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Foreword

Dear Guests,

International Conference on New Horizons (INTE) is international educational activities for academics, teachers and educators. These conferences are now well-known international academic events and the number of paper submissions and attendees increase every year. They promote the development and dissemination of theoretical knowledge, conceptual research, and professional knowledge through conferences activities, the conference proceedings books and TOJET & TOJNED. Their focus is to create and disseminate knowledge about new developments in their field. This year, INTE is organized collaboratively in Vienna University of Technology. This Conference has received almost 1300 applications. The Conference Academic Advisory Board has accepted approximately 600 paper to be presented in INTE Conference.

We would like to thank Prof. Dr. Muzaffer ELMAS, Rector of Sakarya University and Prof. Dr. Hellmuth STACHEL from Vienna University of Technology for their supports of organizing these Conferences

We also would like to thank all participants who will present their academic works in INTE 2016, Vienna, Austria and especially to our distinguished guests and keynote speakers for their collaboration and contribution for the success of INTE 2016.

We wish you a successful conference and good time in Vienna, Austria.

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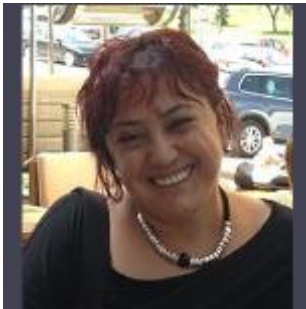
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ABSTRACT

As the needs of the individuals have gone under big changes parallel to the continuous and extensive improvements in information technologies, curricula have also been changed in order to be able to adapt and respond them. In the new curricula, terms such as student-centeredness and flexibility which are difficult to define and apply are emphasized in the teaching and learning situations which are directly about the students. More research is needed to reveal the effectiveness, weak and strong parts of the new curricula and teachers are one of and probably the most important source of information in this term as they are who put the new curricula in practice and see the firsthand results. Following it, this study aims to develop a scale to evaluate teaching and learning situations of curricula put in practice in 2013 in secondary schools (grade 9-12) by teachers and reveal their strength and weakness, deficiencies and halting points. First, scale items will be written depending on literature review findings and results of interviews with field teachers. Later, prior study of likert type items will be carried out with 10-15 teachers and required corrections will be done on items. Then, pilot stud will be done with the required number of sample depending on item number. Data acquired from pilot study will be analyzed for reliability and validity and factor analysis will be done. The scale for evaluating the teaching and learning situations in secondary school curricula will be ready to apply after required analysis.

Keywords: secondary school curricula, curriculum evaluation, teaching and learning situation, scale development

INTRODUCTION

Notwithstanding the influence of factors such as socio-economic status, home, and community, student learning is strongly influenced by what and how teachers teach (Timperley, 2008). Maintaining a positive and organized classroom setting free from disruption is critical to providing an instructional environment conducive to teaching and learning (Skiba, Ormiston, Martinez, & Cummings, 2016). According to Department of Education and Early Childhood Development (2016) a student-centered approach which actively engages the young person in the learning process is critical if skills which result in healthy behaviors are to be fostered and developed. Some of the learning strategies that could be incorporated in a comprehensive approach include self-directed learning, co-operative learning, role playing, behavioral rehearsal, peer education and parent involvement. Consideration should be given to allowing students to plan some learning experiences. They could be provided with opportunities to identify topics or areas for further study, contribute information relevant to an issue for study and/or make suggestions for follow-up activities.

Prawat (1992) stated that the education system in the USA was in the midst of a major paradigm shift which was argued as "a revolution" by Goldman (1989) and according to him it represents "one of those rare periods in history when large numbers of people are receptive to major changes in education." This inference is supported by results from Gallup poll in education sponsored by Phi Delta Kappa. For the first time in its 20-year history then, the poll showed the public favored drastic overhaul of the educational system-including the adoption of a national curriculum and national educational standards (Elan and Gallup 1989). This "revolution" was more than two decades ago when the technology wasn't as effective as today. The 21st century is about the management of all the knowledge and information, we have generated and the value addition we bring to it. But we should continue with lifelong learning (Sharma, 2016). In the light of all these 21st century educational theories, all the curricula in all classes have been continuously changing in Turkey since 2005 when a reform movement to follow constructivism started. These changes aim to create a teaching and learning situation in class that results with more active students, individualized education and supporting students' holistic development. It will help students to have a deep understanding if students experience the followings in the teaching and learning process (MEB, 2011): explore, wonder and question, do experiments and observations, reach the concepts, relate new information with the old, practice and solve problems in different ways.

Problem

Although it is common to evaluate curricula through teacher opinions, these studies are generally carried out through qualitative data coming from interviews and this results in difficulty of comparing studies of curriculum evaluation. Focusing on the teaching and learning situations in the curricula, the question is: "How can we collect teacher opinions on curricula in a more comparable way?"

Aim

The aim of the study is to develop a "Teaching and learning situations evaluation scale" which will give the opportunity to make direct comparisons among similar studies of curriculum evaluation and let researchers who aim to evaluate teaching and learning situations use it in all courses.

METHOD

This study was carried out to do reliability and validity analyses of the teaching and learning situations evaluation scale, so the study employs survey method which aims to gather people's perceptions, opinions, attitudes, and beliefs about a current issue in education (Lodico, Spaulding, & Voegtle, 2010).

Sample

The universe is secondary teachers of all courses who work in Afyon. After required permission was given by the Provincial Directorate of National Education, the teachers were asked to fill the scale which was formed online and distributed through a link or handed personally by the teachers. It was seen that 380 teachers filled the scale but only 357 were appropriate for data analyses.

Data Analysis

Exploratory factor analysis, item-total correlation and 27% bottom-top group comparisons were made for validity and Cronbach alpha value was calculated for reliability.

Data Collection Tool

In the process of scale development, the national and international literature (for example, Çakmak and Gürbüz, 2014; Öksüz, 2015; Ocak and Ataseven, 2015; Hung, Liu, Lin, & Lee, 2016; Baker, Brown, Wilcox, Overstreet, & Arora, 2016) was reviewed and 57 items were written for the pilot study. The items were controlled for language and structure validity by the experts and then piloted on 20 teachers. The final form of the scale was then formed through the feedback from experts and the pilot study.

FINDINGS

Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) and *Bartlett's test* which is a test that examines whether the population correlation matrix resembles an identity matrix values were examined before starting the exploratory factor analyses in order to check the appropriateness of the data to factor analysis (Field, 2009).
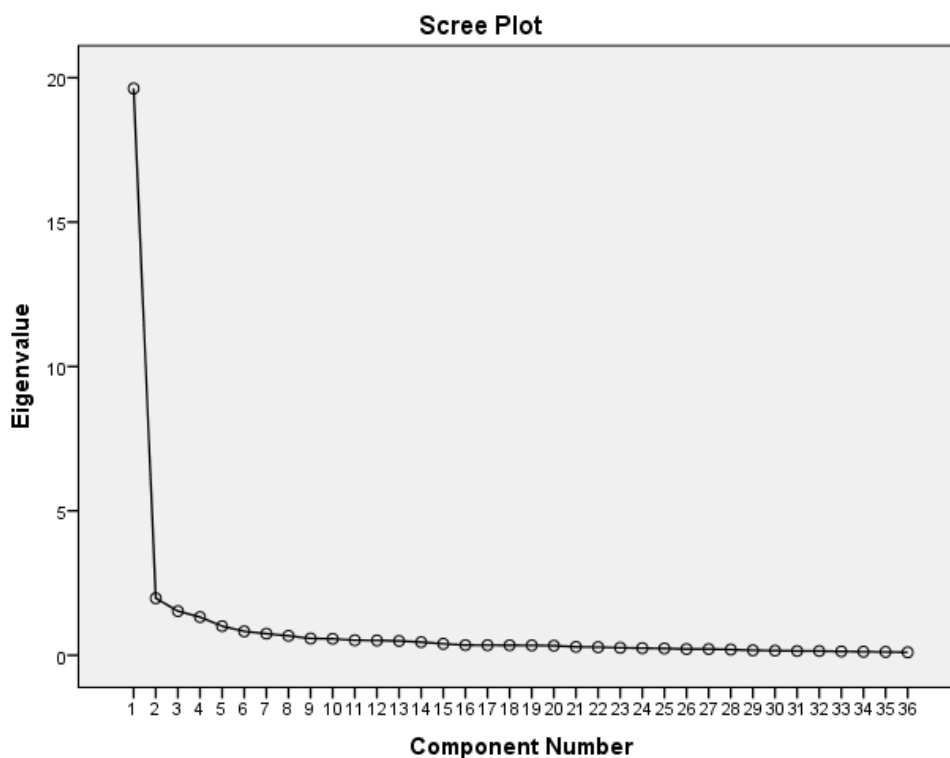
Figure-1 Scree Plot

KMO value is .970 and Barlett's test is .000. As the results indicate that data set is appropriate for factor analysis because KMO is higher than 0.50 and .970 is superb and Barlett's test is significant ($p<.05$), factor analysis was carried out. According to the results, the scale consists of a single factor (Figure-1). It was seen that 21 items had factor loadings lower than .40 and they were excluded from further analyses.

Table-1 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19.627	54.519	54.519	19.627	54.519	54.519
2	1.976	5.488	60.007			
3	1.530	4.249	64.256			
4	1.322	3.672	67.928			
5	1.008	2.800	70.728			
6	.827	2.297	73.025			
7	.748	2.078	75.103			
8	.672	1.867	76.969			
9	.580	1.612	78.582			
10	.569	1.581	80.163			
11	.520	1.443	81.606			
12	.514	1.427	83.033			
13	.495	1.374	84.407			
14	.453	1.258	85.665			
15	.396	1.101	86.766			
16	.352	.977	87.743			
17	.349	.969	88.712			
18	.346	.962	89.674			
19	.342	.951	90.625			
20	.333	.926	91.551			
21	.292	.811	92.362			
22	.280	.777	93.139			
23	.260	.723	93.862			
24	.246	.682	94.544			

25	.237	.658	95.202
26	.217	.602	95.804
27	.215	.596	96.400
28	.198	.550	96.950
29	.172	.477	97.427
30	.158	.440	97.867
31	.148	.411	98.278
32	.146	.405	98.683
33	.134	.371	99.054
34	.124	.344	99.399
35	.115	.320	99.718
36	.101	.282	100.000

Extraction Method: Principal Component Analysis.

After 21 items were excluded from further analysis, the remaining 36 items explain 54.519% of the total variance.

Another way of examining the validity in item analysis is to compare 27% bottom-top groups' means (Can, 2014). Accordingly, the highest and lowest scores of 96 participants were compared through independent samples t-test.

Table-2 Bottom-top Group Comparisons

Items	t	Sig. (2-tailed)
1- Sample activities are student-centered.	10.059	.000
2- Sample activities are teacher-centered.	.058	.954
3- Activities are applicable.	10.414	.000
4- Teaching and learning experiences are consistent with the objectives.	12.499	.000
5- Teaching and learning approaches are appropriate to the field of study.	15.222	.000
6- Resulting activities such as discussion, trip, observation, experiment, summarizing, production in the end of learning experiences are directive for the teacher.	17.152	.000
7- Activities support learning by doing and experiencing.	18.187	.000
8- Activities are organized by keeping student interests, needs and demands in mind.	19.860	.000
9- Teaching and learning process develops critical thinking ability.	25.244	.000
10- Teaching and learning process develops creative thinking ability.	22.162	.000
11- Teaching and learning process develops research, questioning and deciding abilities.	24.813	.000
12- Teaching and learning process develops problem solving ability.	24.193	.000
13- Teaching and learning process develops communication ability.	23.444	.000
14- Teaching and learning process develops correct, effective and good use of Turkish ability.	22.892	.000
15- Teaching and learning process develops entrepreneurship ability.	20.210	.000
16- Teaching and learning process develops information technology using ability.	22.793	.000
17- Teaching and learning process supports 5E instructional model.	16.933	.000
18- Teaching and learning process directs towards discussion methods like debate, panel, open forum etc.	18.391	.000
19- Teaching and learning activities direct towards group work.	20.904	.000
20- Teaching and learning process directs towards teacher-centered methods such as direct method, question and answer, etc.	4.674	.000
21- Teaching and learning activities direct towards group work.	19.976	.000
22- Methods and techniques are consistent with objectives.	21.687	.000
23- Methods and techniques are consistent with content.	22.316	.000
24- Activities can be done both in and out of the school.	19.981	.000
25- The teacher is a guide who leads the students and improves him/herself in the process.	16.249	.000
26- Curriculum offers materials to be used in the activities.	19.001	.000
27. The materials used in teaching and learning process can easily be reached in all regions.	17.239	.000
28. Sample activities are appropriate to students' level.	18.654	.000
29. A learning experience is in interaction with the others.	24.019	.000
30. Activities can be done both in and out of the school.	18.988	.000
31. Learning experiences support the upper class attainments.	17.568	.000

32. There are examples of how to use EBA in the teaching and learning process.	9.535	.000
33. The teaching and learning process directs teachers to use digital materials.	9.218	.000
34. The teaching and learning process directs students to use digital materials.	10.276	.000
35. A classroom seating plan is provided appropriate to the activities in the curriculum.	13.308	.000
36. There are explanations in the curriculum about classroom management.	14.602	.000

According to the results shown in Table-2, there is a significant difference between the bottom and top groups in all items (p<.05) except number 2 (p=.954; p>.05). As a result, this item should be excluded from further analysis.

Kaiser–Meyer–Olkin measure of sampling adequacy (KMO) and Bartlett's test were repeated after excluding 22 items due to insufficient factor loading or insignificant difference in bottom-top groups. The next KMO value is .971 and Barlett test is significant (p=.00; p<.05). Then the exploratory factor analysis was repeated and it was seen that factor loading of the item 20 is lower than .40, so it was excluded from further analysis. Then, analyses were repeated with a total of 34 items. Finally, KMO value is .971 and Barlett test is significant (p=.00; p<.05) for the remaining 34 items.
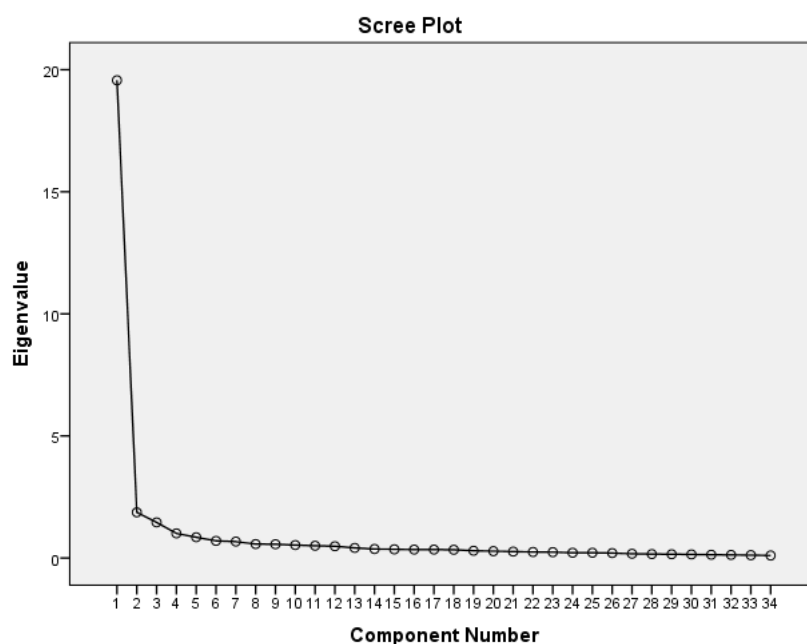
Figure-2 Scree Plot for 34 Items

According to factor analysis, 34 items in the scale again goes under one single factor (Figure-2). After excluding a total of 23 items in the analyses, the remaining 34 items explain 57.545 of the total variance (Table-3). The Cronbach alpha reliability value is .976.

Table-3 Total Variance Explained

Component	Initial Eigenvalues			Extraction Sums of Squared Loadings		
	Total	% of Variance	Cumulative %	Total	% of Variance	Cumulative %
1	19.565	57.545	57.545	19.565	57.545	57.545
2	1.871	5.503	63.047			
3	1.457	4.286	67.333			
4	1.007	2.960	70.294			
5	.850	2.500	72.794			
6	.703	2.066	74.860			
7	.671	1.974	76.834			
8	.570	1.676	78.510			
9	.562	1.653	80.163			
10	.531	1.560	81.724			

11	.502	1.477	83.200
12	.482	1.418	84.619
13	.412	1.213	85.832
14	.370	1.088	86.920
15	.355	1.044	87.963
16	.347	1.020	88.983
17	.344	1.013	89.996
18	.338	.994	90.990
19	.297	.873	91.863
20	.281	.826	92.689
21	.261	.768	93.457
22	.247	.726	94.183
23	.239	.702	94.885
24	.217	.637	95.522
25	.215	.633	96.156
26	.201	.591	96.746
27	.173	.508	97.255
28	.159	.467	97.721
29	.152	.446	98.168
30	.147	.431	98.599
31	.134	.394	98.992
32	.125	.368	99.360
33	.116	.342	99.702
34	.101	.298	100.000

Extraction Method: Principal Component Analysis.

Another way to check the reliability of a scale is to calculate item-total correlation as in a reliable scale all items should correlate with the total, not less than .30 (Field, 2009). Findings about item-total correlation is given in Table-4.

Table-4 Findings about Item Reliability

	Scale Mean if Item Deleted	Scale Variance if Item Deleted	Corrected Item-Total Correlation	Cronbach's Alpha if Item Deleted
1- Sample activities are student-centered.	113.894	708.017	.568	.976
2- Activities are consistent with the content.	113.922	708.286	.564	.976
3- Activities are applicable.	114.171	704.080	.623	.976
4- Teaching and learning experiences are consistent with the objectives.	114.143	703.634	.694	.976
5- Teaching and learning approaches are appropriate to the field of study.	114.045	702.470	.734	.976
6- Resulting activities such as discussion, trip, observation, experiment, summarizing, production in the end of learning experiences are directive for the teacher.	114.305	694.870	.775	.975
7- Activities support learning by doing and experiencing.	114.300	693.351	.772	.975
8- Activities are organized by keeping student interests, needs and demands in mind.	114.580	688.340	.836	.975
9- Teaching and learning process develops critical thinking ability.	114.451	691.333	.831	.975

10- Teaching and learning process develops creative thinking ability.	114.487	690.295	.833	.975
11- Teaching and learning process develops research, questioning and deciding abilities.	114.457	690.468	.852	.975
12- Teaching and learning process develops problem solving ability.	114.490	689.251	.852	.975
13- Teaching and learning process develops communication ability.	114.303	692.953	.828	.975
14- Teaching and learning process develops correct, effective and good use of Turkish ability.	114.384	693.175	.770	.975
15- Teaching and learning process develops entrepreneurship ability.	114.499	690.880	.808	.975
16- Teaching and learning process develops information technology using ability.	114.280	697.146	.711	.976
17- Teaching and learning process supports 5E instructional model.	114.434	697.055	.786	.975
18- Teaching and learning process directs towards discussion methods like debate, panel, open forum etc.	114.507	695.492	.754	.975
19- Teaching and learning activities direct towards group work.	114.328	697.963	.791	.975
20- Methods and techniques are consistent with objectives.	114.238	695.440	.832	.975
21- Methods and techniques are consistent with content.	114.185	697.522	.833	.975
22- Activities can be done both in and out of the school.	114.499	693.318	.780	.975
23- The teacher is a guide who leads the students and improves him/herself in the process.	114.134	696.735	.738	.975
24- Curriculum offers materials to be used in the activities.	114.339	696.612	.772	.975
25- The materials used in teaching and learning process can easily be reached in all regions.	114.605	697.717	.696	.976
26- Sample activities are appropriate to students' level.	114.381	697.214	.749	.975
27- A learning experience is in interaction with the others.	114.328	696.620	.820	.975
28- Activities can be done both in and out of the school.	114.412	694.760	.774	.975
29- Learning experiences support the upper class attainments.	114.305	697.999	.756	.975
30- There are examples of how to use EBA in the teaching and learning process.	114.824	706.713	.468	.977
31- The teaching and learning process directs teachers to use digital materials.	114.168	709.489	.524	.976
32- The teaching and learning process directs students to use digital materials.	114.280	707.118	.557	.976
33- A classroom seating plan is provided appropriate to the activities in the curriculum.	114.874	695.936	.634	.976
34- There are explanations about the classroom management in the curriculum.	114.720	697.713	.654	.976

As seen in Table-4, item-total correlation of all 34 items are above .30 which means it is not necessary to exclude any other item. The values of item-total correlation change between .469 and .852

RESULTS
This study aims to develop a teaching and learning situations evaluation scale in order to help curriculum developers and teachers find strengths and weaknesses in the theory or practice of the teaching and learning situations in the curriculum as new theories and practices in education emerge continuously. The draft of the scale included 57 items after it was checked by experts and piloted with a group of 20 teachers. The draft form of

the scale was given to 380 secondary school teachers in Afyon but 357 scales were returned and appropriate for data analyses. An explanatory factor analysis was carried out on the data as KMO and Barlett values indicated convenience for factor analysis. Of 57 items in the draft, 21 items were excluded because of insufficient factor loading score; 1 item because of no significant difference between 27% bottom-top group comparison and 1 because of insufficient item-total correlation value. The final form of the scale includes 34 items under a single factor and total variance explained is 57.545%. The Cronbach alpha value that indicates the reliability of the scale is .976 which is much above the minimum required value. All these results show that the developed teaching and learning situations evaluation scale can be used by researchers to collect data from the teachers about what to keep and change in the curriculum. Such a scale giving the opportunity to collect quantitative data which makes comparisons among similar researches easier will save time and effort.

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DEVELOPING A TEACHER CHARACTERISTICS SCALE

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ABSTRACT
It is a known fact that every profession needs to be developed during its practice. To be able to acquire this we need to know the characteristics of teachers related to their professional development. For this purpose this study tries to develop a scale to measure teacher characteristics which would help in designing in-service training programs to educate teachers. The first draft of the scale had 69 items and was administered to 99 senior teacher candidates in the faculty of education. The results were analysed by using exploratory factor analysis. As a result it was found that the scale contains three components, namely, teacher-student interaction characteristics with 13 items, characteristics related to teaching profession with 11 items, humanistic and justice characteristics of teachers with 9 items.

Keywords: teacher characteristics, in-service training, professional development.

INTRODUCTION

Teachers play an influential role in shaping the society and for this reason they are expected to have certain types of attitude and behavior to fulfil the requirements of their work. In order to work in a field that requires such dedication, they have to have a compatible personality with this profession to get satisfaction from what they are doing, love teaching and learning process and be happy doing this job. Otherwise, needs of individuals such as happiness, self-fulfilment and self-actualization cannot be met and for this reason they are not expected to be successful in their profession (Dağ, 2010).

Student characteristics as well as teacher characteristics affect the teaching-learning situation, but this study will be concentrated on teacher characteristics only. Hence a review of the existing literature was done to find desired attitudes and behaviour of teachers. Seferoğlu (2004) listed the characteristics of a qualified teacher as follows:
- Provides learning experiences, taking into account the characteristics of students
- Believes in the necessity of advance planning and plans before implementation.
- Develops suitable instructional materials for students at different levels of capacity.
- Knows advantages and limitations of different approaches, methods and techniques for the realization of effective learning.
- Encourages students to interact with each other and participate in the teaching-learning process and enables them to effectively take responsibility of their own learning.
- Knows the importance of evaluation in the teaching-learning process and the necessity of using different evaluation strategies.
- Knows the necessary resources and methods to motivate students on topics such as career choice and gaining learning habits.
- Takes the necessary measures to improve the basic skills of students.
- Knows physical, emotional and mental characteristics of students and designs teaching activities accordingly.
- Is not aware only of formal education but also knows adults education and is equipped to support professional development.
- Plans, manages and evaluates school extracurricular activities in cooperation with the school administration.
- Knows the necessity of constant professional and personal improvement.
- Knows the structure and functioning of the education system and schools and provides necessary opinions and suggestions for development.
- Is in cooperation with parents and other related people for the best education of students (in Sarpkaya, 2012).

According to Ronald and Grogan (2003) teachers' behaviors that are necessary in quality classes should be examined in specific categories. In the *having good command of the subject area and passion for teaching* category there exist behaviors such as deep knowledge in the teaching-learning process, loving his/her subject,

relating teaching tools and materials to students' experiences and life. In the *relationships with students'* category there are behaviors such as calling students frequently with their names during lessons, being concerned of the achievements of students in their tests, and building a warm friendly relationship with students. In the *validity* category behaviors such as creating additional opportunities for students, and helping students individually outside of class time exist. İn the *class arrangement and management* category behaviors such as maintaining an appropriate pace during lessons and diversifying classroom activities are given place (in Cafoğlu, 2007).

Maria Orlando (2013) points out that most teachers give no effort to do more than the minimum required. Teaching is not an easy work and some teachers can never be excellent but stay at a medium level of competency in teaching. To be a great teacher one must constantly work very hard to provide a nurturing and challenging environment for fostering maximum learning of their students. Maria Orlando based on her K-12 administrative experience and many teacher evaluations that she made listed nine characteristics of a great teacher as follows:

"1. A great teacher respects students [and] creates a welcoming learning environment for all students.
2. A great teacher creates a sense of community and belonging in the classroom [and] lets students know that they can depend not only on her, but also on the entire class.
3. A great teacher is warm, accessible, enthusiastic and caring [and] is the teacher to whom students know they can go with any problems or concerns.
4. A great teacher sets high expectations for all students [and] knows that students generally give to teachers as much or as little as is expected of them.
5. A great teacher has his own love of learning and inspires students with his passion for education and for the course material. He constantly renews himself as a professional on his quest to provide students with the highest quality of education possible.
6. A great teacher is a skilled leader [and] conveys this sense of leadership to students by providing opportunities for each of them to assume leadership roles.
7. A great teacher can "shift-gears" and is flexible when a lesson isn't working [and] assesses his teaching throughout the lessons and finds new ways to present material to make sure that every student understands the key concepts.
8. A great teacher collaborates with colleagues on an ongoing basis [and] uses constructive criticism and advice as an opportunity to grow as an educator.
9. A great teacher maintains professionalism in all areas—from personal appearance to organizational skills and preparedness for each day." (Retrieved on August 27, 2016, brackets are mine).

Since a lot of hard work is required to achieve the status of a great teacher we must help teachers in their efforts. For this reason we must be aware of their existing characteristics to know exactly what they need to improve themselves. This study aims to develop an instrument for assessing teacher characteristics related to their teaching profession.

Significance and Purpose of the Study
The purpose of this research is to develop a scale to measure teachers' perceptions about their own teaching characteristics. This scale will help teachers improve their teaching-learning process by raising their awareness about their own strengths and weaknesses in the teaching profession. In addition, the scale can be used by administrators as a part of teacher assessment procedure. With this scale teachers will be able to assess their own behaviors and try to change to be more effective in class. Administrators and inspectors will also be aware of the characteristics of teachers and will be in a better position when designing in-service training courses/workshops for them.

RESEARCH METHOD
The Population and Sample of the Study
The research population consists of senior teacher candidates studying at private universities in the TRNC in the 2015-2016 academic year. The sample for the first pilot study was chosen randomly and consists of 99 senior teacher candidates in the faculty of education. 41 of them (41.4%) were female and 58 (58.6%) were male. The average age of the teacher candidates was 22.59.

Development and Administration of Teacher Characteristics Scale
After a thorough review of the literature characteristics of teachers were listed in three major areas, namely, teacher-student interaction characteristics, characteristics related to the teaching profession, humanistic and justice characteristics. From this list 69 items could be written for the first draft of the scale. A five-point Likert-type scale with options "fully agree", "agree", "undecided", "disagree", "strongly disagree" was used. Group

administration method STAM (Synchronous Technological Administration Method) which uses PowerPoint slides and optic forms to collect data was used (Yaratan and Suphi, 2013).

Data Analysis
The results were analyzed by using exploratory factor analysis with principal components analysis and Varimax rotation.

RESULTS
Exploratory factor analysis was conducted to identify items that reflect the three predetermined categories of teacher characteristics. First sampling adequacy and the significance of the relationship between items were checked to decide on the applicability of the factor analysis. As can be seen from Table 1, KMO is above .70 which means that the sample size is adequate for doing a factor analysis. Also Bartlett's Test of Sphericity turned out to be significant which means that there is enough correlation between the items of the scale to do a factor analysis.

Table 1. KMO and Bartlett's Test of Sphericity results

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	.734
Approx. Chi-Square	1419.998
Bartlett's Test of Sphericity df	561
Sig.	.000
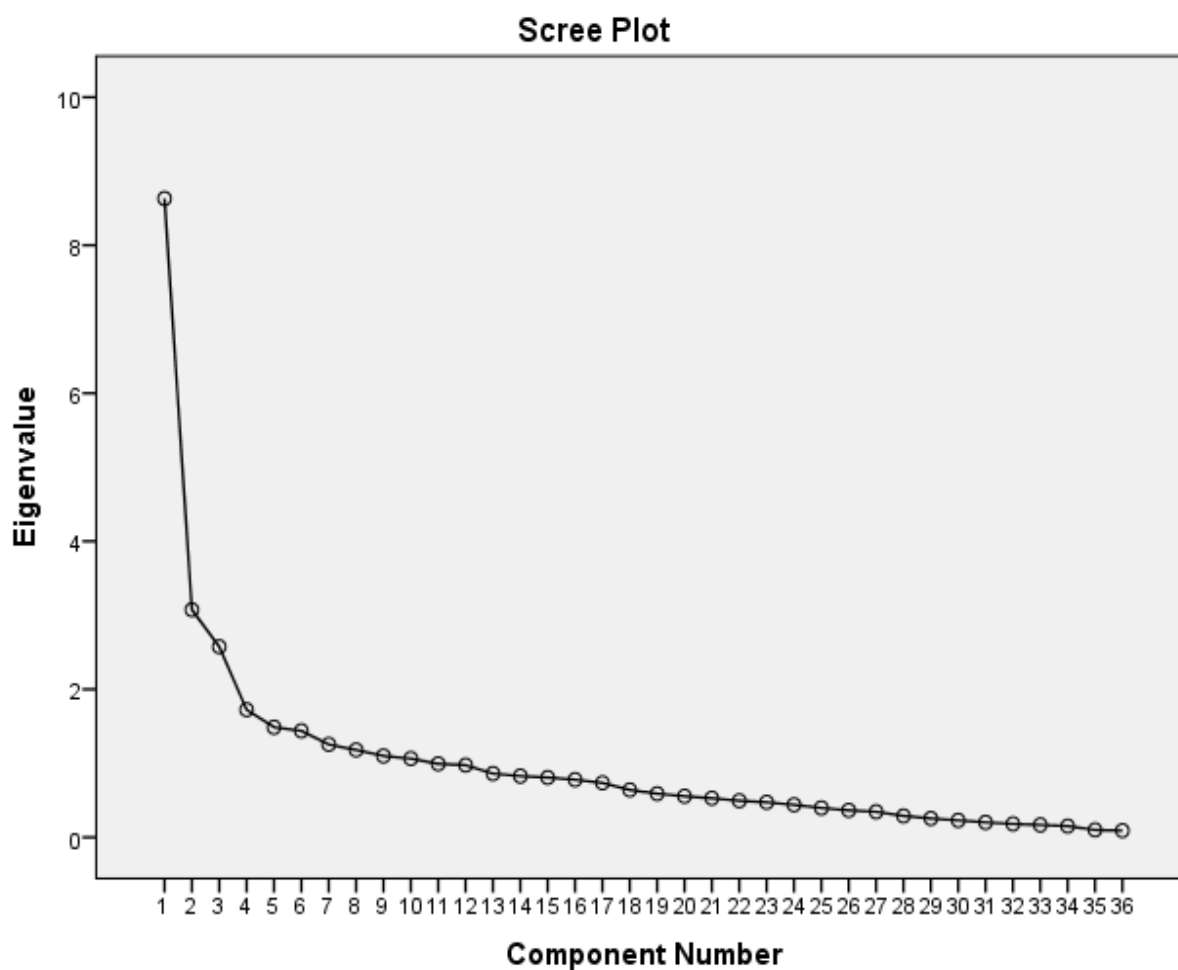
Figure 1: Scree Plot for the Exploratory Factor Analysis.

From Figure 1 it can be seen that on the vertical part of the scree plot there are three eigen values that represent three factors and the rest of the eigenvalues are on the horizontal part of the scree plot. Hence, as we expected, three components can be extracted from the scale. After the factor analysis the following components were obtained:

1. *Teacher-student interaction characteristics of teachers* component with 13 items,
2. *Characteristics of teachers related to the teaching profession* component with 12 items,
3. *Humanistic and justice characteristics of teachers* component with 11 items.

After Varimax rotation the items related to the *teacher-student interaction characteristics* component were obtained as shown in Table 2. Cronbach's alpha for this component was found to be .866 which indicates a very reliable component. This component accounted for 15.3% of the item variance.

Table 2.   Rotated Component Matrixª for Teacher-Student Interaction Characteristics of Teachers

	Component		
	1	2	3
34. I like to participate in social activities with my students.	.747		
59. I include the ideas of my students to my lessons.	.699		
45. I create additional opportunities and I help my students individully outside class time.	.678		
35. I set up a warm friendly relationsship with my students.	.653		
42. I organize appropriate learning experiences to motivate my students to fulfil their motives.	.620		
67. I am open to opinions and suggestions of my students about my teaching.	.580		
64. I tell my students that they can see me outside the classroom to discuss and ask questions about the course.	.562		
47. I diversify classroom activities.	.545		
65. I encourage cooperative behavior of my students in my class by giving assignments to enable them to help each other.	.542		
36. I avoid critical and judgmental responses while I listen my students.	.528		
66. I follow the individual development of my students and provide the necessary assistance to them in this process.	.526		
32. I call my students by their names.	.506		
38. when I interact with my students I share my positive feelings about them.	.487		

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Table 3. Rotated Component Matrixª for Characteristics related to the teaching profession

	Component		
	1	2	3
25. I pay attention to sources of knowledge around me to utilize them for educational purposes.		.673	
40. I have the pattern of personality to raise the prestige of the teaching profession.		.667	
23. I have the professional insight to sense behavioral problems before they occur.		.580	
26. I am knowledgeable in my professional area.		.577	
43. I use teaching-learning principles and methods effectively.		.573	
21. I do my work properly and on time.		.538	
6. My feelings of self-confidence are developed.		.523	
46. I maintain an appropriate rate of progress throughout the lesson.		.516	
24. I show an intense interest in developing myself.		.515	

57. I change the physical layout of the classroom if I believe that it will provide a better learning opportunity for my students.	.506
62. I ask questions in class to produce an effective environment.	.459
9. I am an organized teacher.	.417

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

Varimax rotation for the component *characteristics related to the teaching profession* revealed 12 items to be related as shown in Table 3. Cronbach's alpha was found to be .812 which indicates that this component is also a very reliable component. 13.0% of item variance were accounted for by this component.

Humanistic and justice characteristics component was obtained after Varimax rotation with 11 items as shown in Table 4. Cronbach's alpha was found to be .832 indicating a very reliable component. This component explains 11.4% of item variance.

Table 4. Rotated Component Matrix[a] for Humanistic and Justice Characteristics of Teachers

	Component		
	1	2	3
10. I am an honest and fair teacher.			.712
17. I am a sensitive person.			.647
33. Instead of an authoritarian approach caused by the concern of losing control, I set up humane relationships with my students with an equal and democratic approach.			.622
13. I am a tolerant teacher.			.596
41. I am aware that there may be some students with learning disabilities or behavioral disorders due to individual differences.			.581
19. I show an unbiased and objective attitude in solving the problems.			.570
8. I show love and care to the people around me.			.566
31. I can establish positive relationships with my students.			.528
30. I am aware of the individual differences of my students.			.495
52. I clearly state my expectations from my students about their lessons.			.478
50. I provide equal learning opportunities to all students in my class.			.453

Extraction Method: Principal Component Analysis.
Rotation Method: Varimax with Kaiser Normalization.
a. Rotation converged in 6 iterations.

CONCLUSION

In this study "Teacher Characteristics Scale" was designed to have three factors, namely, teacher-student interaction characteristics, characteristics related to teaching profession and humanistic and justice characteristics of teachers. Other studies which resemble to this study have been found in the literature that had been reviewed. One such study was done by Erdoğdu (2013) who developed "Perceived Teacher Behaviors Scale". This scale was administered to elementary school students to collect data about their perceptions of the behaviors of their teachers. Only two factors were extracted from this scale. The first factor reflected the perceptions of students about the democratic behaviors of their teachers and the second factor reflected the perceptions of students about the authoritarian behaviors of their teachers. Yeşil (2010) also worked on the democratic behaviors of teachers and ended up with a one factor instrument solely related to democratic behaviors of teachers and the scale was titled as "Scale for Democratic Teacher's Behavior Determination".

Tarhan and Şentürk (2011) called their instrument as "Teacher Attitude Scale toward Undesirable Intra-class Behaviors of Students" which had two factors "Emotional Attitude Expressions" and "Behavioral Expressions". This scale measured teacher attitudes toward undesirable student behaviors. Erişen ve Çeliköz (2003) developed a five-factor instrument to measure the perceived degree of competency of teacher candidates about "subject matter", "designing, planning, and administering instruction", "testing and evaluation", "cooperation with others

concerned" and "professional development". They called their instrument as "Prospective Teacher Competency Scale".

Many scales have been developed by researchers associated with examining various aspects of teacher behavior. This study was aimed at investigating teachers' characteristics about their interaction with their students, characteristics related to the teaching profession, and humanistic and justice characteristics. These three components of this scale accounted for a total of 39.7% of item variance. The final version of the scale with a total of 36 items has a Cronbach's alpha of .898 which represents an excellent reliability level.

This phase was the first pilot study which was done on the first draft of 69 items of the "Teacher Characteristics Scale". It was prepared with the intension of obtaining three factors. The next phase will be the administration of the scale to a larger sample of teachers. The data collected in this second phase will first be analyzed by using exploratory factor analysis followed by a confirmatory factor analysis for convergent and discriminant validities. Of course for reliability Cronbach's alpha will be computed. The third phase will be the utility of the scale for finding a solution for a defined problem related to teacher characteristics.

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DEVELOPING AN EVIDENCED CHIROPRACTIC CURRICULUM

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ABSTRACT
Many Chiropractic programs worldwide are standardised and audited by local accreditation bodies. International bodies such as The Councils on Chiropractic Education International (CCEI), The World Federation of Chiropractors (WFC) and The World Health Organisation (WHO) have a common intent to provide education and practice of the highest quality and service to the community. Tertiary education institutions are internally driven to assess practice and improve the quality of education. But nowhere is the specific content of the chiropractic curriculum standardised. Accreditation bodies provide guidelines of a core chiropractic syllabus and competency standards for the institutions that fall under their jurisdiction. The WHO provides global guidelines for a core syllabus but there is no evidence this guides educational practice. The actual research on what is truly useful both to the students once qualified and to the ongoing development of the profession, is scant. This goes beyond the metrics of student and faculty outcomes, to the core questions of relevance for the profession. The aim of this paper is to discuss the issue of evidenced curriculum content.

INTRODUCTION

What should chiropractic students be taught, how is the decision presently made, and what are the considerations that should be taken into account in this decision? This commentary explores the situation as it now is and looks towards possible solutions.

To begin with the present situation, the first chiropractic schools began in the United States, Canada, Australia and the United Kingdom, although chiropractic science is taught in many countries around the world today (Chiropractic, 2009). In some of these countries (for example, United States, Canada, Australia, some European countries), the chiropractic program is taught in a standardised way in university or college, and the status of chiropractic is legal, controlled either by legislation and chiropractic regulation or by general law (Chiropractic, 2012). In countries like Denmark and Switzerland, the chiropractic program is incorporated into the existing medical educational infrastructure (Myburgh and Mouton, 2008). In some countries the status is unclear (China, Vietnam, Greece, Hungary, Spain, Morocco, Syria and Turkey) and in South Korea and Taiwan there may be risk of prosecution (Chiropractic, 2012).

Many countries adhere to a common international standard of education through the collegiality of international accrediting agencies under the banner of the Councils on Chiropractic Education International (CCEI), which presently includes the Council on Chiropractic Education Australasia (CCEA), the European Council on Chiropractic Education (ECCE) and The Federation of Canadian Chiropractic (FCC) (International, 2016). In the US, The US Council on Chiropractic Education (CCE) is the sole accreditation agency, recognised by the US Office of Education since 1974 and the Council for Higher Education Accreditation (CHEA) and is a member of the Association of Specialised and Professional Accreditors (ASPA) (Brett et al., 2013). In Australia and New Zealand, study programs have been accredited by the CCEA since 2002, and this accreditation is approved by the Chiropractic Board of Australia (CBA) or New Zealand Chiropractic Board (NZCB). The CCEA is assigned this authority in Australia by the Health Practitioner Regulation National Law Act 2009 (Australasia, 2015, Australasia, 2009).

This standard has been adopted by the World Health Organisation (WHO), which entered into official relations with the World Federation of Chiropractors (WFC) in 1997. The WFC, established in 1988, encourages "improved standards of chiropractic education and practice in order to provide the highest quality of service to the community" (Chapman-Smith, 2013). The standards of education form the basis of the WHO publication, the Guidelines on Basic Training and Safety in Chiropractic (2005) (Chiropractic, 2012).

The CCEI stipulates the minimum requirement of at least five academic years of full-time study, but they acknowledge that "educational requirements may vary to a certain extent as they reflect the specific conditions and expectations of academic conventions and/or legislation in the region" (International, 2010).

In Australia, it is the policy of the CCEA that "the administration and faculty/academic staff must have freedom to design the curriculum", and that "all faculty should have a significant role in determining the content of the curricula and courses offered by the institution" (Australasia, 2009). It is therefore incumbent on institutions to research and revise the effectiveness of their programs constantly.

The principle aim of this commentary is to discuss how to make an evidenced decision on what should be taught in a chiropractic program.

DISCUSSION

It is beyond the scope of this commentary to consider individual programs worldwide. The purpose, however, which is to ponder the question of how content within a curriculum is chosen, can be served with an example. In Australia, chiropractic teaching began in a few private institutions in Victoria (1930's), New South Wales (1959) and South Australia (1963) (Devereaux et al., 2006, Ebrall and Molyneux, 2005). My Department of Chiropractic began in 1990, as a merger between the Sydney College of Chiropractic (SCC) and Macquarie University, making it the first teaching centre for Chiropractic at a publically funded university worldwide (Devereaux et al., 2006). Since 2009, the Department of Chiropractic has been part of the Faculty of Science and Engineering, and offers a three year Bachelor of Chiropractic degree, followed by a two year Master of Chiropractic program. This equates to 10 semesters full-time, or part-time equivalent, 72 credit points at the undergraduate level, and 64 credit points at the postgraduate level. Each undergraduate credit point requires 3h/wk of course load, and 4h/wk of course load at the postgraduate level. This totals 2808h of undergraduate, and 2496h of postgraduate workload (Department of Chiropractic, 2015). This is comparable to the programs offered at tertiary level at other Australian universities, and in the United Kingdom and the United States (Draper and Walsh, 2008).

But what should be taught in over 5000h of contact with students? The CCEI see that the "purpose of …. professional education is to prepare the chiropractor as a primary health care provider" (International, 2010). This requires a broad base of medical training in order to develop good differential diagnosis skills, and to know when to refer and to whom. It also necessitates excellent communication skills, both with patients and within medical teams. However, it can also be said that the role of a chiropractic education is to produce competent specialists, and the area of specialisation is principally the spine. Chiropractors, it can be justifiably said, are typically consulted to manage specific musculoskeletal conditions in practice, and this is what they should know best (Puhl et al., 2014, Coulter et al., 2002). According to the WFC, about 60% of these conditions are back pain, 20% are musculoskeletal pain conditions of the neck, shoulder, extremities and arthritic pain. Headaches make up about 10% of consultations (Chiropractic, 2012).

However, in this tug of war on teaching time, research skills have become a major necessity. Mainstream medicine has become evidence based, an approach chiropractic must yet fully embrace. This requires that clinicians ask focused questions, know how to systematically retrieve the best available evidence, critical appraise that evidence by testing it for validity, clinical relevance and applicability, apply the evidence in practice, and evaluate the results (Services, 2015). In the 1990's, somewhat behind allopathic medicine, the Research Agenda Conferences voiced the need for teaching chiropractic students research methodology in order to develop these skills (Shields, 2005).

The above attempts to rationalise what is best for students to learn, but how can this be evidenced? This goes beyond measuring student grades and levels of satisfaction, but rather speaks to measuring what is relevant for future practice, which would influence career prospects, successful integration into disciplinary teams, employment patterns and contribution of the profession to health care in the society.

One approach to finding this evidence is to map the curriculum content against certain criteria. A curriculum map records the course content, the timeline and scheduling and the congruence between teaching and assessment (Hege et al., 2010). An example of this was done at Macquarie University. The authors conducted their mapping of the Masters Programme (MChir) against two domains: musculoskeletal conditions commonly seen in practice, and for which chiropractic has been shown to be effective (Gorrell et al., 2015). They found the programme to be effective in that there was congruence between the assessment tasks within the curriculum and the two domains against which it was mapped. The authors concluded that completion of the curriculum provided training that was relevant to conditions commonly seen by chiropractors and musculoskeletal conditions for which chiropractic treatment is effective. However, does this mean the course provides the training students need to be successful practitioners? As discussed above, there are any number of areas of teaching that can be rationalised as important for successful training of clinicians.

Another approach would be to assess whether students, during their education, achieve set levels of competence. The CCEA, for example, have five competency standards students must attain to practice safely and ethically. They are: practising professionally; communication, collaboration and leadership; clinical assessment; planning care; and implementing, monitoring and evaluating care (Australasia, 2015). However, it is one thing to call for testing of competency standards in a program, and another to provide evidence that what is taught translates into relevancy and clinical success once the student has graduated and is a practising physician.

Another approach to this problem is to find out whether the teaching program has met the needs of graduates in their careers. In 2015, I set out to explore this by sending a questionnaire to past graduates. Ethics approval was obtained from the Macquarie University Faculty of Science Human Research Ethics Subcommittee (reference number 5201401167). The questionnaire was built online, using Qualtrics Surveys (Qualtrics Software Company, 225 George Street, Sydney, NSW, 2000). Letters were sent to the Chiropractic Alumni (graduates of the Sydney College of Chiropractic and Macquarie University), the Chiropractic Association of Australia (National) and the Chiropractic and Osteopathic College of Australasia (COCA) asking their help in disseminating the information to members to participate in the study.

The response rate, however, was disappointing. The total pool of Macquarie University graduate respondents was calculated as potentially 2400, based on the availability of the program since 1990, at an average of about 100 graduates a year (although numbers of graduating students in the early years would have been smaller). There were 76 responses, 3.2% of the estimated total pool. This is hardly representative of the graduate experience, but the findings were non-the-less interesting, and relevant here only in illustrating the type of information that can be obtained. Further larger studies are needed to obtain more reliable data.

Seventy one percent of the respondents were male. The mean age was 36±9.2 years. The mean year of graduation was 2005±6.7. The mean length of time in practice was 9.6±6.7 years. The mean number of hours per week the clinicians worked was 34.8±9.7h. On a scale from 0 to 100, the chiropractors were asked, in retrospect (from your perspective now), to rate your level of preparedness for clinical work at the time they graduated from the Chiropractic Master's program at Macquarie University (0 being completely unprepared for what was to follow, and 100 being very ready to practice). The mean response was 67.3±19.4. There was a similar response to whether they thought their clinic internship had been helpful in preparing them for practice (68.1±25). Not such an enthusiastic response to self-preparedness.

When asked about the specifics of the program, the response was interesting too. The diagnostic skills of history taking, general physical examination, functional analysis, neurological and orthopaedic examination and radiological analysis and skills, were all considered to be essential by over 90% of respondents in each case. The responses to the necessity for management skills teaching was more varied. Most could see the value of diversified (97.5%), sport injury management, and rehabilitation of the spine and extremities (91.9% each), terminal point technique (86.5%), nutrition (83.8%) and management of geriatric health conditions (81.1%). But skills such as flexion and distraction (59.5%), Gonstead (56.8%), and electrophysical therapy (45.9%) were far less favoured as necessary in the program. The respondents did also consider communication skills (97.3%) and research skills (critical thinking 94.6%, evidence evaluation 94.6%, and evidence identification 86.5%) as very important. Not surprisingly, clinicians saw practice management skills as a very necessary part of the program (94.6%). Knowledge of ethics and law and jurisprudence also rated highly (89.2% respectively).

A similar type of study was done by Barry Draper and Max Walsh at RMIT, Melbourne, Australia, in 2008, with a questionnaire sent to all chiropractors registered to practise in the state of Victoria (Draper and Walsh, 2008). They had a 33.6% response rate, equating to a total of 329 chiropractors. They found chiropractors most routinely used spinal, limb and neuroanatomy, plain film X-ray interpretation and communication skills, and over 50% felt they received too little training in communication skills. They also felt they received too little training in philosophy, psychology, nutrition, neurophysiology, and CT and MRI interpretation. In regard to what they used routinely, they felt many physical examination procedures (ophthalmoscopy, otoscopy, heart and lung examination, nose and throat examination) and physiological therapeutic procedures (laser, interferential, high voltage, TENS) were rarely if ever used, and many felt the latter should not be included in the program. In the comments given by Macquarie University students in response to what they believed should be increased in the curriculum, they said: communicating with other professionals, practice management, business skills, systems of practice, exposure to ill patients, real world protocols, and pharmacology.

Both the Draper and Walsh and Macquarie University results indicate that communication skills are highly rated and therefore greatly needed by clinicians. This is not only important for clinician-patient relationships, but for collaboration within interdisciplinary teams. Another is management skills. This was also a finding in a Danish study on the development of chiropractic education in their country. In the Danish and Swiss circumstance, chiropractic education is integrated into the medical education system in the University of Southern Denmark and the University of Zurich, a move that is beneficial in addressing interdisciplinary communication (Myburgh and Mouton, 2008).

The graduate perspective is however limited in the appraisal of the relevance of chiropractic education. Surviving or even thriving clinically as an individual practitioner may not necessarily equate to progressive chiropractic education that advances the profession along with other evidence based medicine. The ultimate

aims of the profession should also be considered and translated into curriculum content. Globally there is a need for chiropractic education to address its evidence base to attain relevancy in evidence based medical care, and to network with other medical disciplines. These are pressures that should be directly addressed and translated into education practice. The metrics for its success would be the relevancy of chiropractic within the broad base of primary care, with research attainment evidenced by numbers of chiropractic PhD graduates, publications and the award of grants. Referrals and collaborations across medical disciplines would evidence the extent to which chiropractic has found its place among other health care professions.

LIMITATIONS

In reviewing the relevance of the chiropractic curriculum, this paper addresses the content of the course. However, what are also important are the methods of teaching and the role of the learning environment. This was found by Dijkstra et al (2015) to be of vital importance in investigating how ascribed competencies relate to preparedness for practice in postgraduate medical education (Dijkstra et al., 2015). Whilst this is acknowledged to be an important aspect of any teaching program, it has not been specifically investigated in this paper, as it adds an additional dimension beyond the scope and main objective here.

CONCLUSION

Although standards are set, and chiropractic programs are constantly audited by various accreditation bodies, these bodies do allow institutions to determine the details of their programs. The burning question is what evidence is used to determine those details, and could there be benefit in researching this further, perhaps even on a global scale? Relevancy relates to the many aspects of how much the graduated students feel the education system has prepared them for practice; how competently they practice, and what place chiropractic holds in the medical community, in terms of practising in an evidence based manner and collaborating in an interdisciplinary team. Just as chiropractic practice should be evidenced based, so too should the education program itself be based on good research as to what constitutes an effective curriculum that speaks to the relevance and usefulness of the education program for the chiropractor, and to the ultimate goals of global relevancy within the medical professions today.

CONFLICT OF INTEREST
The author has no conflict of interest to disclose

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DEVELOPING MULTICULTURAL EDUCATION PROGRAM FROM MIDDLE SCHOOL CURRICULUM IN KOREA

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ABSTRACT
The objective of this study is to design multicultural education program by backward approach for middle school students in Korea. The study employed 'Backward Design' with its templates by McTighe and Wiggins suggested. 'How was the developed unit of multicultural education by backward design?' was set up as the study question. Revised version of national curriculum documents of middle schools were collected and analyzed for the development. In the title of a unit 'Seeking virtue of variety', the first step of backward design, desired result was set up as follows: The students could understand characteristics of culture and respect its virtue of variety. Journal keeping, crafting a set of dolls' sample in theme of variety, and holding multicultural fair were designed as assessment evidences in the second step. Learning experiences such as an individual research on interested topics in culture and reading narrative fiction with variety issues were organized as the last step of backward design. Backward designed program suggests integrate several subjects and emphasize affective objectives program implementation.

INTRODUCTION
General school age has decreased annually but multicultural students tend to increase. In accordance with this trend, school education is gradually changing and multicultural education   receive attention these days.

 In 1980's, multicultural education's concept and contents were introduced by several scholars. At the time , Many Korean have cultural homogeneity and didn't feel the need about the way of multicultural education(Cho et al, 2010). After the 2000s, multicultural education was introduced in earnest. In 2006, the government announced 'measures to support multicultural famiels education'. From 2007, 'Program to support multicultural famiels education' was set annually. In accordance with this trend, many studies has been carried out.(Hwang, 2011). Especially, a training course that was announced in 2007 treated multicultural education as an cross curriculum and multicultural education was incorporated into the regular school curriculum.

    Various studies focus on the regular school curriculum, at the beginning of the study concept and status of multicultural education in Korea was treated.(Yang, 2008; An et al, 2008) Studies about purpose and content of multicultural education(Kim, 2010; Jeon, 2012)and studies about the current status and the actual conditions were conducted.(Cho et al, 2010; Hwang, 2011; Jeon, 2011; Mun & Park 2009; Kim & Hong, 2016).

    Although Multi-Model studies have been made, 68.6% of Middle school students and High school students answered that they didn't get multicultural education. In contrast to student's comments, 78% of teachers agreed with necessity of multicultural education (Heo & Choi 2011). Eventually, multicultural education as an cross curriculum depends on teacher's choice.

    This study takes notice of this trend and conducts multicultural education unit design in middle school by using Backward's way. Teachers have to design with the aim of learner's understanding.
This study focuses on diversity respect among various sub theme. Because, diversity respect is the most basic step of multicultural education in the field of multicultural education goal.(Heo & Choi 2011; Park & Lee, 2010). This research result will function as basic data with which teachers design multicultural education subject in an cross curriculum subject. 150 schools focusing on multicultural education will be designated and be run. Based on the trend emphasizing diversity respect and understanding of multiple cultures in the regular school curriculum, It carries an important meaning(Ministry of Education,   2015).

Method
Templates from backward design by wiggins and mctighe was used as a theoretical framework Backward Design have there feature. Wiggins and McTighe(2005,   2011) stressed the importance of assessments. Backward Design focuses on teaching method with which students utilize what they learn in the reality. Backward Design aims at learner's perfect understaing. Wiggnis and McTighe classified steps of understanding into six sections. (explanation, interpretation, application ,perspective, empathy, self-knowledge). Using these six sections of understanding depends on teacher's selection.
  In Korea, Study which covers curriculum or unit design by using Backward design was conducted(Kim & Lee, 2013; Park, 2012; Lee, 2011; Kang & Yi, 2010, 2012; Cho, 2005).   These days, another study that is interested in developing Backward design by applying to the reality for Korea can be found(Park, 2011; Yun, 2015; Kang & Yi, 2013; Lee, 2015).
  An overseas trend of research associated with Backward design focus on utilizing Backward design for a university education such as education for nurse education curriculum, sanitation education curriculum, pre-teacher education to university students, and training for university professors instead of special education. (Boozer, 2014; Bowen & Graham, 2015; Linder, et.al., 2014; Lorenzetti & Patterson, 2014; Nelson, et. al., 2013; Smith, Cornelissen & Mitton, 2015; El-Jardali & Fadlallah, 2015).

FINDINGS
Stage 1, anticipated results after learners study 'Diveristy respect' chapter is that learners have an attitude of acceptance and respect about issues such as gender issues, religious discrimination by learning educations about cultural understanding.

<Stage 1> Respect the diversity of the section of desired outcome.

Stage 1 – Desired Results		
Established Goals · U1 The students could understand characteristics of culture and respect its virtue of variety	**Transfer(T)**	
	Students will be able to independently use their learning to…. T 1 Learners have an attitude of acceptance and respect issues such as gender issues, religious discrimination by learning educations about cultural understanding.	
	Meaning(M)	
	Understandings *Students will understanding that…* U0 To understand the features of the culture, with an attitude of respect for the diversity as fortunate.	**Essential questions** *Students will keep considering* Q1 What is the culture? Q2 South korea is a multicultural society? Q3 How is the discrimination different from the difference? Q4 How can various things be virtue? Q5 How can students respect cultural diversity? Q6 What do generous attitude and respect mean?

Acquisition(A)	
knowledge *Students will know…* K1 To know what a multi-cultural means K2 To identify multicultural topics contained in 'international markets.' movie and 'a Hen Into the Wild' a fairy tale. K3 To c larify what the concept of respect is K4 To understand the traditional culture and the current culture of other countries in a particular topic. K5 To introduce the proud culture of other countries. .	**Skill** S1 To analyze the information involved with cultural conflict in a video. S2 To configure characteristics of a character representing a diversity. S3 To criticize the outcome of each cultural subject. S4 To write an article to support acceptance and diversity

   Backward design assumes that anticipated result will reach the goal of perfect understanding by treating six sections of understanding. Likewise, this study in table 2 considers anticipated result of perfect understanding about diversity respect in view of Backward design's suggestion.

< Table 2 > Six aspects of understand

Explanation	U1 Students can explain why diversity is good for our society U2 Students can explain the conflict situation of "International market" and "hens coming out of the garden" in conjunction with one's experience.
Interpretation	-U3 Students can identify the characteristics of our culture. - U4 Students can infer the topic of the "international market", "hens coming out of the garden."
Application	- U5 Students can select an interesting cultural theme.
Perspective	U6 Students can have an specific attitude about cultural conflict situation in terms of respecting diversity

	- U7 Students can feel good about diversity.
	- U8 Students get interested in the past and present culture of other countries. Students have an interests.
Empathy	- U9 Students understand the feelings of the person who was put in conflict situation for me and the other cultures.
	- U10 Students envy a friend having a multi-cultural background.
	- U11 Students have an mind of helping one another who have an difficulty of adapting to a Korea culture.
	- U12 Students agree to the value of the social life.
Self-Knowledge	-U13 Students can criticize the problems about discrimination in everyday life.
	--U14 Students can find reality that has not been respected about diversity.

Because 'Diversity respect' chapter this study treats intends change of learner's attitude,   as table 2 shows the way, sympathy section's many goals which is in affective characteristic of Backward design's six understanding section were set. Respecting the diversity, being proud of various cultural background, and agreeing with living together was set as an objective for sympathy.

Second section of Backward design is an evaluation. Because first section set an result that is anticipated after learners get an education, second section is an next step to decide whether an anticipated result is achieved.

Second section of Backward design consists of assignments, another way to identify the attainment of student's goal. This study designs three assignments. literature and movie appreciation treating diversity issues, making diversity-themed doll sets, and organizing mini-cultural expo which treats cultural theme. This study presents three assignments for each chapter, but using this way is at the discretion of the teacher. For example, this study in table 3 selects 'A Hen Into the Wild' as a literature treating diversity issues, students should read this literature, write an report and give an presentation about this work.

<Table 3> Performance tacks 1: presentation of   'A Hen Into the Wild'

Stage 2 - Determine assessment evidence		
CODE	Criteria	Performance tacks **1**
All Transfer Goals	• Validity • Logical • interpretation	.Performance tacks 1 Student, has been depicted in the assimilation read 'a Hen Into the Wild', after the you a conflict situation that was born on the differences through the group-specific discussion write a short new ending of the way you want to impressions statement, announcement to. | Goal(G)	Students, after a group-specific discussion write a short new ending the happened conflict situations you like method for	

			reading the "hens coming out of the garden," "difference" in the work on the impressions sentence present.
		Role(R)	In the scene in which the hero appeared to read the situation that contains the problem that occurred for different looks, it is the role to speak their thoughts.
		Audience(A)	Teachers and students will be in the audience to hear the announcement of impressions statement.
		Situation(S)	Students understand the conflict situation that creates the different in the book and invented fairy tales and alternate endings to express situation in that situation.
		Product(P)	A conflict that differences produce from reading a book in the configuration of the new ending, is the impressions statement that student has been put meaning and attitude of this work.
		Achievement standards(S)	-Certain amount of votes from expressing their impressions of students did you get? -Do you have put the spirit of recognize their difference in a new ending?
Meaning(M) Acquisition (A)	Accuracy	**OTER EVIDENCE** • To explain the contents of 'a Hen Into the Wild' • To do a quiz about characters and situation background.	

<Table 4> Rubric example the task

Self-evaluation and reflection			
2 STEP- Grading standard			
Category	Validity	Logical	interpretation
Significance	**40**	**40**	**20**

Scale	3	-To propose a concrete solution about respecting diversity.	To make an announcement that is proper in the situation and expertly lay out a logical basis	-To understand conflict situation in a fable and properly relate cause and effect in a report.
	2	To suggest some proposals about respecting diversity, but not concrete.	- To make an announcement that is proper in the situation, but logical basis is normal.	-To understand cause of conflict situation in a fable, but do not relate that in a report.
	1	- To do not suggest proposals about respecting diversity	- To do not make an announcement proper in the situation and to do not suggest logical basis.	-To do not understand cause of conflict situation in a fable and to do not relate that in a report.

<Talbe5>   An example for students give performed tasks

Subject : Making a presentation about the report of "A Hen into the Wild"	
goal	- To have an generous attitude accepting conflict situation about diversity issues and respecting diversity.
roal	- Playing the role to talk and share ideas after reading the difficult situation caused by different looks and shapes which 'Ipssak ' or 'Greenhair' have
audience	- Audiences are other participant in a book discussion.
situation	- Students can understand 'being created differently', 'different looks', and 'other differences' by reading conflict situation and make alternate endings
The documents for submission	- To submit an report with one's opinion. - To submit quiz paper associated with the character and background.
guidelines	- To make a presentation about the report with one's opinion. - To have an attitude respecting other's opinion.

Secondly, Students assume that they are doll design developer in toy company. After that, students make doll set with other student as an group assignment. . This assignment can connect art subject's clay arts. So students combine with not only one's idea but also other student's idea and they consider how diversity idea can be put in diversity doll set. By using this assignment, participation in the class will get better.

Thirdly, Assignment selecting specific cultural subject, researching other country's culture and holding mini culture expo is designed like table 7. Mini culture expo is designed for reflecting student's interests. Students select one's interests for assignment subject and research same subject about other country. Students can feel cultural diversity by doing assignments. Finally, all students in a class can combine their research result in mini cultural expo.

<table 6> Performance tacks 3: Mini cultural expo in our class

Mini cultural expo in our class 3	Mini cultural expo in our class	
content	Students can choose from one of the following 10 topics. 1.Cartoon 2. Movie 3. Music 4. A historical event. 5. Characters 6. Language 7. Foods. 8. Tourist attraction. 9.Literature 10. Artwork. If students choose one subject, they research same subject of other country. Students can choose country in every continent (also every tribe.) In the day of assignment evaluation, Our classroom can be changed into place for putting our cultural subject poster.	
	Goal (G)	Students can introduce a topic of their interest in other country in cultural expo.
	Roal (R)	Students play a role in cultural expo as a person in charge of expo. They introduce one's proud culture.
	audience (A)	Students can get an information of specific proud culture.
	situation (S)	Half of students submit posters to an cultural expo. The other half of students can be introduced to culture in poster exhibition. And they take a vote by sticker.
	Product(P)	Poster results dealing with cultural introduction of one's interesting subject.
	Achievement standards(S)	How many votes do students get by audience? Are subject, detailed description and visual materials included in poster?

As table 6 presents assignments method, mini cultural expo in our class is an assignment dealing with various cultural subjects of one's same interests. Also students can feel diversity by doing mini cultural expo in our class.

3. Learning experience and instructional planning

Backward chapter development methods plan curriculum by considering student's learning activity and specific chapter in last 3 stages. After taking account of WHERETO's factors, this research suggest designed contents like table 7.

<Table 7>   **Stage 3 – Learning Plan**

Stage 3 – Learning Plan			
1/10	**2/10**	**3/10**	**4/10**
• The nurses and miners association of 'international markets.' film, which obviously watch a video editing. • Movie characters, why announce to discuss that in the face of such a conflict situation to another team	• Reading a fairy tale Hence Into the yard. • Ipssak use and green hair listening to a point in time chatting	• 'A Hen Into the Wild' impressions of reading a book and none other conflict situations involving its way you want, and writing in short to express a new ending	• To the world that consisted only of one kind of imagination (In the sea, tree, animal) • Clay Art 'diversity' topic in containing a doll set to announce after
5/10	**6/10**	**7/10**	**8/10**
• In order to see and experience the culture of diversity, the theme presentation of 10 of culture • studies corresponding to the 10 themes in Korean culture	• I found a case corresponding to the 10 themes in the culture of other countries • Examples are collected traditional culture and to compare current culture of separate	• Experience the cultural diversity: cartoons(palestine: mouse), music(USA-hip-hop: Eminem), art(Mexico-Diego Rivera), movies(Ireland-once), Human(Cuba-Che Guevara), Food(Indonesia-Nasi Goreng), History(It kept the independent Thailand), tourist attractions(Bali), language(dialect), literature(China-Heo Sam Kwan maehyeolgi)	Select interesting cultural topics, decorate the exhibition poster
9/10	**10/10**		
• Mini cultural exhibition hosting our classroom	•Mini cultural exhibition hosting our classroom		

Diversity respect chapter consist of 10 chapters in table 8. Watching movies and reading literature dealing with diversity subject, imagining one world with one cultural feature, making diversity doll set, holding other country cultural expo is designed in diversity respect chapter. In each chapter, learning activity contains assignments for evaluation.

Discussion

By using Backward design this study deals with diversity respect chapter of multicultural education as an cross-curriculum in middle-school curriculum.

First, diversity respect chapter developed in this study is designed focusing on affective characteristic. Multicultural education programs developed in Korea just treat other country's clothing, play, holiday, foods and etc, but the earlier studies don't treat bias and discrimination.(Kim & Hong, 2016). This study primarily focuses on diversity respect and places emphasis on change of student's value and attitude.

Secondly, this study designs assignments integrating various subjects in evaluation of Backward chapter design. Diversity respect chapter in this study consists of reading an literature, writing an book report, making an diversity-doll set and holding a mini cultural expo. Reading an literature treating diversity theme and writing an report about someone's surroundings can be connected with language department. Based on student's interests, teachers can connect various subject such as art department, history department, music department and etc with multicultural education.

Thirdly, diversity respect chapter developed in this study primarily focus on virtue of diversity. Most earlier studies in multicultural education just treat perceptional aspect of diversity respsect, but this study focuses on affective characteristic. Students selected in educational experience and instructional planning view television image, read text about diversity theme, feel the value of diversity by doll, and approach diversity based on student's interest. Virtue, interest and attitude are the prime object of this chapter design.

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DEVELOPING PERSONNEL COMPETENCIES IN EXPLOSIVE ATMOSPHERES FOR ELECTRICAL ENGINEERS

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ABSTRACT

Competency of personnel working in explosive atmospheres is necessary. The potential for accidents in explosive areas is increasing if personnel are not competent. The objective of this study is to develop personnel competencies in explosive atmospheres for electrical engineers in industries. The authors modified IEC Units of Competence for working with electrical equipment for explosive atmospheres, and thus they developed five-dimension competency model: (1) apply basic principles of protection in explosive atmospheres, and classify hazardous areas; (2) install explosion-protected equipment and wiring systems; (3) maintain, overhaul, and repair explosion-protected equipment; (4) test and inspect electrical installations in or associated with explosive atmospheres; and (5) design and audit electrical installations in or associated with explosive atmospheres. The model developed could be a reference framework for developing electrical safety course in college education and industrial training. For verifying the model, the next steps will consist of exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and analytic hierarchy process (AHP).

INTRODUCTION

The International Labour Organization (2014) indicated that "*the health and safety of the world's workforce periodically attracts the attention of the national and international media. Industrial disasters, especially those resulting in multiple fatalities, make global headlines.*" In fact, thousands of workers die from work activities every day, and many of the fatalities remain unreported or ignored. Globally, an estimated 2.3 million workers die from occupational accidents or work-related diseases each year. In addition, millions of workers endure nonfatal injuries or diseases each year. This phenomenon generates substantial social and economic burdens for communities and countries; furthermore, it creates difficult humanity and financial problems for the laborers and their family members. Therefore, disaster prevention is necessary and urgent. Most accidents and diseases that occur in the workplace can be prevented.

Because explosion-related industrial accidents have caused unprecedented environmental damage and loss of life in recent years, the United Nations Economic Commission for Europe (2011) issued "A Common Regulatory Framework for Equipment Used in Environments with an Explosive Atmosphere." The objectives of this framework were to foster the use of relevant standards proposed by the International Electrotechnical Commission (IEC) and International Organization for Standardization (ISO) by the industry to promote globally harmonized legislation, confirm mutual acceptance of test procedures and test results among the test houses, and strive for comparable installation, maintenance, and repair procedures for the equipment.

The standards for hazardous sites stipulate that special equipment must be used to prevent hazardous gas ignition. However, if this special equipment is not installed correctly, then it cannot provide comprehensive explosion protection, thus causing unsafe conditions for the equipment. Employing competent personnel can ensure correct installation of the equipment as well as comprehensive explosion protection, thereby extending the useful life of the equipment. Competent personnel should be able to recognize the faults that can become ignition sources (Wigg, 2010; 2012). Several regulations have stipulated that competence is required; however, the competence is generally not specifically defined (IEC, 2013a). Competence is a potential characteristic of a person that can affect individual behavior and performance (Spencer & Spencer, 1993). Lacking competence causes a person to make severe mistakes and produce poor results (Axley, 2008).

In the local context, Taiwan has implemented an explosion-protected electrical equipment inspection system. However, no system for certificating the competence of the practitioners of explosion-protected electrical equipment has been established. For explosion-protected electrical equipment, Item 1 of Article 7 in Taiwan's Occupational Safety and Health Act (OSHA, 2013) stipulates that "Machinery, equipment, or tools specified by the central competent authority whose structures, functions, or safeguards do not fulfill safety standards shall not be manufactured and shipped from the factory or imported, rented out, supplied, or installed by manufacturers, importers, suppliers, or employers." For explosion-protected electrical equipment personnel, Item 1 of Article 32 in the Occupational Safety and Health Act (2013) stipulates that "Employers shall provide laborers with all necessary safety and health education and training to perform duties and prevent accidents." Obviously, no

regulation or system has been established for the safety, health education, and training of the supervisors or operators in explosion-protected electrical equipment operation. Therefore, whether explosion-protected electrical equipment operation personnel possess sufficient competence to accomplish assignments and tasks safely is a noteworthy topic.

PERSONNEL COMPETENCE IN EXPLOSIVE ATMOSPHERES

When exposed to combustible gases, the vapor of flammable liquid, and dust, sparks or heat generated by electrical equipment can ignite the aforementioned gases, vapor, or dust. Therefore, in all businesses that require sites to store, process, or use these gases, vapor, or dust, explosion-protected electrical equipment is needed. Explosion-protected electrical equipment refers to safe equipment that is specifically designed or manufactured to prevent electrical equipment from becoming an ignition source (Su, 2006). When combustible gases, vapor, or liquids are ignited by electric arcs or sparks, explosion-protected electrical equipment encloses them to inhibit explosion. Only cooled gases can be discharged to the surrounding hazardous site through gaps.

The International Association of Electrical Inspectors (2014) indicates that classification and scope definition of hazardous areas is essential to guaranteeing the safety of electrical installations in hazardous sites. Before installing electrical circuits and equipment at hazardous sites, the class of these hazardous areas must be determined. Through risk analysis, areas are classified by their likelihood of containing explosion hazards. Hazardous areas include sites that have ignitable or potentially ignitable concentrations of substances such as flammable gases, flammable liquid vapors, combustible liquid vapors, flammable liquids, combustible liquids, combustible dust, fibers, or catkins, or sites that exhibit the accumulation of other explosive or fire hazards.

Personnel who work in explosive atmospheres should possess appropriate competence because incompetent personnel can increase accident occurrence in these sites. Although competence is mandated in several regulations, it is generally not defined specifically. Compared with the requirements of ordinary regulations and installation processes, competence also includes the ability to perform specific tasks (IEC, 2013b). Lacking this competence can cause errors that generate disasters. For example, a worker who lacked equipment maintenance competence in explosive atmospheres was determined to be likely to fail to tighten all the screws of explosion-protected equipment (Arnhold, 2014). Therefore, there is the risk of having an external explosion occur when a flammable gas enters the enclosure and is ignited by the arcs. Another example is that a switch should be completely rewired because the wire was too long to fit into the enclosure. However, incompetent installer cut a hole in the back of the enclosure to accommodate the switch. This eliminated the explosion-protection property of the equipment (Wigg, 2010).

The Organization for Economic Co-operation and Development (2012) claimed that the framework of Corporate Governance for Process Safety comprises five basic elements: leadership and culture, risk awareness, information, competence, and action. Specifically, the element of competence requires that high-ranking managers and leaders of an organization confirm that it possesses the competence to manage hazards derived from operation; moreover, the managers and leaders should confirm that managers, engineers, and operators at every level of the organization possess necessary competence. In addition, engineering and technical courses have increasingly emphasized developing student competence (Lohmann, Rollins, & Hoey, 2006). Wigg (2010; 2012) noted that explosion-protected electrical knowledge and skills can be obtained through higher education or training held inside or outside of enterprises.

IECEX SCHEME FOR CERTIFICATION OF PERSONNEL COMPETENCE FOR EXPLOSIVE ATMOSPHERES

The IECEx scheme for certification of personnel competence (CoPC) provides practitioners in explosion-related industries with an internationally recognized certification that assesses personnel competence in the following dimensions: site classification and the design, selection, installation, maintenance, auditing, inspection, overhaul, and repair of explosion-protected equipment. Certified personnel exhibit sufficient competence to work safely in the explosion-protected industry, complete tasks by using explosion-protected equipment, and confirm safe operation of the equipment through protection techniques (Selamat, 2014). Certified practitioners comprise responsible people and operators. Specifically, responsible people or operations supervisors refer to those who are responsible for the design, selection, installation, inspection, maintenance, repair, and overhaul of explosion-protected equipment. Operators refer to those who are involved in the selection, installation, inspection, maintenance, repair, and overhaul of explosion-protected equipment (Baseefa, 2014).

For the IECEx scheme for CoPC for explosive atmospheres, IECEx operation document (OD) 502 sets documentation and information requirements for all applicants, specifying that all applicants should satisfy the minimum requirements for knowledge and skills. Possessing corresponding competence is mandatory for personnel who work in explosive atmospheres. Without adequate competence, the personnel are likely to

increase the probability of accidents at explosive sites when engaging in related activities. Although several regulations have specified that competence is mandatory, few regulations have clearly defined this competence. Competence is determined by knowledge, skills, experience, and training. Competence evaluation is a difficult task that requires specific assessment methods. Moreover, periodically monitoring the performance of certified personnel is necessary because competence must be maintained (IEC, 2013a).

IECEx OD 504 presents the specification of the units of competence assessment outcomes for the IECEx scheme for CoPC in explosive atmospheres, which comprises 10 units (Table 1) (Arnhold, 2014; IEC, 2013b; Selamat, 2014). The specification for the units of competence assessment outcomes mainly apply to personnel that handle explosion-protected and associated equipment for explosive atmospheres, covering the following work functions: (1) classification of hazardous areas; (2) production, processing, or servicing functions in a hazardous area and not directly involved in installing, maintaining, or repairing explosion-protected equipment and systems; (3) installing and maintaining explosion-protected equipment and systems in the hazardous area; (4) overhauling, repairing, and modifying explosion-protected equipment; (5) developing, designing, and maintaining explosion-protection strategies; and (6) inspecting hazardous area equipment, systems, and installations. IEC (2014) later published a revision of the OD 504 (i.e., Edition 3.0), adding a competence unit (i.e., Ex 000): basic knowledge and awareness of a hazardous site (the safety responsibilities and minimum basic knowledge of people entering a site that has classified hazardous areas, such as adaptability to a hazardous site and compliance with safety instructions and procedures).

Table 1: List of units of competence for explosive atmospheres

Unit	Title
1. Ex 001	Apply basic principles of protection in explosive atmospheres (Elements: prepare to work in a hazardous area, observe the conditions of an explosion-protected system area, and engage in actions to limit risk of an explosion)
2. Ex 002	Classify hazardous areas (Elements: determine the type and extent of an explosion hazard, establish the type and extent of zones, and document classification and delineation of zones)
3. Ex 003	Install explosion-protected equipment and wiring systems (Elements: prepare for installation of equipment and wiring, install the equipment and wiring systems, and confirm that the installation is complete)
4. Ex 004	Maintain equipment in explosive atmospheres (Elements: prepare to perform maintenance, perform maintenance, complete maintenance work inspections and documentation, establish maintenance requirements, develop and implement a maintenance schedule, and evaluate the maintenance program)
5. Ex 005	Overhaul and repair of explosion-protected equipment (Elements: prepare for overhaul or repair of equipment, perform the overhaul or repair work, and document overhaul or repair work)
6. Ex 006	Test electrical installations in or associated with explosive atmospheres (Elements: prepare to conduct testing, conduct testing, and confirm and document test results)
7. Ex 007	Perform visual and close inspection of electrical installations in or associated with explosive atmospheres (Elements: prepare for inspection, conduct inspection, report inspection results, and evaluate records system)
8. Ex 008	Perform detailed inspection of electrical installations in or associated with explosive atmospheres

		(Elements: prepare for inspection, conduct inspection, and report inspection results)
9.	Ex 009	Design electrical installations in or associated with explosive atmospheres (Elements: establish a design brief, design the system and installations, and check and finalize the design)
10.	Ex 010	Audit and inspect electrical installations in or associated with explosive atmospheres (Elements: audit hazardous area documentation [verification dossier] and prepare to audit as-built installation, conduct auditing, and report audit results)

Source: IEC (2013b; 2014)

PERSONNEL COMPETENCE MODELS FOR EXPLOSIVE ATMOSPHERES

According to the specification for units of competence assessment outcomes included in IECEx OD 504 (2014), in the IECEx scheme for CoPC for explosive atmospheres, competence refers to the ability to apply knowledge and skills to achieve a desired outcome. Competence focuses on the tasks that employees are expected to achieve in the workplace instead of on the learning process. Moreover, competence covers the ability to transform and apply skills and knowledge to new situations and environments. The specification comprises the knowledge and associated skills that are required in each competence unit, showing that different competence units require common knowledge and associated skills. For example, both competence in applying basic principles of protection in explosive atmospheres (Ex 001) and in classifying hazardous areas (Ex 002) requires applying principles of explosive atmospheres and explosion protection. The result indicates overlaps between the elements (knowledge or skills) of these competence units. Therefore, integrating these competence types is necessary.

According to the industry classification standard (DGBAS, 2016) and occupation classification standard (DGBAS, 2010) of Taiwan and the content of competence units for explosive sites, the competence of personnel in explosive atmospheres that is required in Taiwan can be integrated into the following five dimensions:

A. To apply basic principles of protection in explosive atmospheres and classify hazardous areas (Unit Ex 000, Unit Ex 001, and Unit Ex 002).
B. To install explosion-protected equipment and wiring systems (Unit Ex 003).
C. To maintain, overhaul, and repair explosion-protected equipment (Unit Ex 004 and Unit Ex 005).
D. To test and inspect electrical installations in or associated with explosive atmospheres (Unit Ex 006, Unit Ex 007, and Unit Ex 008).
E. To design and audit electrical installations in or associated with explosive atmospheres (Unit Ex 009 and Unit Ex 010).

Table 2 presents the required knowledge or skills in each dimension of personnel competence. The model developed could be a reference framework for developing electrical safety course in college education and industrial training. For verifying the model, the next steps will consist of exploratory factor analysis (EFA), confirmatory factor analysis (CFA), and analytic hierarchy process (AHP).

Table 2: Required knowledge or skills in all dimensions of personnel competence for explosive atmospheres

Personnel competences in explosive atmospheres	Knowledge or skills required
A. Apply basic principles of protection in explosive atmospheres and classify hazardous areas	A1. Understand the nature of explosive hazards and hazardous areas
	A2. Understand occupational health and safety responsibilities related to hazardous areas
	A3. Understand explosive atmospheres and explosion-protection principles
	A4. Understand explosion-protected equipment and certification schemes
	A5. Understand explosion-protected equipment and principles
	A6. Understand explosive atmosphere classification techniques
	A7. Perform hazardous area classification work
B. Install explosion-protected	B1. Understand explosion-protection techniques

equipment and wiring systems	B2.	Understand common characteristics of explosion-protection techniques
	B3.	Understand explosive atmosphere installation requirements
	B4.	Perform explosive atmosphere cable termination techniques
	B5.	Perform hazardous area installation work
	B6.	Understand hazardous area maintenance work performance
	B7.	Perform hazardous area operations reporting work
C. Maintain and repair explosion-protected equipment and wiring systems	C1.	Understand explosive atmosphere maintenance requirements
	C2.	Understand explosive atmosphere management
	C3.	Perform hazardous area maintenance work
	C4.	Understand explosion-protected equipment overhaul and repair - general requirements
	C5.	Understand explosion-protected equipment overhaul and repair specific to each technique
	C6.	Perform explosion-protected equipment overhaul and repair work
D. Test and inspect explosion-protected electrical installations	D1.	Understand explosive atmosphere installation testing
	D2.	Perform hazardous area installation testing work
	D3.	Understand explosive atmosphere visual and close inspection requirements
	D4.	Perform hazardous area visual and close inspection work
	D5.	Understand explosive atmosphere detailed inspection techniques
	D6.	Perform hazardous area detailed inspection work
E. Design and perform audit inspection of explosion-protected electrical installations	E1.	Understand explosive atmosphere installation planning
	E2.	Understand common classified explosive atmospheres
	E3.	Understand explosion-protected electrical system design
	E4.	Perform hazardous area installation design work
	E5.	Perform explosion-protected electrical system design work
	E6.	Understand hazardous area auditing processes
	E7.	Perform hazardous area audit inspection work

Source: revised from IEC (2013b; 2014)

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DEVELOPING TALNA: A NUMERACY LEARNING APPLICATION FOR CHILDREN WITH AUTISM

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ABSTRACT

There is a growing trend in the academic research area in designing innovative interactive technologies based interventions for children with autism. This technology could be a unique platform for facilitating and encourage the learning process environment of children with autism. This paper presents and discusses the design and development techniques of touchscreen-assistive learning numeracy application (TaLNA). The TaLNA project aims to create an environment that scaffolds the learning process development of children with autism. Series of related work are reviewed, where children with autism have been included in the design process, and series of design activity implemented in TaLNA are described. TaLNA consist of three topics section 1) learn and discover the numbers 2) tracing numbers by using dots images and 3) learn and solve the addition arithmetic problem. Embedded with multicoloured, animated and interactive learning will feasibly keep the autism children engaged. It is an aspiration that TaLNA could uplift the instructional learning environment for children with autism, which could avail boost in early childcare education (ECCE) and thus foster the quality of life for children with autism.

Keywords - Children with Autism, Tablet Technology, Learning Process

INTRODUCTION

Touchscreen-assistive learning numeracy application (TaLNA) was developed as a supporting tool in teaching basic numeracy and counting skills to children with autism. As counting skill is a basic skill for each to live an independent life, thus, it is vitally important for children with autism, too, to master this skill to promote an inclusive future proposed by the Malaysian government towards Vision 2020. Individual with autism possesses different cognitive abilities compared to typically developing the individual. Autism individual experiences delays throughout their development and faces problems in numerous skills that are normally very essential for other typical individuals to go through their daily life. The cognitive abilities of individual with autism are often very slow in progress. These individuals are very well known with the deficit of three different cognitive abilities, which are social skills, communication skills and limited imagination (Hasnah Toran, 2013), although each may show diversified symptoms. Because of its varied symptoms and causes of autism, clinical cure has yet to found. Despite all that, symptoms of a child with autism may be reduced through non-clinical methods such as special education. Educational methods designed specifically for individual with autism is a growing research area. Through the special education, visual support plays a significant role in communications, instructions and engagements of the students. This kind of method encourages the children to become more self-reliance as well as increasing their self-determination. When it comes to special education, Applied Behaviour Analysis (ABA) is the method design that was most talked about. As it has been academically established, it has become one of the most trusted methods to benefit not just student with autism, but also other students with or without special needs. One of the structured teaching methods that are making use of ABA is Treatment and Education of Autistic and related Communication-handicapped Children (TEACCH) program (Rao & Gagie, 2006).

Nowadays, there are a lot of computer software and mobile application developers try to embed the conventional special education method into digital mediums. However, to embed these methods into digital devices means new medium(s) is/are involved. Conventional methods that were established to be effective were found effective when the methods were used conventionally. Thus, when a new platform takes place, a whole new academic proof is needed to establish whether this method may still be effective for the users. Digital devices such as computers and tablets were undoubtedly created to make life easier. As the mobile technology industry grows to a whole new level every time a new model of variety kinds of devices were developed, the content developments were also catching up to live up to the standard. The importance of such devices has also expanded to new target consumers. It has not only become a necessary assistive tool in an everyday basis, but its role has become significant

to assist not just typical individual, but also individual with special needs. Besides, it has also been reported that a lot of children with autism were immersed with visually based media and had more tendency to learn through this kind of media such as computer (M. Kamaruzaman & Azahari, 2014; M. Kamaruzaman, Rahman, Abdullah, & Anwar, 2013; Nally, Houlton, & Ralph, 2000). TaLNA is not meant to replace the existing conventional method, but to support and assist the process of teaching and to learn to keep the children with autism engaged in the learning process. In designing TaLNA, certain guidelines were considered to suit the preferences and to encourage interactions with the students with autism in the learning process. Designed based on the concept of ABA intervention, this application compels positive fortifications for every correct response. It is built as a platform for parents, educators, and caregivers to help the children to learn, discover as well as developing their skill to achieve self-determination. This paper will discuss further in the design process of TaLNA.

REVIEW OF RELATED RESEARCHES
Due to the instantaneous development of mobile technology, great deals of researches were made concerning human-computer interaction (HCI). These studies were made not only to typical users of the mobile technology but also to individuals with special needs such as autism. Over the past few years, scholars, scientists and developers have collaborated to develop computer software and mobile applications to aid the learning and development of children with autism (Chien et al., 2015; Hourcade, Bullock-Rest, & Hansen, 2012; M. F. Kamaruzaman, Rani, Nor, & Azahari, 2016; Pavlov, 2014). It has been widely agreed that user interface (UI) design is an important part in HCI as it may indicate the effectiveness of the developed software or application (Pavlov, 2014). Effective UI design allows the end user to perform tasks as well as encouraging effortless, unrefined, and irresistible interaction between the user and the system. Individual with autism were often blessed with fairly distinct visual processing ability as they were often referred to as visual thinkers (Frauenberger, Good, & Alcorn, 2012). A lot of researchers have found that children with autism showed better reaction through visual compared to other sensory (Hayes et al., 2010; McKone et al., 2010; Milley & Machalicek, 2012). Interactive visuals were also said to be highly useful to support the learning process of children with autism. With the use of mobile technology as self-instructor, there is a good possibility that children with autism may acquire an admirable level of self-determination thus, made self-managing personal task possible. Mobile devices such as tablets are examples of devices with eminent Computer Assisted Instruction (CAI) with appropriate software. Devices of this sort make it feasible for individual with autism who possesses severe speech impairment to express their needs (M. Kamaruzaman & Azahari, 2014; Mejia-Figueroa & Juárez-Ramírez, 2014; Nurdalilah Mohd Rani, Siti Humaira Ramli, Rafeah Legino, Mustaffa Halabi Haji Azahari, Muhamad Fairus Kamaruzaman (2016);Torii, Ohtani, Shirahama, Niwa, & Ishii, 2012) It is necessary to follow certain established guidelines while designing applications for autism users. UI have a strong relationship to its demographic of target users and users with autism are target groups that are atypical as they may have a different worldview than the researchers and designers. In designing UI, an attempt to complexity reduction of software or application is crucial to make the product easy to use, systematic as well as enjoyable to work with (Darejeh & Singh, 2013). Therefore, it is the utmost important for software or applications to be developed grounded by the users' cognitive ability, in this case, children with autism. Hence, TaLNA was designed to comply with the need of children with autism as supporting material in learning basic numeracy and developing counting skill.

DESIGN PROCESS AND PRINCIPLES
The design of TaLNA had undergone nine stages of design process. These processes were crucial to establishing proper guideline for the UI design of the application. In order to design the interface, layout and content of the application, it is noted that minimalism expects need to be emphases for the ease of children with autism to digest all the information. All tasks were chosen early in the design effort, which then is used to raise issues concerning the design so design decisions may be made as well as to evaluate the design as it is being developed (Abras, Maloney-Krichmar, & Preece, 2004; Muhamad Fairus Kamaruzaman, Harrinni Md Nor, Mustaffa Halabi Haji Azahari. (2016); Lewis & Rieman, 1993). According to M. F. Kamaruzaman et al. (2016), the design processes involves:

1. Task user analysis
2. Choose representative tasks
3. Find Existing Interfaces
4. Rough Out the Design

5. Analyse User Interaction
6. Create Prototype
7. Test Design to Users
8. Iterate
9. Build the Design

Through the mentioned processes, TaLNA's architecture was designed after various discussions and careful considerations with the autism experts. TaLNA consists of three major activity stages consist of recognising the number, identify the number, and number calculation. Each stage was separated into two sections. The two sections under the recognising number and identify number are both separated into '1-5' and '6-10'. Meanwhile, the two sections under number calculation involve 'plus' and 'minus'. Activities under identifying number involve 'connecting the dots'. Five important principles to design the UI was involved in designing TaLNA. These five principles were necessary to design an application that would be suitable for its target user, in this case, children with autism. The five principles involve were (M. F. Kamaruzaman et al., 2016; Lewis & Rieman, 1993).

1. Clustering Principle - organising the screen into visually separate blocks of similar controls.
2. Visibility Reflects Usefulness Principles - makes frequently used controls visible for the users to access and hide the less frequent controls.
3. Intelligent Consistency Principle - encourages using the similar screen for similar functions.
4. Colour as a Supplement Principle - supplementary to emphasise information through other means.
5. Reduced Clutter Principle - as simple as possible without leaving out attractive touch to it.

FORMING THE TALNA DESIGN

TaLNA was built using Adobe Flash CS5.5 with action script 3.0 in app.xml format. The script target setting used the template setting of AIR for Android 3.2. Thus any mobile device with Adobe AIR will be able to play this application. Figure 1 shows the general settings of AIR for Android 3.2 to build this application. Standard screen size to build an application for Android was used as per set by the AIR for Android 3.2 template, which is either 480 x 800 for portrait view or 800 x 480 for landscape view. For TaLNA, the screen size was set to 800 x 480 for landscape viewing.

Figure 1: General setting of AIR for Android 3.2 in building TaLNA

The TaLNA design structure building started by building the homepage. Upon entering the homepage, the user will be greeted with cheery background music to draw the attention of young target users towards the application. The homepage consists of five functional buttons. These buttons include three activity buttons, one information button and one exit button. The three activity buttons are 'Recognising', 'Identify' and 'Calculation'. The three activity buttons and information button navigate the user to a different page. The homepage building is as shown in Figure 2

Figure 2: Building the homepage

The first activity button leads to and activity called recognising numbers. In this level, user has to listen to the voice over that says the number in word and the user is required to repeat after the voice over. This level teaches the user to recognise the number and learn how to pronounce the basic numbers. Recognising numbers activity contain ten linear page flows that teaches number one to number ten. Starting from page one, there are two navigating buttons. One button navigates to the homepage, and the other one navigates the next page. Meanwhile, there are three navigating buttons from page two until page nine. One button navigates to the homepage, one navigates to the previous page, and the other one navigates to the next page. Lastly, there are two navigating buttons in page ten that consist of one button to the homepage and one button to the previous. Each of the ten pages was divided into two sections. Instruction section was placed on the right side of the page followed by learning section on the left side of the page as shown in Figure 3. The learning section consists of the number in Arabic form, the picture example of the quantity on the left of the number, and the spelling of the number in roman writing below them.

Figure 3: Recognising number page 1 and page 10

The second activity button navigates to an activity called identifying numbers. In this page, the user will learn to identify the numbers while playing one puzzle of each number. Once the user chooses one number on the activity screen as shown in Figure 4, the user will be lead to the puzzle page. The puzzle is called connecting the dots, as the user has to connect all dots to form the number. The user will have to connect the dots following the sequence of the small number on each dot as shown in Figure 5 to form the number.

Figure 4: Identify activity's main page where user will have to choose a number to play the puzzle

Figure 5: Puzzle page where the user will have to connect the dots in sequence based on the number shown on each dot to form the one whole shape of a number

The third activity, calculation, was divided by two sections, which are plus, and minus operations as shown in Figure 6. In this page, there are three navigating buttons consist of homepage button, plus operation button and minus operation button. In each of plus and minus operation button, there are ten linear calculation quiz pages with different level of difficulties. The plus and minus operation pages are as shown in Figure 7. Each quiz answered with a correct answer will be navigated to the praising page as shown in Figure 8 and will be able to advance to the next question. For questions that are answered wrongly will be navigated to inducement page The praising page is necessary as a form of award system that is normally used in autism's conventional education method as recommended in ABA. Reward system increases the student's determination in completing a task in the correct manner. The student will attempt to answer the same question again afterwards.

Figure 6: Calculation page

Figure 7: Plus, and minus page

Figure 8: Praising page appears when the question is answered correctly

TALNA PARTICIPATORY DESIGN DEVELOPMENT

After TaLNA had been built, it was tested to users with autism to analyse their interaction with the application's design. In gathering data for the analysis, a participatory approach was used to gain a better understanding of requirements, to build realistic expectations for target groups, and to empower marginalised groups (Frauenberger et al., 2012). Two types of participatory design involve participation via proxy and full participation. While participation via proxy involves people with intimate knowledge of the students such as parents, caretakers and teachers, full participation directly involve children with autism (Frauenberger et al., 2012). Using full participatory research design, this paper reports the involvement of teacher and caretaker as well as children with autism in the application's development, which allows them to have a direct impact on the outcome. With the cooperation of Sri Muda Primary School, Shah Alam, Puncak Alam Primary School, Autism Centre, Rawang and Autism Lab, Faculty of Education, Universiti Kebangsaan Malaysia (UKM). 6 teachers and 2 caretakers were involved in this investigation which to determine TaLNA apps practicality and functionality including the user experience (UX). This is vital to ensure the apps can be use and utilise by the children with autism. This data can be view in Table 1. For full participatory design development, 15 children with mild autism from Autism Lab, UKM has been participated in this experiment. The result from Table 2, shows the engagement of children with autism towards the application. The participatory investigation also looks on the smooth browsing and the acceptance of the layout and interface by the children with autism. According to the result shown in Table 2, only two of the students were not engaged to the application, while the rest of the children were very engaged. The two students, who were not engaged, were both able interact with the first activity just as fine as the other students. However, both of them fall apart to interact with the second and third activity. This is due to the sense of fatigue (Alias, 2014). The overall result of the experiment shows that almost all of the students managed to interact and engage in all three numeracy activities in the application. The engagement of the students was observed from the aspect of colour scheme as well as layout and interface design of the application. The result indicates that, so far, the design of TaLNA is user-friendly and practical for the use of students with autism.

Table 1. Teacher and caretaker respond towards TaLNA apps

Number of Teacher / Caregiver	Centre / School	Teacher / caregiver respond towards the TaLNA apps	Not Engaged	Neutral	Very Engaged	Teacher / Caretaker participatory on TaLNA apps development. 1. **User Experiment** 2. **Apps practicality** 3. **Apps Functionality**	Activity 1	Activity 2	Activity 3
Teacher 1	SK Sri Muda, Shah Alam	Yes			√	Very Engaged	√	√	√
Teacher 2	SK Sri Muda, Shah Alam	Yes			√	Very Engaged	√	√	√
Teacher 3	SK Puncak Alam	Yes			√	Very Engaged	√	√	√
Teacher 4	SK Puncak Alam	Yes			√	Very Engaged	√	√	√

Teacher 5	Autism Centre, Rawang	Yes		√	Very Engaged	√	√	√
Teacher 6	Autism Lab, UKM	Yes		√	Very Engaged	√	√	√
Caretaker 1	Autism Centre, Rawang	Yes		√	Very Engaged	√	√	√
Caretaker 2	Autism UKM Lab, Selangor.	Yes		√	Very Engaged	√	√	√

Table 2. Children with autism level of engagement towards the TaLNA application

Number of Children with ASD	School	Children with ASD, behaviour respond towards the touchscreen apps	Not Engaged	Neutral	Very Engaged	Participatory on TaLNA application development. 1. **Colour Scheme** 2. **Layout & Interface (user-friendly) (practicality)**	Activity 1	Activity 2	Activity 3
ASD Children 1	Autism UKM Lab, Bangi.	Yes			√	Very Engaged	√	√	√
ASD Children 2		Yes	√			Not Engaged	√	x	x
ASD Children 3		Yes			√	Very Engaged	√	√	√
ASD Children 4		Yes			√	Very Engaged	√	√	√
ASD Children 5		Yes			√	Very Engaged	√	√	√
ASD Children 6		Yes			√	Very Engaged	√	√	√
ASD Children 7		Yes			√	Very Engaged	√	√	√
ASD Children 8		Yes			√	Very Engaged	√	√	√
ASD Children 9		Yes			√	Very Engaged	√	√	√
ASD Children 10		Yes			√	Very Engaged	√	√	√
ASD Children 11		Yes			√	Very Engaged	√	√	√
ASD Children 12		Yes			√	Very Engaged	√	√	√
ASD Children 13		Yes			√	Very Engaged	√	√	√
ASD Children 14		Yes	√			Not Engaged	√	x	x
ASD Children 15		Yes			√	Very Engaged	√	√	√

CONCLUSION

This paper discussed the building of TaLNA design and its direct impact on engagement towards the target group. TaLNA was designed based on five principles that include Clustering, Visibility Reflects Usefulness, Intelligent Consistency, Colour as a Supplement, and Reduced Clutter. These principles are the key foundation in designing multimedia content for children with autism or children with disabilities with the traits closely similar to children with autism. Using Adobe AIR setting for Android 3.2, TaLNA was designed suitable to be used in Android mobile device so long it has Adobe AIR installed in it. In this research, TaLNA was installed in Samsung Galaxy Tab 4, and its functionality

was tested before the actual experiment was conducted towards the students. After making sure that the application works well, the engagement experiment took place to observe interactions of students with autism towards TaLNA. The result shown from the experiment indicated that most students did not have any problem operating the application. Most students also seemed to be very engaged in the application as 13 out of 15 managed to complete all three numeracy activities in the application. In conclusion, the creation of TaLNA apps design is on the right track which it may be used as a supporting medium in encouraging students with autism in engaging with mathematical lessons.

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DEVELOPING WORKSHEETS BASED ON PREDICTION-OBSERVATION-EXPLANATION (POE) EMBEDDED IN THE CONTEXT-BASED APPROACH: THE STATES OF MATTER- HEAT AND TEMPERATURE

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ABSTRACT

The aim of this study was to develop worksheets based on Prediction-Observation-Explanation (POE) embedded in the Context-Based Approach (CBA) to increase 5th grade students' conceptual understanding on "The States of Matter- Heat and Temperature" and to present in detail how POE was used in the worksheets. The worksheets consisted of three sections was examined by one science instructor, one chemistry instructor, and two science teachers for their approval, ensuring the validity of the worksheets' content. It was found that the worksheet was appropriate to the POE and CBA, the content and level students by experts' common opinion. Then, the worksheets were applied as pilot with 14 5th grade students enrolled in the Science course in the 2015–2016 academic years in a public elementary school in Turkey. In this paper, all phases of one worksheet were introduced in detailed. Also, the applicability of the worksheets was evaluated based on opinions of unstructured interviewed teacher in the pilot study. As a result, the worksheets can be used as an alternative to the teaching materials in the literature. Future studies may be conducted to investigate the effect of the worksheets composed of POE-CBA combination on the students' understanding about 'The States of Matter- Heat and Temperature'

Keywords Context-based approach; Prediction-Observation-Explanation, the States of Matter- Heat and Temperature; Worksheet

BAĞLAM TEMELLİ YAKLAŞIMLA KOMBİNE EDİLMİŞ TAHMİN-GÖZLEM-AÇIKLAMA (TGA)'YA DAYALI ÇALIŞMA YAPRAĞININ GELİŞTİRİLMESİ: MADDENİN HALLERİ VE ISI SICAKLIK

ÖZET

Bu çalışmanın amacı; 5 Sınıf öğrencilerinin 'Maddenin halleri ve ısı sıcaklık' konularında kavramsal anlamalarını arttırmak için Bağlam Temelli Yaklaşım (BTY) ile kombine edilmiş Tahmin Gözlem Açıklama (TGA)'ya dayalı çalışma yaprakları geliştirmek ve çalışma yapraklarında TGA'nın nasıl kullanıldığını sunmaktır. Üç bölümden oluşan çalışma yaprakları kapsam-içerik geçerliliği ve öğrenci seviyesine uygunluğu açılarından bir fen eğitimcisi, bir kimya eğitimcisi ve iki fen bilgisi öğretmeni tarafından incelenmiştir. Uzmanların yorumlarına dayalı olarak çalışma yapraklarının BTY ve TGA'ya uygun olduğu ve kapsam-içerik geçerliğini sağladığı tespit edilmiştir. Çalışma yapraklarının pilot uygulamaları 2015-2016 güz yarıyılında Türkiye'de bir şehir merkezinde bulunan bir devlet ortaokulun 5. Sınıflarında öğrenim gören toplam "14" öğrenci ile yapılmıştır. Çalışma yapraklarının bütün aşamalarının detaylıca sunulduğu bu araştırmada pilot uygulamayı yürüten fen bilgisi öğretmeni ile yapılandırılmamış mülakat yapılarak öğretmenin bakış açısıyla çalışma yaprağı değerlendirilmiştir. Sonuç olarak çalışma yaprakları literatürdeki öğretim materyallerine bir alternatif olarak kullanılabilir. Gelecek bir araştırmada 5. Sınıf öğrencilerinin 'Maddenin halleri ve ısı sıcaklık' konularındaki kavramsal anlamalarına TGA-BTY kombinasyonunun etkisi incelenebilir.

Anahtar kelimeler: Bağlam temelli yaklaşım; Tahmin Gözlem Açıklama, Maddenin halleri ve ısı sıcaklık; Çalışma yaprağı

GİRİŞ

Eğitim sürecinde öğrenci ve öğretmenin etkileşiminin güçlü olması kadar etkileşim noktasının gerçek yaşamla bağlantılı olması da önemlidir. Bu bağlantının sağlanmasında ve çok sayıda problemin çözüme kavuşturulmasında Bağlam Temelli Yaklaşım (BTY) önemli bir gelişme olarak değerlendirilmektedir (Gilbert, 2006; Gilbert, Bulte & Pilot, 2011). Bu problemlerden birisi bilimsel bilgilerin aşırı derecede artması sonucunda öğretim programlarının bilgi yumağına dönüşmesidir. Bir diğer problem ise aşırı bilgi yüklemesinden dolayı derslerde öğrenilen bilgi ile gerçek yaşam arasında bağlantı kurulmadan içeriğin anlatılmaya çalışılmasıdır (Millar & Osborne, 2000). Bu nedenle öğrencilerin derslere aktif katılımı azalmakta ve kısa bir süre sonra sunulan bu bilgiler unutulmaktadır. Çünkü öğrencilere "bu konuyu neden öğreniyorum? Bu bilgi

benim ne işime yarayacak?" sorularına karşılık bulmalarını sağlayacak bir öğretim şansı verilmemektedir (Roberts, 1982; Pilot & Bulte, 2006). Nitekim birçok eğitim programlarının analiz sonuçlarından öğrencilerden gerçek hayat problemlerini çözmek için öğrendiği bilgiler ile gerçek hayat arasında bağlantı kurmasının beklendiği ortaya çıkmaktadır (Gilbert, 2006; Stolk, Jong, Bulte, & Pilot, 2011). Bir başka karşılaşılan problem ise öğrenciler kendilerine verilen problemleri sadece kendilerine öğretildiği biçimiyle çözebilmekte aynı problem başka açıdan öğrenciye verildiğinde başarısız olmaktadırlar. Ya da öğrenciler öğrendikleri bilgileri öğretim programından sunulan bir zorunluluk olarak değerlendirmekte, bu zorunluluk ortadan kalkınca öğrencilerin birçoğu bu derslerle tekrar ilgilenmemektedir. Bu problemleri çözmek için geliştirilmiş öğrenme yaklaşımlarından olan BTY, öğrencilere bilimsel içerikler sunulurken, onlara güncel olay örnekleri ya da günlük yaşamdan aşina oldukları bağlamlar sunularak, bilgiye ihtiyaç duydukları bir öğrenme ortamının oluşturulması temeline dayandırılmıştır (Bulte, Westbroek, Jong & Pilot, 2006; Gilbert vd., 2011). BTY dayalı öğretim sürecinde öğrencilerin bağlamlar eşliğinde yeni bilgiyi eski bilgileriyle örüntüleyerek kalıcı öğrenmelerinin sağlanması amaçlanmaktadır. Bu şekilde öğrencilerin bilgiyi ezberleyerek yüzeysel öğrenmeleri yerine yorumlayarak ve anlayarak öğrenmeleri sağlanmış olacaktır.

BTY öğrencilerin kavramsal başarılarında bir artış sağlamakla birlikte (Potter & Overton, 2006; Broman, Bernholt & Parchmann, 2015; Karslı & Yiğit, 2015; Çiğdemoğlu & Geban, 2015; Karslı & Kara Patan, 2016), derse aktif katılımlarını arttırmakta (Bennett, Gräsel, Parchmann & Waddington, 2005; Fensham, 2009; Karslı & Yiğit, 2016) ve onların kimyaya karşı olumlu tutum geliştirmelerinde ve motivasyonlarını arttırmada etkili olmaktadır (Barker & Millar, 2000; Campbell, Lubben & Dlamini, 2000; Bennett & Lubben, 2006; Karslı & Yiğit, 2016). Ayrıca bağlam eşliğinde öğrenme, öğrencilerin soyut olan konu ya da kavramları günlük hayatta karşılaşılan olaylarla ilişkilendirmelerine yardımcı olarak öğrenmeyi kolaylaştırmakta (Stolk, Bulte, Jong & Pilot, 2009; Gilbert vd., 2011; Karslı & Kara Patan, 2016) ve öğrencilerde bilimsel anlayış geliştirmektedir (Bennett vd., 2005; Çiğdemoğlu & Geban, 2015). BTY ile ilgili yürütülen çalışmaların olumlu sonuçlar ortaya koyması ve eğitimdeki birçok problemin çözümünde önemli bir gelişme kaydetmesi özelliklerinden dolayı bu araştırmada bu yaklaşım benimsenmiştir.

Öğrencilerin ön bilgilerini sorgulayarak yeni bilimsel bilgilerle önceki bilgileri arasında ilişki kurarak öğrenmelerinde Tahmin-Gözlem-Açıklama (TGA) etkili bir tekniktir. TGA White ve Gunstone'un (1992) kitabında orijinal ismi, "Prediction-Observation-Explanation (POE)" olarak tanıtılmaktadır. TGA sunulacak bir konuyla ilgili başlangıçta nedenleriyle birlikte tahminlerde bulunulmasını, daha sonra olayın gözlemlenmesi ve yapılan tahmin ile gözlemin birlikte açıklanması esasına dayanmaktadır (White & Gunstone, 1992). Araştırma sonuçlarında TGA'nın öğrencilerin alternatif kavramlarını azaltarak, kavramsal anlamalarını arttırmaya yardımcı olduğu anlaşılmaktadır (Kearney, Treagust, Yeo & Zadnik, 2001; Kearney, 2004; Tokur, Duruk & Akgün, 2014; Bilen, Özel & Köse, 2016). Ayrıca TGA sadece öğrencilere bilgi sunmak için değil, öğrencilerin meraklarını arttırarak derse aktif katılımlarını da sağladığı için öğrenme sürecinde sıklıkla kullanılmaktadır (White & Gunstone, 1992). TGA tekniğinin etkili ve sistemli bir şekilde uygulanabilmesinde ise çalışma yaprakları oldukça etkili bir materyal olarak kullanılmaktadır (Şahin & Çepni, 2009)

TGA'ya dayalı çalışma yaprakları hazırlanırken öğrencilerde kavramsal anlamayı gerçekleştirmenin yanı sıra gerçekleşmesi amaçlanan anlamanın kalıcılığını sağlamak da oldukça önemlidir. Bu bağlamda TGA'ya dayalı geliştirilen çalışma yapraklarında günlük hayatla ilişkili olaylar üzerinden tahminler, gözlemler ve tahminlere yönelik açıklamalar yapma gibi unsurlardan yararlanmanın öğretileceklerin bilişsel yükünü azaltarak istenilen kavramsal anlamanın daha kalıcı kılınacağı düşünülmektedir.

Maddenin halleri ve ısı sıcaklık konuları soyut kavramları içermesinden dolayı birçok seviyedeki öğrenciler tarafından zor bulunmaktadır. Hatta ilköğretimden üniversiteye farklı öğrenim seviyesindeki öğrencilerde bu konularla ilgili çeşitli alternatif kavramlar tespit edilmiştir (Örn, Erickson, 1979; 1980; Aydoğan, Güneş & Gülçiçek, 2003; Turgut & Gürbüz, 2011). Isı ve sıcaklık konularını öğrenciler ilk kez formal olarak ortaokul 5. Sınıfta öğrenmektedirler. Ortaokulun ilk temellerinin atıldığı 5. Sınıfta öğrenilen fen konularının öğrencilerin ileriki eğitim yıllarında öğreneceği fen konularına temel oluşturacağı tartışılmaz bir gerçektir. Bu sebeple bu yıllarda öğrenciler günlük dilde ısı ve sıcaklık kavramlarıyla duydukları yanlış ifadeler veya sezgisel öğrenme gibi çeşitli nedenlerle edindiği alternatif kavramlarını gidermeleri onların gelecek eğitim yaşantılarını da etkilemesi açısından oldukça önemli ve bir gereklilik olarak görülmektedir. Bu nedenle öğrencilerin var olan bilgileri ile yeni yapılandıracakları bilgileri günlük hayattan tanıdıkları durumlarla ilişkilendirerek etkin ve kalıcı öğrenmeler gerçekleştirmelerine ve kavramsal değişimlerinin sağlanmasına yönelik daha fazla çalışma yapılmasına vurgu yapılmaktadır (DiSessa & Sherin, 1998). Bu nedenle bu çalışmada 5. Sınıf öğrencilerinin bir bağlam eşliğinde TGA yöntemine göre tasarlanmış çalışma yapraklarının geliştirilmiştir.

Bu çalışmanın amacı; 5 Sınıf öğrencilerinin 'Maddenin halleri ve ısı sıcaklık' konularında kavramsal anlamalarını arttırmak için Bağlam Temelli Yaklaşım (BTY) ile kombine edilmiş Tahmin Gözlem Açıklama (TGA)'ya dayalı çalışma yaprakları geliştirmek ve çalışma yapraklarında TGA'nın nasıl kullanıldığını sunmaktır.

YÖNTEM

Bu çalışmada 'Maddenin Halleri ve Isı sıcaklık' konularının öğretiminde, günlük hayattan seçilen bağlam eşliğinde öğrencilerin tahminler yapmasına, tahminlerine dayalı olayları gözlemlemelerine ve tahminleriyle gözlemleri arasındaki çelişkileri gidererek bilginin yapılandırılmasına imkân veren çalışma yaprakları geliştirilmiştir. Geliştirilen çalışma yapraklarının pilot uygulamaları 2015-2016 güz yarıyılında Karadeniz bölgesinin kıyı şehirlerinden birinin merkezinde bulunan bir ortaokulun 5. Sınıfında öğrenim gören toplam "14" öğrenci ile yapılmıştır. Pilot uygulama yüksek lisans yapan 9 yıllık deneyime sahip bir fen bilgisi öğretmeni tarafından yapılmıştır. Öğretmen BTY ile ilgili yüksek lisans dersi almış olup bu yaklaşımın uygulanması konusunda ön bilgiye sahiptir. Yapılan öğretim yaklaşık olarak 2 hafta içerisinde 8 saatlik (8x40 dak.) sürede tamamlanmıştır. Uygulamalar arasındaki kopukluğun giderilmesi için her ders başında önceki derste işlenenler kısaca tekrarlanmış, her ders sonrasında da dersin değerlendirilmesi yapılmıştır.

Öğretim Materyalinin (Çalışma Yapraklarının) Geliştirilme Sürecinde İzlenen Adımlar

Çalışma yaprağının geliştirilme sürecinde aşağıda belirtilen adımlar gerçekleştirilmiştir:

1. Çalışma yaprakları, TGA ve BTY'yi temel alan araştırmalar, 5. Sınıf fen bilimleri dersi kitapları, BTY'ye göre hazırlanmış öğretim programları ve 5. sınıf fen bilimleri dersi öğretim programı detaylıca incelenmiştir. Öğretim programından 'Maddenin halleri ve ısı sıcaklık' konusun kazanımları belirlenmiştir.
2. Literatürden ve öğretmenlerle yapılan görüşmelerden 'Maddenin halleri ve ısı sıcaklık' konusunda karşılaşılan güçlükler ve alternatif kavramlar tespit edilmiştir. Kazanımların öğretilmesine ve belirlenen alternatif kavramların giderilmesine yönelik olarak öğrenciler tarafından gündelik yaşamdan tanıdıkları 'kutup ve boz ayılarının yaşamları' bağlamı seçilmiştir. 'Kutup ve boz ayılarının yaşamları' bağlamı çerçevesinde kutup ve boz ayılarının yaşamları hikayeleştirilerek TGA yöntemine uygun formatta çalışma yapraklarına dönüştürülmüştür.
3. Hazırlanan çalışma yaprakları bilimsel olarak doğruluğu, BTY'ye, TGA'ya ve öğrenci seviyesine uygunluğu açılarından 1 kimya eğitimcisi, 1 fen eğitimcisi ve 2 10 yıllık mesleki deneyime sahip fen bilgisi öğretmeninin görüşlerine başvurulmuştur. Uzmaların görüşlerine göre gerekli düzenlemeler yapılarak çalışma yapraklarına son hali verilmiştir.
4. Son hali verilen çalışma yapraklarının uygulanabilirliğinin ve aksaklıkların belirlenmesi için pilot uygulaması yapılmıştır.

Öğretim Materyali

Maddenin halleri ve ısı sıcaklık' konularında BTY ile kombine edilmiş TGA'ya dayalı çalışma yapraklarından bir tanesi aşağıda detaylı olarak sunulmuştur. Çalışma yaprakları TGA'ya göre tasarımlandığı için üç aşamadan oluşmaktadır.

1. Tahmin: Öğrencilere bir gösteri deneyi veya olay hakkında bilgi verilir ve öğrencilerden gösteri deneyinin veya olayın sonucunu sebepleriyle birlikte tahmin etmeleri istenir. Bu aşamada öğrencilerin tahminde bulunacakları olayı tam olarak anladıklarından emin olunmalıdır. Öğrencilerden tahminlerinin nedenlerini yazmaları istenir. Bu sayede öğrencilerin ön bilgileri aktifleşir ve sahip oldukları alternatif kavramlar ortaya çıkarılabilir. Tahmin etmek ve bunun için bir neden göstermek gözleme odaklanmayı kolaylaştırarak motivasyonu da artırır (White & Gunstone, 1992). Tahmin etme aşamasının bu özelliklerinden dolayı bu aşamada 'kutup ve boz ayılarının yaşamları' bağlamı kapsamında öğrencilere kutup ayılarının ve yavrularının yaşamları, postları vb. özellikleri ısı ve sıcaklık konusuyla ilişkilendirebilmeleri için çeşitli sorularla öğrencilere sunulmuştur. BTY ile kombine edilmiş TGA'ya dayalı çalışma yaprağının tahmin aşaması aşağıda sunulmuştur.

ANNE KUTUP AYISI VE YAVRUSU

Kutup ayıları her ne kadar soğukta yaşamaya adapte olmuş olsalar da yeni doğmuş küçük kutup ayıları soğuğa henüz anneleri kadar alışkın değildir.

Fotoğrafta da gördüğünüz gibi daha az posta sahip olan küçük yavru ayı annesine temas ederek ısınmaya çalışıyor.

Kutup ayılarının yaşamlarından verilen bu örneğe göre aşağıdaki sorularla ilgili tahminlerinizi boşluklara yazınız.

1.) Sizce daha küçük boyuta sahip yavru kutup ayısı neden annesine sokularak ısınmaya çalışıyor?

2.) Sizce anne kutup ayısının mı yoksa yavru kutup ayısının mı ısısı fazladır?

3.) Annesi ile yavru kutup ayısı arasında nasıl bir enerji akışı olur?

4.) Anne ayı ve yavru ayının vücut sıcaklıklarında bir süre sonra nasıl bir değişim olur?

2. Gözlem: Bu aşamada öğrencilere tahminde bulundukları olayı gözlemlemeleri sağlanır. Öğrencilerin birbirlerinden etkilenerek gözlemlerini değiştirmesini engellemek için deney yapılırken her öğrencinin gözlemlerini kendilerine verilen çalışma yapraklarındaki ilgili kısma kaydetmesi sağlanır. Gerek görülürse tahmin ettirilen durum ya da olay tekrarlanmalıdır. Eğer öğrencilerin tahminleri ile gözlemleri arasında farklılıklar varsa, bu çelişkiler öğrenmeyi ilerletebilir. Böylece öğrencilerin olayı gözlemeleri ve varsa alternatif kavramlarından hoşnutsuz olmaları sağlanır (White & Gunstone, 1992). BTY ile kombine edilmiş TGA'ya dayalı çalışma yaprağının gözlem aşaması aşağıda sunulmuştur.

Hadi gözlem yapalım.

Deney Araç Gereçleri

İspirto ocağı,
2 adet beherglas,
Su,
Termometre,
Üçayak

Deneyin Yapılışı

- İspirto ocağını öğretmeniniz yaktıktan sonra üzerine üçayağı koyalım.
- Üçayağın üzerine bir miktar su dolu beherglas koyalım.
- Termometre ile suyun sıcaklığı 60°C olana kadar sıcaklığını ölçelim.
- Daha sonra ikinci beherglasa ilk beherglastaki ile aynı miktarda çeşmeden su koyalım.
- Parmağımızla dikkatlice bu beherlere dışarıdan dokunalım.
- Daha sonra ocaktan indirdiğimiz sıcak su ile çeşmeden doldurduğumuz soğuk su dolu beherglasları birbirine dokunacak şekilde koyalım ve termometre ile ikisini de tekrar ölçelim.

1.) Deneyde nasıl bir değişiklik gözlediğimizi aşağıya not alalım.

2.) Parmağınızı beherlere dokundurduğunuzda ısı alışverişi mi yoksa sıcaklık alışverişi mi oldu?

3.) Bu deneydeki olay ile yavru ayı ve annesi arasındaki olayı ilişkilendiriniz.

4.) Sizce termometre ile ölçtüğünüz değer ısı mıdır yoksa sıcaklık mıdır?

5.) Isı ve sıcaklığın benzer veya farklı yönleri var mıdır? Yaptığınız deneyden yola çıkarak yazınız.

3. Açıklama: Bu aşamada öğrencilerden tahminleri ve gözlemleri arasındaki çelişkileri tartışmaları ve bu çelişkileri gidermeleri istenir. Öğrencilerin kavramları kendi kendilerine yapılandırmaları için gözlemler sınıf içinde tartışılır. Bu aşamayı öğrenciler genellikle zor bulurlar. Bu aşamada öğretmen açıklamayı doğrudan yapmamalıdır. Öğrencilere rehberlik etmelidir. Öğrencilerin akıllarına gelebilecek tüm ihtimalleri dikkate almalarını sağlamalı ve farklı alternatif yorumlar yapmaları için özendirmelidir (White & Gunstone, 1992; Köse, Costu & Keser, 2003). Açıklama aşamasında öğrencilerin başlangıçtaki tahminleriyle gözlemleri arasındaki çelişkili durumları nedenleriyle açıklamalarına yönelik rehberlik edilir. BTY ile kombine edilmiş TGA'ya dayalı çalışma yaprağının açıklama aşaması aşağıda sunulmuştur.

> **Başlangıçtaki tahminlerinizle gözlemlerinizi karşılaştırınız ve aşağıda verilen sorulara açıklamalar yapınız.**
>
> 1.) Sizce küçük kutup ayısı neden annesine sokularak ısınmaya çalışıyor? Bunu deneyde gözlemlediğiniz durumlarla ilişki kurarak açıklayınız.
>
> ....
>
> 2.) Anne ayı ile yavru ayı arasında nasıl bir enerji akışı olur? Hangi ayının vücut ısısı daha fazladır? Deneyinizde hangi durumlar arasında buna benzer bir enerji akışı olmuştur?
>
> ~~~~~~
>
> 3.) Anne ayı ve yavru ayının vücut sıcaklıklarında bir süre sonra nasıl bir değişim olur? Bunu deneyinizde iki beherglası birbirine temas ettirdikten sonra sıcaklıklarının nasıl değiştiğinden yola çıkarak açıklayınız.
>
> ~~~~~~
>
> Gerekli boşluklara ilgili kavramları yazarak Isı, sıcaklık ve ısı alış verişi olaylarını açıklayalım.
>
> 4.) Hikayemizdeki yavru kutup ayısı annesinden ne alarak vücut sıcaklığını arttırdı.................
> 5.) Yavru kutup ayısı .... alırken anne kutup ayısı ......kaybetti. Çünkü .... maddeler .... maddelere ısı verir.

Veri Toplama Aracı ve Verilerin Analizi

Araştırmada veri toplamak amacıyla pilot uygulamayı yürüten fen bilgisi öğretmeni ile yapılandırılmamış mülakat yapılarak öğretmenin bakış açısıyla çalışma yaprakları değerlendirilmiştir. Mülakatta öğretmenden 'Maddenin halleri ve ısı sıcaklık' konularını öğretirken BTY ile kombine edilmiş TGA'ya dayalı çalışma yapraklarının pilot uygulaması sırasında yaşadıklarını, gözlemlediklerini eleştirel bir bakış açısıyla değerlendirmesi istenmiştir. Mülakat yaklaşık olarak bir saat sürmüştür. Öğretmenle yapılan görüşmeler öğretmenden izin alınarak ses kayıt cihazı ile kayıt edilmiştir. Ses kaydı alınan veriler yazılı hale getirilmiştir. Bu veriler araştırma sorusuyla ilişkisiz ifadelerden arındırılarak, sadeleştirilmiştir. Mülakattan elde edilen veriler içeriksel olarak analiz edilmiştir. Kendi içinde anlamlı bir bütün oluşturan veriler kodlanmıştır. Kodlardan datemalar oluşturulmuştur. Analizi yapılan verileri doğrudan okuyucuya sunmak ve verilerin geçerliğini sağlamak için öğretmen ifadelerinden alıntılar sunulmuştur.

BULGULAR

Öğretmenle Yürütülen Mülakatlardan Elde Edilen Bulgular

Bu bölümde 'Maddenin halleri ve ısı sıcaklık' konularını öğretirken BTY ile kombine edilmiş TGA'ya dayalı çalışma yapraklarının pilot uygulaması ile ilgili öğretmenle yürütülen yapılandırılmamış mülakatların analizinden elde edilen bulgular sunulmuştur.

Şekil 4. Öğretmenin BTY ile kombine edilmiş TGA'ya dayalı çalışma yaprakları eşliğinde işlenen ders süreci ile ilgili görüşlerinden elde edilen bulgular

Öğretmenin görüşlerinden BTY ile kombine edilmiş TGA'ya dayalı çalışma yaprakları ile işlenen dersler teması altında "İlgi çekici", "Derse katılımı arttırma", "Günlük hayatla bağlantı kurmayı sağlama", "Derse Motive olmayı sağlama", "Eğlenceli olma", "Bağlamla ilişki kurmayı sağlama" kodlarının oluştuğu Şekil 4'ten görülmektedir.

BTY ile kombine edilmiş TGA'ya dayalı çalışma yaprakları ile işlenen dersler temasına yönelik öğretmen ifadesinden alıntı:

'Bence günlük hayattan bağlamlar seçilmesi gayet mantıklı oldu. Kutup ve boz ayılarının postları ile ısı ve sıcaklık arasında ilişki kurulması öğrencilerin ilgisini çekti'. 'Bu çalışma yapraklarıyla öğrencilerin derse katılım oranı gözle görülür şekilde arttı'. 'Çalışma yapraklarında konu akışının, takip edeceğimiz yolun belli olmasını ve belli bir plan dahilinde her şeyin sıralı olmasını beğendim. Öğrencilerin ellerinde doküman olduğunda üzerine yazmak daha kolay ve düzenli oldu'

TARTIŞMA VE SONUÇLAR

Pilot uygulama sonrası öğretmen ile yapılan mülakat bulgularına göre araştırma kapsamında geliştirilen çalışma yaprakları ile derslerin sunumu öğrencilerin daha fazla derslere katılımını sağlamıştır. Bu durum BTY ile kombine edilmiş TGA stratejisinin uygulanma sürecinde öğrencilerin süreçte etkinliklere etkin katılmasını sağlamasının bir yansıması olabilir. Nitekim BTY ve TGA'nın derse aktif katılımı desteklediği sonuçları bu durumu desteklemektedir (Liew & Treagust, 1995; Bilen & Köse, 2012; Cinici & Demir, 2013; Karslı & Yiğit, 2015; 2016; Karslı & Kara Patan, 2016). Bu nedenle BTY ile kombine edilmiş TGA yöntemine dayalı çalışma yapraklarının öğrencilerin 'Maddenin halleri ve Isı sıcaklık' konusunda anlamalarına olan etkisi bir başka araştırma konusu olabilir.

Pilot uygulama sonuçlarına göre çalışma yaprakları öğrencilerin günlük hayatla konuyu ilişkilendirmelerine yardımcı olmuştur. Literatürde BTY'ye göre işlenen derslerin öğrencilerin günlük yaşamla öğrenilen kavram arasında bağlantı kurmalarına yardımcı olduğunu gösteren çalışmalar da bu sonucu desteklemektedir (Gilbert vd., 2011; Karslı & Yiğit, 2015). Yeni uygulamaya konulan öğretim programları konu ve kavramların günlük yaşamla ilişkilendirilmesine yönelik etkinliklerle zenginleştirilmiştir. Bu nedenle sınıflarda bu programları uygulamaya koyan öğretmenlere günlük yaşamla ilişki kurmayı sağlamada daha etkili olan BTY gibi yaklaşımların önemi, özellikleri ve uygulama şekli ile ilgili eğitim verilmelidir. Öğrencilerin fen kavramlarıyla gerçek hayat durumlarının birbirinden bağımsız olmadığı düşüncesinin oluşturulması ve fen kavramlarını yaşamlarının bir parçası gibi görmeleri için öğrenciler ilköğretimden itibaren günlük yaşam içerikli etkinliklerle derslerin zenginleştirilmesi sağlanmalıdır.

Ayrıca çalışma yaprakları ile işlenen derslerin konu akışının düzenli olmasını sağladığını ve bu şekilde konuların sunumunun daha planlı olduğu anlaşılmıştır. Bu bulgu çalışma yapraklarının kavram öğretimi sırasında yapılacak aktivitelerin bütün işlem basamaklarının organize bir şekilde ve bir bütünlük içinde sunulmasını kolaylaştıran, etkili bir kavram öğretiminin gerçekleştirilmesinde hem öğretmene hem de öğrenciye kolaylık sağlayan öğretim materyali olma özelliğinin bir sonucu olarak görülebilir (Karslı, 2011; Karslı & Şahin, 2009; Karslı & Yiğit, 2016). Bu nedenle başka bir araştırmada Maddenin halleri ve ısı sıcaklık konusuna ek olarak diğer fen konularında benzer etkinlikleri içeren etkililiği incelenmiş çalışma yaprakları geliştirilerek öğretmen, öğretmen adayı ve araştırmacıların erişimine sunulabilir.

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DEVELOPMENT MODEL OF INTEGRATED ICT LEARNING PACKAGE BY USING PERSONAL KNOWLEDGE MANAGEMENT TO ENHANCE LEARNERS' 21ST CENTURY SKILLS

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ABSTRACT

This research aims to develop and evaluate the model of integrated ICT learning package by using Personal Knowledge Management for enhance learners in 21st century skills that divide into 3 stages: first stage is to study the appropriate model of ICT skills learning package, second stage is to develop ICT skills learning package for learners, and third stage is to study the use of ICT skills learning package form learners. The participants were master degree students that study in Department of Educational Technology in 2015 academic year. Research tools were: matrix analysis data form, satisfaction questionnaire, 21st century skill evaluation. Data were analyze by Arithmetic mean and Standard Deviation (S.D.) Research findings showed that the model of ICT skills learning package in 21st century for learners that analyze and syntheses are include the 3 main parts: 1) Personal Knowledge Management (PKM) are included the activities: Activation (Community of Interests), Demonstration (Before Action Review), Application (Community of Practices), and Integration (After Action Review) and designed activity in to the Online Learning Environments: OLEs and Virtual Learning Environments: VLEs, 2) Self-Directed Learning: SDL are included the 5 elements: Set Goal, Plan, Learn, Show, and Reflex. Driven by "Seek & Sense" activity, 3) Collaborative Learning: CL are included the 5 elements: Collaboration, Discussion, Community, Brainstorm, Interaction, and Share Idea. Driven by "Show & Share" activity, and 4) Monitoring and Evaluation are included the 3 elements: 1) Critical Thinking and Problem Solving, and 2) Communication and Collaboration. Finally, the model showed the quality evaluation by 3 experts found that "appropriated level" which is the "Prototype model" that can be use and apply into the learning activity in the next future.

INTRODUCTION

Educational and communication technology shaped the facilities and services of teacher and learner. The way of teaching and learning, the way of sharing experiences has been changed. ICT becomes integral of our lives and it promises opportunity for learners to gain equality in education within diverse contexts and services. The needs for ICT skills professional development that can meet today's educators' demanding schedules, that uses quality content and resources that are available to teachers from any place and any time, and that can deliver relevant, accessible, and ongoing support has stimulated the development of online teacher professional development programs. Online teacher professional development programs make it possible for educators to communicate, share knowledge and resources, and reflect via asynchronous interactions. Moreover, Rabah (2015) suggests that the benefits and challenges of ICT integration is a powerful and flexible tool for learning, it is needed and desired to meet globalization challenges in particular knowledge and communication breakthroughs that the world can achieve using information communication technologies (ICT) are so numerous that educational institutions are striving to invest in ICT tools in an attempt to help raise citizens who are ready to face the challenges of the 21st century where media, manufacturing industries as well as commerce have become increasingly technology-oriented. In addition, Omar and Noordin (2013) supports that the uses of Information and Communication Technology (ICT) have been developed tremendously in order to assist the operations for daily business and education throughout the world. Technological advancements today have passed beyond cables and wires where the means of communication now can be done from just about anywhere. Office works can be done from home, meetings can be conducted virtually and educational classes can be handled from thousands of miles away without having to have the students to sit in front of their teachers in the same classrooms. However, there is a concern recently that such technological advancements would not be possible to be continued without the sufficient supplies of human capitals. The condition of education in Thailand today still has several problems. Especially, the quality of learners seems shortages (Secretariat of the Council of Education- Thailand, 2010). Along with the lack of pedagogy skills that is not match in the actual practical needs for higher education. Particularly, Lee (2010) have suggests that the common difficulties and limitations regarding the implementation of knowledge management into classrooms cultures. In addition, the concept of social media that based on the appropriate tool and the medium to deliver knowledge, and helps learners can communicated with each other (Catherall, 2008) especially in teaching and learning using the potential of internet network to access with various sources of learning (Belleghem, 2011).

The main purpose of this study is to research and develop activities to be appropriate with the learners that integrated with the concept of knowledge management and social media. The question then becomes, "How to

design and develop the appropriate design the model of Information and Communication Technology learning package". The expected benefits are the appropriate model that is the systematic approach to enhance graduated students in 21ˢᵗ century skills. More over the results of quality assessment of model that is body of knowledge to develop the learning skill of graduated students. In addition the results can be the information to support the higher education systems policy maker.

THE STUDY

This research aims to 1) design the model of Information and Communication Technology learning package for enhance graduated students in 21ˢᵗ century skills, and 2) develop and evaluate the Information and Communication Technology learning package for enhance graduated students in 21ˢᵗ century skills. The methodology provide into 2 phases, the details are as following:

The first phase focus to design the model of Information and Communication Technology learning package for enhance graduated students in 21ˢᵗ century skills.

     1. Analyzing the elements of Personal Knowledge Management (PKM) are included the activities: Activation (Community of Interests), Demonstration (Before Action Review), Application (Community of Practices), and Integration (After Action Review) and designed activity in to the Online Learning Environments: OLEs and Virtual Learning Environments: VLEs.

     2. Analyzing the elements of Self-Directed Learning: SDL are included the 5 elements: Set Goal, Plan, Learn, Show, and Reflex. Driven by "Seek & Sense" activity.

     3. Analyzing the elements of Collaborative Learning: CL are included the 5 elements: Collaboration, Discussion, Community, Brainstorm, Interaction, and Share Idea. Driven by "Show & Share" activity.

     4. Analyzing the elements of Monitoring and Evaluation are included the 3 elements: 1) Creatively and Innovation, 2) Critical Thinking and Problem Solving, and 3) Communication and Collaboration.

     5. Integrating the elements of Personal Knowledge Management, Self-Directed Learning, Collaborative Learning, and Monitoring and Evaluation by the matrix analysis technique

     6. Studying the appropriate quality of model of Information and Communication Technology (ICT) learning package for students in 21st Century by the 3 experts (Educational technology and Knowledge Management field)

The second phase go for develop and evaluate the model of Information and Communication Technology (ICT) learning package and assessment tools.

     1. Developing the model of Information and Communication Technology (ICT) learning package and quality evaluated by the 3 experts (Educational technology and Knowledge Management field).

     2. Try-out model of Information and Communication Technology (ICT) learning package by the 45 graduate students who study in semester, 2015 for study the research tools quality (try-out stage).

     3. Preparing the all of research tools that using in the next step.

Finally, the third phase go for study the use of ICT skills learning package form learners.

     1. Research design: by following the One-Group Posttest Design.

     2. Population and samples:

        2.1 Population are the graduate students who study in semester, 2015 academic year at Faculty of Education, Kasetsart University, Thailand.

        2.2 Samples are 36 graduate students that collected by random sampling technique and learn by the model of Information and Communication Technology (ICT) learning package.

     3. Research tools:

        3.1 The Information and Communication Technology (ICT) learning package.

        3.2 The Information and Communication Technology (ICT) skills test.

     4. Data analysis:

        4.1 Descriptive statistics were Arithmetic Mean and Standard Deviation (S.D.) are used to describe the basic features of the quantitative data.

        4.2 Qualitative data were analyzed by category group and issuing data technique.

FINDINGS

1. The model of model of Information and Communication Technology learning package for enhance graduated students in 21ˢᵗ century skills was appropriated with the criterion of quality, detail are as follow:

     1.1 Personal Knowledge Management (PKM) are included the activities: Activation (Community of Interests), Demonstration (Before Action Review), Application (Community of Practices), and Integration (After Action Review) and designed activity in to the Online Learning Environments: OLEs and Virtual Learning Environments: VLEs.

1.2 Self-Directed Learning: SDL are included the 5 elements: Set Goal, Plan, Learn, Show, and Reflex. Driven by "Seek & Sense" activity.

1.3 Collaborative Learning: CL are included the 5 elements: Collaboration, Discussion, Community, Brainstorm, Interaction, and Share Idea. Driven by "Show & Share" activity.

1.4 Monitoring and Evaluation are included the 3 elements: 1) Creatively and Innovation, 2) Critical Thinking and Problem Solving, and 3) Communication and Collaboration.

1.5 Integrated elements of Personal Knowledge Management, Self-Directed Learning, Collaborative Learning, and Monitoring and Evaluation by the matrix analysis technique, details see on fig. 1

Fig 1: The model of model of Information and Communication Technology learning package for enhance graduated students in 21st century skills.

2. The quality of the model of Information and Communication Technology (ICT) learning package in 21st century for graduated students by the 3 experts was appropriated with instructional media showed overall results quality at highest level (mean=4.51, S.D.= 0.54), details are following: the highest level showed at process step (mean=4.61, S.D.= 0.54), the overview of the basic elements of the model (mean= 4.52, S.D.= 0.59), the overall of productivity (output) step (mean= 4.50, S.D.= 0.56), the overall of the input step (mean=4.40, S.D.= 0.58) and totally, model that mean the model of Information and Communication Technology (ICT) skills learning package in 21st century for graduated students can supports the student to learn and enhance their self-directed learning skill on the next steps, details see on table 1

Table 1: the quality of the model

Quality issue	Arithmetic Mean	Standard Deviation (S.D.)	Level
the basic elements of the model	4.52	0.59	highest
the input step	4.40	0.58	high
the process step	4.61	0.54	highest
the output step	4.50	0.56	highest
the overall results quality	4.51	0.54	highest

3. The evaluation of ICT skills learning package form learners.

3.1 The learner's score of ICT skills showed overall results at highest level (arithmetic mean=3.50/4.00), details are following: 1) the quality of product especially in appropriately design step (arithmetic mean=3.58/4.00),

the quality of product especially in continue design step (arithmetic mean= 3.50/4.00), and the quality of creatively product especially in new technique/methods application (arithmetic mean= 3.42). (See in table 2)

Table 2: The learner's score of ICT skills

ICT skills issue	Arithmetic Mean (4.00)	Level
the quality of product especially in appropriately design step	3.58	highest
the quality of product especially in continue design step	3.50	high
the quality of creatively product especially in new technique/methods application	3.42	highest
the overall results	3.50	highest

3.2 The learner's score of self-directed learning skills showed overall results at highest level (arithmetic mean=4.34, S.D. = 0.11). Totally, the ICT skills learning package can supports the student to learn and enhance their self-directed learning skill on the next steps.

CONCLUSIONS

Research results exhibited that the model of Information and Communication Technology (ICT) skills learning package in 21st century for graduated students was appropriated and fit to the quality of instructional media system design and development principal. Online learning skills development is an emerging trend it is still a "new frontier". Educators around the world experience many demands on their knowledge, time, and professional development. Developing and sustaining an effective online learning community can be challenging even in the midst of an era of much technological advancement.

Moreover, developing and sustaining an effective large-scale online community is even more challenging. In addition, professional development has mainly centered on learning processes that involve updating knowledge, yet it has made little headway as a construct that includes both the professional and personal characteristics and working conditions. It has also focused more on developing. Finally, the online learning technologies have the potential to transform the professional development of students; penetrate cultural, discipline, and other barriers; bring educators together to learn, share successes and challenges; and co-construct and transfer learning.

RECOMMENDATIONS

1. Online Learning Environments (OLEs) and Virtual Learning Environments (VLEs) are important tools to teaching and learning for graduated study.

2. Applications to design and development that using web-based instruction for graduate students appropriately which guide the application of the next future to teaching in higher education institutions.

3. Guidelines to online teaching & learning especially in "Seek & Sense" and "Show & Share" process among learners in the "Community of Interest" and "Community of Practices".

4. Best practice to use Personal Knowledge Management process with Self Directed Learning and Collaborative Learning in the Graduated study courses.

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DEVELOPMENT OF A RESEARCH COMPETENCE IN UNIVERSITY STUDENTS THROUGH BLENDED LEARNING

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ABSTRACT

This paper reports the need to develop a research competence in undergraduate students. This has been studied from different perspectives, so the paper aims to show a proposal by using a strategy called Blended Learning.

To achieve this goal, it is first important to seek out the knowledge, skills and values that the research competence must contain, according to numerous authors; and then, identify the knowledge and skills that a university student must possess to be considered with the competence.

Although efforts have been made to develop research competence, such as the mentoring of research, research summers, the STAR project and the thesis for obtaining the degree, this goal has not been achieved in the students.

In this work, Blended Learning is seen as a strategy and not as a method. The difference lies in the point of view. When seen as a strategy, it allows strategic planning for its implementation; whereas as a method, uploading material to an educational platform turns out just being a waste of time.

Finally a proposal for a model, which includes virtual classroom strategies and taking advantages of the best strategies, is shared.

Keywords: Blended   Learning;   Higher   Education;   Research   Competence;   Student

INTRODUCTION

This research presents a proposal to develop the research competence in university students. To do this; firstly the authors define what the research competence is; followed by a review of the efforts that have been made to develop this competence; and lastly a proposal is shared.

1. The research competence

According to the Tuning Project the research competence is identified, within systematic generic skills, known as Research skills (Sierra Alonso, 2011). According to Gonzalez and Wagenaar (2003) they are also considered specific skills related to research.

All competences must have knowledge, skills and values. For this reason, a review of literature was conducted to determine the authors that included these three elements of the research competence. As a result of this review, the research group determined what would be the competence regarding knowledge, skills and values included in the competence to be developed by university students.

Knowledge for University Students

Scientific and technical knowledge (Landazábal, Claro, & Cruz, 2007).

Methodological knowledge (Molina & Hernandez, 2013).

Knowledge of technological means to make optimal research results (Toro & Tejeda, 2010).

Correct punctuation, grammar and spelling (Landazábal, Claro, & Cruz, 2007).

Procedures for asking and identifying issues of the research project (Mena & Lizenberg, 2013).

Procedures for planning the time needed to work on the research / Formulation of research projects (Bolivar, 2005).

Procedures for registering, making designs, and validating of research instruments (Bolivar, 2005).

Procedures for analyzing quantitative and qualitative data included in the research (Bolivar, 2005).

Have full control of general, technical, and graphic language (Landazábal, Claro, & Cruz, 2007).

Skills for University Students

Advanced search for relevant and adjacency information (Bolívar, 2005; Toro & Tejeda, 2010).

Identifying and writing scientific hypothesis for the research project (Molina & Hernandez, 2013).

Developing goals and purposes (Carlos, 2001).

Developing communication skills (Camargo & Bonilla, 2015).

Ability to learn (Camargo & Bonilla, 2015).

Ability to develop strategies (Camargo & Bonilla, 2015).

Ability to solve problems (Carlos, 2001; Rodriguez, Bertone, & Garcia, 2009).

Academic skills (reading, seeing, hearing, take notes, graph, interpret documents, design) (Carlos, 2001).

Research skills (observe, hypothesize, analyze, search for information, evaluate, use instruments) (Carlos, 2001).

Social skills (Cooperate, know discuss, defend own ideas, teamwork, conflict resolution) (Carlos, 2001).

Observation skills (Cuevas, Guillen & Rocha, 2011; Landazábal, Claro, & Cruz, 2007).

Cognitive Skills (Charles, 2001).

Self-management capacity (Charles, 2001).

Skills for teamwork (Campos, Madriz, Rivera, & Roads, 2012).

Methodological skills (Campos, Madriz, Rivera, & Roads, 2012).

Skills to manage research (Campos, Madriz, Rivera, & Roads, 2012).

Technological skills (Campos, Madriz, Rivera, & Roads, 2012).

Logical organization of ideas (Landazábal, Claro, & Cruz, 2007).

Analytical thinking (Molina & Hernandez, 2013).

Thinking (Velez, 2006).

Use of personal scientific knowledge to describe, explain and predict phenomena of their field of expertise (Mena & Lizenberg, 2013).

Values according to various authors

The review of the literature showed that values are the same for any research done regardless if it is for undergraduate or graduate students. Values or standards selected were the following.

- Autonomy
- Collaboration
- Commitment
- Discipline
- Ethics

- Flexibility
- Honesty
- Interest
- Originality
- Perseverance

- Respect
- Responsibility
- Rigor
- Solidarity
- Transparency

2. Efforts to achieve the research competence

The research competence has been worked for many years at universities around the world, and there have been many efforts to achieve it. The results have been varied, as some universities have had significant progresses and others have not been able to develop it.

To mention some efforts, summer research courses conducted by Hunter, Laursen, and Seym (2006) where made, where they discussed in four US universities how to turn students into future scientists. The analysis was based on the four research programs of summer courses.

The results were positive, given that both students and teachers perceived that they had a very good experience and universities felt that they were good programs.

The main problem of the research summer course had to do with the fact that there was no follow-up of the competences learned. The students returned to their studies and there was no connection with the competence they learned in terms of research.

The good thing is that the seed planted in the program might produce results in the near future if there is a follow up or related activities in their original or core programs.

A second effort was designed by Finn and Crook (2003) called Scientific Training for Student Assignment for Research, for ITS acronym in English, STAR Project. This project provided the experiential part, as the student learned by doing, in addition to their official website that provides tips, short exercises and case studies.

A third effort, are the tutors of research. This activity is known by different in different names: advisor, counselor and tutor research. Authors Igea Del Rincon (2000), Monge Crespo (2010), Sanchiz Ruiz, Martí Puig, and Cremades Soler (2011), Galician and Riart (2010) and Sanz Oro (2009), have investigated tutorials from the point of view of students. They depart from the importance of the students in the research activity. They have the target in the research they are working on. This activity is called orientation.

3. Blended Learning

Once the research competence has been addressed, it is necessary to review the literature related to Blended Learning, and as a result, show the benefits and jobs that have been made in Higher Education.

There are countless advantages of Blended Learning according to Bonk and Graham (2006), where the main three are:

In first hand, it serves students from diverse communities. Unfortunately when students go to college, they do not do it with the same level of knowledge and skills. They also bring different ways and styles of learning.

For this, Blended Learning offers new ways to personalize the learning experience and engage students.

To discuss the reduction of graduation time, it is important to mention that students face new and more demanding pressures every day, like for example, their work and family. The percentage of working students is higher than ever, besides being a full time student.

Blended Learning allows universities to provide more programming options for students enrolled completing their required courses.

As for the ultimate benefit, the advantage is the better understanding of the student progress, as a blended learning mode platform allows the collection of detailed data on student activity and learning behavior in the online environment used. The availability of these data helps in two key aspects for Higher Education, improving the quality and improving student outcomes.

Using Blended Learning in Higher Education is not something new. Universities have used it in Saudi Arabia, Spain, United States, Scotland, England, Finland, the Netherlands, Malaysia, New Zealand, Taiwan, Turkey, Switzerland and of course Mexico, among others.

Universities have done studies on the advantages and disadvantages of blended Learning. For example, the Faculty of Forestry, University Putra Malaysia in 2009 (Kamaruzaman & Khodabandelou, 2009), the University of Ballarat and the University of Western Sydney in undergraduate and postgraduate (O O'Connor, Mortimer, & Bond, 2011), US universities, Indiana University, Bloomington, Portland State University, the University of Georgia and The University of Illinois at Urbana-Champaign (Curtis, Kyong-Jee Eun, Ya -ting, & Su, 2007).

Another topic that interests a lot to universities is the perception of students and teachers about the use of blended learning. The universities which have researched the subject are the University of Cordoba and Granada (Hinojo, Aznar, & Cáceres, 2009), Croatia, University of Rijeka (Zuvic-Butorac, Roncevic, Nemcanin, & Nebic, 2011), the Ahi Evran University, Kırıkkale University and Hacettepe University in Turkey (Akkoyunlu & Yilmaz Soylu, 2004; Usta & Mehmet Ozdemir, 2008), and of course the Universidad Veracruzana in Mexico (Arras Vota, Torres Gastelú, & Fierro Murga, 2012).

In addition, some universities have done studies on the implementation of Blended Learning in some careers in particular, such as Brigham Young University, a private university in Utah, United States (Cottrell & Robison, 2003) and the Complutense University of Madrid (Arrabal Ortiz, Fernández Barbero, Barrio Otero, Ros Rodriguez, Santos & Gilabert, 2009).

One of the most important areas to investigate their pedagogical Blended Learning is partly why universities such as the Open University of Israel (Precel, Eshet-Alkalai, & Alberton, 2009), the

University of Tabuk in Saudi Arabia, Assiut University Egypt (Farrag Badawi, 2009) and Anadolu University in Turkey (Caner, 2010) have done studies on this aspect.

As for the results of Blended Learning in learning the University of Seville, Spain and the PUCMM University of the Dominican Republic (Cabero, Llorente, & Bridges, 2010), also the University Zurich in Switzerland (Gerber, Grund , & Grote, 2007), just as the Thames Valley University in the United (Hughes, 2007) and the University of Stuttgart in Germany (Steffens & Reiss, 2010), have done studies related to the impact of blended learning on learning.

As you can see, there are many investigations concerning the implementation, the pedagogical aspect and the outcomes or results of using Blended Learning with university students.

BLENDED LEARNING PROPOSAL

The proposal is a teaching method that includes virtual classroom strategies and strategies where the event receiving more importance is the process of interaction, whether in the classroom or virtual.

The difference with other proposals is that this one is a didactic strategic planning that considers each of the strategies for each classroom activity, and enhances virtual and each didactic material. This increases knowledge and improves skills to achieve the research competence.

Figure1. Applying flipped allows Blended Learning proposal.

Classroom   better contact through the activities with the professor and the teaching materials and assembled in the educational platform.

As for teaching materials it is important to focus on four main areas: research, word processing, and quantitative and qualitative software.

As for the investigation, a creative process of materials must be developed. This process must explain the scientific method, finding reliable information, the research protocol, validity and reliability, and the types of academic research, among others.

In relation to the word processor, you must create screencasts showing management of APA format, how to create a master document, the preparation of the table of contents, use and management of sections and others.

The software for quantitative set of videos should cover a number of actions for example may import data from a spreadsheet, calculate frequencies and determine correlation between two variables.

Although qualitative research is more complex for students, consideration should be given to conduct an investigation of this type. Therefore, at least two materials should be developed: data reduction and the provision and processing of data.

This is the general proposal for the development of research competence in university students by applying the Blended Learning Flipped Classroom teaching model.

CONCLUSIONS

We have three conclusions, the first is that for many years there have been efforts to achieve research competence but these efforts have not been enough.

The second, blended learning is a viable alternative to develop research competence because the blended learning has been successful in several areas and in various countries.

Finally, we propose to use the blended learning as didactic strategic planning that considers each of the strategies for each classroom activity, and enhances virtual and each didactic material. This increases knowledge and improves skills to achieve the research competence.

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DEVELOPMENT OF CONCEPTUAL UNDERSTANDING OF ACID-BASE BY USING INQUIRY EXPERIMENTS IN CONJUNCTION WITH PARTICULATE ANIMATIONS FOR GRADE 8 STUDENTS

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ABSTRACT

The main purpose of this research was to develop conceptual understanding of acid-base by using 5E inquiry experiments in conjunction with particulate animations, also called molecular animations. The participants of this study were 36 students, purposively selected from the populations of grade 8 students studying at Srimuang Wittayakhan School in Ubon Ratchathani Province during the second semester of 2015. The treatment tool was the intervention of 5E inquiry learning activities of chemistry experiments in conjunction with particulate animations of acid-base for 10 hours. The data collecting tools consisted of a conceptual test including 16 five-choice items and mental model drawings at particulate level of acid-base. The dependent samples t-test analysis of students' conceptual test scores indicated that the post-conceptual test score (mean 23.94, SD 3.17) was statistically significantly higher than the pre-conceptual test score (mean 10.19, SD 4.91) at the 95% confidence level. After the intervention, the percentages of students in mis- and alternative conceptual understanding (MU and AU) categories were decreased by 32.29 and 23.96, while the percentage of students in the sound conceptual understanding (SU) category was increased by 56.25. In addition, the dependent samples t-test analysis of students' scores of mental model drawing at particulate level indicated that the post-mental model score (mean 9.07, SD 1.85) was statistically significantly higher than the pre-pre-mental model score (mean 3.17, SD 1.58) at the 95% confidence level. After the intervention, the percentages of students in the no and mis- conceptual understanding (NU+MU) and in the partial with mis-conceptual understanding (PMU) categories were decreased by 62.51 and 9.26, while the percentage of students in the partial and sound conceptual understanding (PU+SU) categories was increased by 72.22. This verified that the intervention of inquiry experiments in conjunction with particulate animations was effective to develop students' conceptual understanding and mental models at particulate level of acid-base.

INTRODUCTION

Acid-base is one the key concepts that all secondary school students are required to study, while many students revealed that it is one of the difficult chemistry topics since it involves intangible concepts. This could lead them to hold alternative conceptual understanding – conceptual understanding that are not consistent with the consensus of the scientific community which may be partially right but incomplete, or just simply wrong (Mulford and Robinson, 2002). Students' mis- or alternative conceptions is considered as one of the most important issue in learning Science (İşman, Willis, and Donaldson, 2015a). Since students' alternative conceptual understanding, also called mis- and alternative conceptions, cannot be measured by traditional instruments (Stears and Gopal, 2010), the use of activities that promote students' conceptual change should be applied (Demirbaş and Ertuðrul, 2014). Requiring students to draw and explain molecular representations of some acid-base phenomena, such as theories and dissociations of some acids or bases, may reveal their conceptual understandings and identify some of their alternative conceptions.

Previous research studies revealed that the topics that many students tended to hold alternative conceptions, such as acid-base theories (Artdej et al., 2010; Sheppard, 2006), pH and neutralization of acid-base (Sheppard, 2006), acid-base reactions (Cokelez, 2010) and when they had difficulty understanding one of these concepts, they also experienced difficulties in related subjects and had mis- or alternative conceptions (Bayrak, 2013) and wrong mental models (Lina and Chiua, 2007). Some studies revealed that even prospective chemistry teachers accommodate some alternative conceptions, such as neutralization concept, the distinction between strength and concentration of acids, and linking the acids and bases topic to daily life (Boz, 2009).

THREE LEVELS OF REPRESENTATIONS AND MENTAL MODELS IN CHEMISTRY

Previous research studies revealed that many alternative conceptions in some invisible concepts stemmed from the fact that students had difficulty in understanding the link among three levels of representations in chemistry (Çalik et al, 2010). Çalik et al (2010) investigated some studies involving students' alternative conceptions in such topics as acid-base and chemical equilibrium, and summarised that some alternative conceptions appeared because many

students encountered difficulty to visualize chemical phenomena and/or processes at the sub-microscopic level and to link the macroscopic, sub-microscopic (or particulate), and symbolic levels to each other. Representations in chemistry involves three levels as follows (Johnstone, 1993): 1) macroscopic representation, describes bulk properties of tangible and visible phenomena in the everyday experiences of learners when observing changes in the properties of matter, such as color changes, formation of gases, and precipitates in chemical reactions, 2) sub-microscopic representation, also called particulate or molecular representation, provides explanations at the particulate level in which matter is composed of atoms, molecules and ions, and 3) symbolic representation, involves the use of chemical symbols, formula, and equations, as well as molecular structure drawings, diagrams, and models to symbolize matter. It can provide information for both macroscopic (relative amounts or moles of involved substances) and molecular levels (numbers of formula unit of involved substances).

Students' conceptual understanding, especially intangible concepts involves the ability to link among three representations in chemistry. The term 'mental model' was introduced to illustrate how students create a model of understanding of a specific process by the incorporation of new received information into their prior knowledge (Johnstone, 1993). If their models fail to assimilate new experiences, students may modify their existing models or generate alternative models. Mental models play a potential role in learning chemistry at the particulate level because much of the chemistry involved at this level cannot be accessed by direct perception (Briggs and Bodner, 2005). Sound understanding of chemistry involves the ability to connect information at a macroscopic level with information at the particulate level (Johnstone, 1993) or transform these invisible information into equivalent mental models, mostly difficult for many students (Doymus, Karacop and Simsek, 2010). The term 'mental models' in this study context could be defined as the models of understanding (in form of drawings) that students use to relate and describe their understanding of how a process or system functions at a macroscopic, symbolic, and particulate levels. Learning chemistry in the digital age has many visualization learning tools to support students to relate among three levels of representation in chemistry; for example, models (Supasorn, 2015), animations, simulations, and other computer supported or assisted methods (Morgil, Özyalçin Oskay, Yavuz and Arda, 2003) as well as analogies (Supasorn and Promarak, 2015). These tools can be adapted and used to support students' learning in chemistry.

INQUIRY LEARNING ACTIVITIES

Inquiry learning activities have been verified that they possess more advantages over traditional approaches including the encouragement of students to practice using learning resources to enhance their conceptual understandings, and the opportunities for teachers to play roles as facilitators who encourage students to perform the activities through an inquiry process (Deters, 2005). The 5E learning cycle has been proven to be one of the most effective inquiry learning in chemistry (Bybee et al., 2006). It involves students through the following steps: 1) engaged in scientific oriented questions, 2) explore important data to answer the questions by carrying out corresponding experiment, 3) make explanations from the experimental data to answer the questions, 4) elaborate or apply their findings in other contexts, and 5) evaluate their experimental processes and results in a variety of ways. This learning cycle is effective to support students to correct their alternative conceptions (Bybee et al., 2006).

Based on the literature review above, the implementation of corresponding experiments through the 5E inquiry learning approach is effective to enhance conceptual understanding of the corresponding concepts for secondary school students in Thailand who shared the same problems about alternative conceptions and difficulty in understanding acid-base as students in other countries. The use of inquiry experiments in conjunction with a corresponding particulate animations could be more effective to enhance students' conceptual understanding and mental models. As a result, the combination of 5E inquiry experiments and particulate animations was used as the intervention tools in this study to minimize students' difficulty in visualizing and relating what occurs at the particulate level to the macroscopic and symbolic levels of acid-base.

RESEARCH QUESTIONS

These research questions were posed when the developed experiments and particulate animations based on 5E inquiry learning activities were implemented: 1) How do students' scores on the conceptual test and on the mental model drawing of acid-base change before and after performed the corresponding experiments in conjunction with the particulate animations?, and 2) How do the percentages of students in each conceptual understanding category in the conceptual test base and in the mental model of acid-base change before and after they performed the corresponding experiments in conjunction with the particulate animations?

METHODOLOGY

This one group pre-test/post-test study used a quantitative method in its research paradigm. However, some informal interview regarding students' mental models was applied to fulfil the quantitative part.

Treatment Tools:

Two types of treatment tools were developed in this study, small-scale experiments and the particulate animations of acid-base. The small-scale experiments consisted of 1) definitions/theories of acid-base, 2) acid-base dissociation, 3) reactions of acid, and 4) reactions of base. The experiments were designed with regard to some 'green' chemistry principles, such as reducing the amounts of chemicals used, toxic chemicals, and generated wastes (Poliakoff and Licence, 2007). The particulate animations of acid-base for secondary school chemistry (Supasorn, 2015a) were developed by using Macromedia Flash 8. The animations consisted of 1) definitions/theories of acid-base (Figure 1a-b), 2) acid-base dissociation (Figure 1c-d), 3) reactions of acid (Figure 1e-g), and 4) reactions of base (Figure 1h-i). These are now available through http://chem.sci.ubu.ac.th/e-learning/AcidBase2015/.

a) Arrhenius acid and base   b) Bronsted-Lowry acid and base   c) Dissociation of strong acid and base

d) Dissociation of weak acid and base   e) Reaction of acid with base   f) Rxn of acid with metal

g) Rxn of acid with carbonate salt   h) Rxn of base with Zn metal   i) Rxn of base with ammonium salt

Figure 1: Examples of screen captured images of the particulate animations of acid-base

The chemistry experiments were in conjunction used with the particulate animations based on 5E inquiry learning cycle (Bybee et al., 2006; İşman, Willis, and Donaldson, 2015b). As a result, four lesson plans of acid-base (total 10 hours) were developed (Table 1). In each lesson plan, the learning activity began with engagement of students to scientific oriented questions concerning acid-base, then students were requested to explore (mostly macroscopic and symbolic) data for answering the engaged questions through a corresponding chemistry experiment, next they formulated explanations from their macroscopic and symbolic data for answering the engaged questions, they then had a chance to elaborate and relate their macroscopic and symbolic information to the particulate information by studying a corresponding particulate animations, finally they evaluated their understanding at macroscopic, symbolic, and particulate levels.

Table 1: Key learning activities of acid-base

Topic	Experiment	Particulate animation	Time (hour)
1. Definitions of acid-base	Determination of pH of Arrhenius, Bronsted-Lowry, and Lewis acid and base	Arrhenius, Bronsted-Lowry, and Lewis theories of acid and base	2
2. Acid-base dissociation	Dissociation of strong and weak acids and bases, and determination of conductivity of acid and base solutions	Dissociation of strong and weak acids and bases	2
3. Reactions of acid	Reactions of acid with base, magnesium metal, and carbonate salt	Reactions of acid with base, magnesium metal, and carbonate salt	3
4. Reactions of base	Reactions of base with zinc metal and ammonium salt	Reactions of base with zinc metal and ammonium salt	3

Data Collecting Tools:

There were two types of data collection tools in this study. The first one was the conceptual test of acid-base containing 16 five-choice with two-correct-choice items (Figure 2). Each item was worth 2 points so the available score was 32 points. The students were classified as 'good or sound (SU)', 'alternative (AU)', and 'mis- (MU)' conceptual understanding categories based on their answers (see Figure 3), in which the criterion was adapted

from Çalik, Ayas and Coll (2009) and Supasorn and Promarak (2015). If their answers were both correct, one correct and one incorrect, and both incorrect, they were then classified as SU, AU, and MU, respectively.

QUESTION: Which substances are classified as base (choose two best choices)?
    ☒ a) Substance that receives proton (H^+)   ☐ b) Substance that receives hydroxide ion (OH^-)
    ☐ c) Substance that dissociates proton (H^+)   ☐ d) Substance that donates proton (H^+)
    ☒ e) Substance that donates hydroxide ion (OH^-)

Figure 2: Example of a test item in the conceptual test of acid-base

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The other tool was the three mental model drawings at particulate level of acid-base containing Arrhenius and Bronsted-Lowry acids and bases, dissociations of strong base and weak acid, and reactions of acid with base and base with zinc metal. Each mental model was worth 4 points so the available score was 12 points. The students were classified as 'sound (SU)', 'partial (PU)', 'partial with specific mis- (PMU)', 'specific mis- (MU)', and 'no (NU)' conceptual understanding categories based on the percentage of correctness in their drawings. If the percentages of correctness were in the range of 0-19, 20-39, 40-59, 60-79, and 80-100, they were then classified as SU, PU, PMU, MU, and MU, respectively (see Figure 3), in which the criterion was adapted from and Sözbilir, Pınarbaşı and Canpolat (2010) and Supasorn (2015b).

Categories of student conceptual understanding in conceptual test			
Sound (SU): Sound understanding, all conceptions aligned to scientific consensus	Alternative (AU): Incomplete or partial understanding, on the right track but incomplete.		Mis- (MU): No understanding, illogical or incorrect information, simply wrong.	
	Partial (PU): Partial understanding, incomplete conceptions	Partial with mis- (PMU): Partial understanding and partial mis-understanding	Mis- (MU): Wrong understanding, illogical information	No (NU): No understanding, not related to the concepts
Categories of student conceptual understanding in mental models			

Figure 3: Categories of student conceptual understanding or conceptions, adapted from Supasorn (2015b)

Participants:
With prior permission from the school principal and the instructor of the science course during the second semester of academic year 2015, 36 grade-8 students (one classroom) at Srimuang Wittayakhan School in Ubon Ratchathani of Thailand who attended all activities in this study were purposively selected as the participants of this study. Please notice that all research tools (lesson plans and activities, experiments, particulate animations, conceptual test, and mental model drawings) were in Thai in which all examples in this article involved translation into English.

Implementation:
The four lesson plans were implemented as one of the science course learning activity. All participants participated in the following process. They began the process by completing the pre-conceptual test and the pre-mental model drawing of acid-base. They then spent 10 hours for learning four lesson plans based on 5E inquiry learning cycle in which chemistry experiments were used in conjunction with the particulate animations of acid-base. Finally, they completed the post-conceptual test and the post-mental model drawing of acid-base.

Data Analysis:
The data collected in this study were pre- and post-conceptual scores and pre- and post-mental model scores. The paired samples T-test analysis was applied to identify the differences between the means of pre- and post-conceptual test scores and between the means of pre- and post-mental model scores at the 95% confidence level. Class normalized learning gain or <g> was applied to identify the level of learning gain. The topics with $<g> \leq 0.30$, $0.30 < <g> > 0.70$, and $<g> \geq 0.70$ were classified into low-, medium-, and high gain categories, respectively (Hake, 1998). In addition, the percentages of students in each conceptual category of conceptual test and mental models both before and after the intervention was also analyzed.

RESEARCH FINDINGS
The results of this study were divided into two parts, conceptual test scores and mental model scores.

Conceptual Test Scores of Acid-Base:
The paired-samples T-test analysis of students' conceptual test scores indicated that they obtained post-test score (mean 23.94, SD 3.17, 74.81%) higher than pre-test core (mean 10.19, SD 4.91, 31.84%) at the 95% significant level of confidence (Table 2). It also indicated that they obtained post-test scores over 70% in all topics and the

normalized learning gains or <g> were in the medium level in all topics. This finding indicated that the intervention was effective to enhance students' conceptual understanding of acid-base.

Table 2: Students' pre- and post-conceptual test scores of acid-base

Topic (total score)	Pre-test			Post-test			Learning gain		T
	mean	SD	%	mean	SD	%	%	<g>	(T-test)
1. Acid-base theories (10)	3.53	1.84	35.30	7.39	1.36	73.90	38.60	0.60	16.74[*]
2. Acid-base dissociation (10)	2.69	1.33	26.90	7.75	1.32	77.50	50.60	0.69	19.60[*]
3. Reactions of acid-base (12)	3.97	2.05	33.08	8.81	1.45	73.42	40.33	0.60	14.15[*]
Total (32)	10.19	4.91	31.84	23.94	3.17	74.81	42.97	0.63	20.95[*]

[*] Statistically significantly different at the 95% confidence level (p<0.05)

Notice that 'acid-base dissociation' was the topic that they obtained the highest percentage of post-test score and <g>. This could stem because the particulate animation for this topic can clearly illustrate that strong acid/base will completely dissociate, while weak acid/base will incompletely dissociate so their understanding in this topic was almost in the high level.

Consider the percentages of students' in each conceptual category for the conceptual test scores of acid-base (Table 3). Noticed that 'reactions of acid-base' was the topic with the highest and smallest percentages of students in the AU and SU categories, which was aligned with the previous study that reported that many students tended to hold alternative conceptions in reactions of acid-base (Cokelez, 2010). However, after the intervention, the percentages of students in the MU and AU categories were respectively decreased by 32.29 and 23.96, while the percentage of students in the SU category was increased by 56.25. This finding indicated that the intervention was effective to promote students to notice their mis- or alternative conceptions and changes them to the more correct conceptual understanding of acid-base.

Table 3: Percentages of students' in each conceptual category for the conceptual test scores of acid-base

Topic (frequency = no. items x no. students)	Pre-test (%)			Post-test (%)			Change (%)[*]		
	SU	AU	MU	SU	AU	MU	SU	AU	MU
1. Acid-base theories (5x36)	0.00	68.33	31.67	57.22	42.78	0.00	57.22	-25.55	-31.67
2. Acid-base dissociation (5x36)	0.00	68.89	31.11	59.44	40.56	0.00	59.44	-28.33	-31.11
3. Reactions of acid-base (6x36)	0.00	66.20	33.80	52.78	47.22	0.00	52.78	-18.98	-33.80
Total (16 x 36)	0.00	67.71	32.29	56.25	43.75	0.00	56.25	-23.96	-32.29

[*] + and – indicate the increase and decrease changes

Mental Model Drawing at Particulate Level of Acid-Base:
The paired-samples T-test analysis of students' mental model drawing scores of acid-base at particulate level indicated that they obtained post-test score (mean 9.07, SD 1.85, 75.58%) higher than pre-test core (mean 3.17, SD 1.58, 26.42%) at the 95% significant level of confidence (Table 4). It also indicated that they obtained post-test scores over 75% and the normalized learning gains or <g> were in the medium level in all images. This finding indicated that the intervention was effective to enhance students' mental model at particulate level of acid-base.

Table 4: Students' pre- and post-mental model drawing scores of acid-base

Drawing (total score)	Pre-model			Post-model			Learning gain		T
	mean	SD	%	mean	SD	%	%	<g>	(T-test)
1. Acid-base theories (4)	1.03	0.58	25.75	3.03	0.63	75.75	50.00	0.67	13.57[*]
2. Acid-base dissociation (4)	1.08	0.65	27.00	3.00	0.82	75.00	48.00	0.66	14.66[*]
3. Reactions of acid-base (4)	1.06	0.62	26.50	3.04	0.80	76.00	49.50	0.67	14.94[*]
Total (12)	3.17	1.58	26.42	9.07	1.85	75.58	49.17	0.67	26.52[*]

[*] Statistically significantly different at the 95% confidence level (p<0.05)

Consider the percentages of students' in each conceptual category for the conceptual test scores of acid-base (Table 5). Noticed that 'acid-base-base theories', especially Bronsted-Lowry theory, was the topic with the highest and smallest percentages of students in the PMU and SU categories, aligned with the previous studies that reported that many students tended to hold mis- or alternative conceptions about acid-base-base theories (Artdej et al., 2010; Sheppard, 2006). However, after the intervention, the percentages of students in the NU+MU and PMU categories were respectively decreased by 62.51 and 9.26, while the percentage of students in the PU+SU category was increased

by 72.22. This finding indicated that the intervention was effective to promote students to notice their mis- or alternative conceptions and changes them to the more correct mental model at particulate level of acid-base.

Table 5: Percentages of students' in each conceptual category for the mental model drawing scores of acid-base

Drawing	Pre-model (%)					Post-model (%)					Change (%)[*]		
	SU	PU	PMU	MU	NU	SU	PU	PMU	MU	NU	PU+SU	PMU	NU+MU
1. Theories	0.00	1.39	30.56	37.50	30.56	33.33	40.28	22.22	4.17	0.00	72.22	-8.34	-63.89
2. Dissociations	0.00	0.00	27.78	52.78	19.44	40.28	30.56	18.06	11.11	0.00	70.84	-9.72	-61.11
3. Reactions	0.00	0.00	26.39	52.78	19.44	40.28	33.33	16.67	9.72	0.00	73.61	-9.72	-62.50
Total	0.00	0.46	28.24	47.69	23.15	37.96	34.72	18.98	8.33	0.00	72.22	-9.26	-62.51

[*] + and – indicate the increase and decrease changes

Examples of Students' Mental Model Drawings of Acid-Base:
Some examples of pre- and post-mental model drawings at particulate level concerning acid-base illustrate in Figure 3. Please notice that all participants were told that all acids and bases presented in the mental model drawings are indicated if they are strong or weak acids or bases prior to drawing. Student A confused that Arrhenius acid (HCl) dissolved in water as molecules prior to the intervention, but he noticed that the acid dissociates as protons (H^+) and anions (Cl^-) in water after the intervention (Figure 3a). He also confused that Arrhenius base (KOH) dissolved in water as molecules prior to the intervention, but he noticed that the base dissociates as hydroxide ions (OH^-) and metal ions (K^+) in water after the intervention (Figure 3b). So did Student B, he misunderstood that Bronsted-Lowry acid (HCl) dissolved in water as molecules, but he realized that the base acts as a proton donor after the intervention (Figure 3c). He also misunderstood that Bronsted-Lowry base (NH_3) dissolved in water as molecules, but he realized that the base acts as a proton receiver after the intervention (Figure 3d). Student C misunderstood that strong base (KOH) dissociates as molecules in water, but he noticed that the strong base dissociates as hydroxide ions (OH^-) and metal ions (K^+) completely in water after the intervention (Figure 3e). So did Student D, he misunderstood that weak acid (HF) dissociates as molecules in water, but he realized that the weak acid dissociates as protons (H^+) and anions (F^-) incompletely in water after the intervention (Figure 3f).

a) Pre- and post-mental models of Arrhenius acid (HCl)   b) Pre- and post-mental models of Arrhenius base (KOH)

c) Pre- and Post-mental models of Bronsted-Lowry acid (HCl)   d) Pre- and Post-mental models of Bronsted-Lowry base (NH_3)

e) Pre- and post-mental models of dissociation of strong base (KOH)   f) Pre- and post-mental models of dissociation of weak acid (HF)

Figure 3: Examples of students' pre- and post-mental model drawings at particulate level of acid-base
(Please notice that H_2O molecules can be skipped in some drawings for students' convenient)

The findings form this study is corresponding to the previous studies that combination of learning tools that illustrate corresponding information at all three levels of representations in chemistry can support students to gain more conceptual understanding and change their mis- or alternative conceptual understanding to the more correct ones in some intangible concepts (Bayrak, 2013; Çalik et al, 2010; Doymus, Karacop & Simsek, 2010; Suapason and Promarak, 2015). In addition, once students extract relevant information from corresponding particulate learning tools (animations, models, or simulations), they will be able to reconstruct or change their particulate

mental models to be the more complete or correct mental models (Briggs and Bodner, 2005; Cokelez, 2010; Doymus, Karacop & Simsek, 2010; Lina and Chiua, 2007; Supasorn, 2015b).

CONCLUSION
This study verified that that the intervention of inquiry experiments in conjunction with particulate animations was effective to develop students' conceptual understanding and mental models at particulate level of acid-base as their post-conceptual test score and post-mental model score were statistically higher than the pre-conceptual test score and pre- mental model score. In addition, the percentages of students in the less correct conceptual categories (MU and AU in the conceptual test and NU, MU and PMU in the mental model drawings) were much decreased, while the percentages of them in the more correct categories (SU in the conceptual test and PU and SU in the mental model drawings) were much increased. This indicated that the use of inquiry experiments in conjunction with particulate animations was effective to promote students' conceptual changes from the less to the more correct conceptual understanding both at macroscopic and symbolic levels, as well as particulate level.

This study may have implications for chemistry instructors in that performing an experiment might be not enough to help students understand key concepts at the particulate level. Chemistry instructors should apply some corresponding models, animations or other visualization tools featuring particulate level to help students visualize concepts at the particulate level and relate these concepts to the corresponding macroscopic experiment observations and symbolic level (Doymus, Karacop & Simsek, 2010; Supasorn, 2015b; Supasorn and Promarak, 2015) and then obtain full conceptual understanding of chemistry.

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DEVELOPMENT OF SCALE OF ATTITUDE ABOUT SOCIAL STUDIES CLASS, CITIZENSHIP, HUMAN RIGHTS, RESPECT FOR DIVERSITY AND TOLERANCE ISSUES FOR MIDDLE SCHOOL STUDENTS

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ABSTRACT

The main aim of social science education is to brought up active citizens. Active citizen means an individual who can criticize, investigate, can look at the situations with different perspectives, can renew himself according to changing world conjucture, have national and universal values. National values can show differences according to the social, economical and cultural conditions which countries in. However, having basic values like respect for human rights and diversity, tolerance, democracy have importance for both national citizenship and world citizenship. To be able to live in peace and serenity in the world, world citizenship concept's inside has to be filled within the frame of international values. Individuals, who have citizenship sense, have adopted basic universal human values, can show democratical attitude and behaviour in every area, are tolerant, have assimilated that diversity is not a discrimination factor but a cultural wealth, has to be brought up. In this respect, in what way intended population perceives the social science class and the subjects which are class's contents has to be identified. In the wake of the detections that has been done, supporting the positive conditions and finding out the cause and result of negative conditions then remedying them have importance. The main aim of this work is that. One of the most important elements in the stage of scale improvement is factor analysis. In factor analysis, the distribution of the values which measure the same structure is examined. The detection of the matters which have the same features, which will measure the same structure is done by examining these values one by one. It can be interpreted as classification and ranking of those, which are included in the same group, in a bag of mixed nuts. In the process of scale's improvement necessary infrastructure preparations have been completed and 70 matters have been prepared within the program regarding the expert opinion. In the scope of the study, with the permission of Izmır Governorship, Eserkent, Akşemsettin İmam Hatip, Fevzi Çakmak, Cemil Meriç, Şehit Gazeteci Hasan Tahsin, Mustafa Baykaş, Şehit Halit Taş Middle Schools have been regarded as the target population of the study and in these schools pilot scheme has been performed. In this pilot scheme which has been performed on behalf of the scale improvement to 600 people have been reached. In the selection of 600 students disproportionate sampling element method has been used. The data obtained has been analyzed in SPSS 23 program. Scale matters have been evaluated by using factor analysis, by looking the matter's relationships with each other and matter's validity and reliability the main scale has been prepared. The prepared scale with with it's final state consists of 24 matters and 4 subscales.

Keywords: Social Studies, Citizenship, Human Rights, Tolerance

1.INTRODUCTION

Education and teaching are prerequisite for society's building, are main elements in it. In the societies where ignorance levels escalate high the fact that everyday inhumane events are happening is transmitted to humanity each day by media organs. Besides the inhumane activities staying neutral to the events that are taking place unfortunately has become a condition which people adopted. In the countries which have democratical values, in face of the injustices and persecutions that are experienced reactions are being voiced by a specific part of the society comparatively and what is happening are being protested with democratical ways. However, in the countries which are named as ''Third World'', in other words, in the countries where there is no democracy, human rights, tolerance and respect for diversity, where these values are not taught good enough in the education system, the state is deplorable.

Education training have been seen as the biggest power from past to the present for world to be a livable world and to make it free from the negative situation it is in. It is a fact that in the days to come these two elements will be effective. When evaluated in this respect country's education and teaching have importance. While some countries design these education and teaching applications in order to protect their powers, some of them use these to keep pther nation's governments under control. We see the changes and improvements occurring in the

world also in the fields of education and training. Country's training programs can be designed again according to the age's conditions. The importance of the education of the individuals who consist of the society is understood better day by day. At the same time, education systems change constantly. As well as the numerous innovations in this process, different methods and techniques also enter into the education system.

In Turkey, from the day of the proclamation of the republic until today, it is seen that there have been significant changes in the education-training programs. These changes provide positive contributions to the education and training, also it has been observed that negative conditions and efficient results couldn't have been get. That the people in a constant conflict with each other is on top of the problems that have been faced today. Living in a peace and tolerance environment, away from this conflict is something humanity long for. In order to provide this environment, especially teaching the citizenship, democracy and human rights notions well, making the lifestyle that this notions require a life philosophy must be the basic purpose. When the humane values get ahead of the material values then hopes for the humanity salvation can be green again. It is possible for the hopes fort he humanity to be constantly green with the transferring of the universal human values in a solid structure from generation to generation without getting lost in the constant changing and drawing away from the main purpose.

Today people's, society's not showing respect to each other's differences is one of the most important problems about communication. As a result of this, the environment of conflict is appearing. In annihilating of the conflicts education is an important power. With this aim, accepting everyone as they are, calling people to the journey of peace and leaving nobody outside of the atmosphere of the peace must be the main purposes. Subjecting every individual to learning living suitable for their position's, bringing them to human values and sense of humanity is a must. For this, especially curriculums of schools importance is significant. Especially social studies taught in 4, 5, 6 and 7th grades are one step ahead of the topics it includes. Various definitions related to social studies have been made. Some of these are:

İnan (2014: 2) In the ''Introduction To Social Studies Education Book'', social studies are defined as follows: Social Studies; is a lecture which includes the social science's chosen topics considering the level of understanding related to the real life and the society.

It is defined as a work area where students gain basic knowledge, skills, attitudes and values based on the data selected from Social Sciences disciplines to educate responsible and good citizens in elementary schools (Erden,1996: 8).

Social studies is integrating the social science and skill concepts with a interdisciplinary approach with the aim of implementation of citizenship skills in critical social issues (Barth, 1991: 7).

That social studies cover fundemantal issues such as democracy and human rights which in particular play an important role in shaping citizenship, has been stated above. When the society is viewed it is clearly seen that there are nuisances in the teaching of these subjects. Unfortunately, when transmission of the subjects to the students is viewed, that the topics and values such as citizenship, democracy, human rights, respect for diversity, tolerance are given to students only as a concept, therefore students struggle transferring mentioned topics into life and when the society is viewed, the news examined in the media is clearly seen. Continuation of the classical rote education despite the change of program can be showed as a cause of this. As a result of this, it is examined that students make an effort just to get the mark they need to get to pass the social studies class. Instead of this understanding applying activities which will really make the students love social studies, so ensuring that students will give importance to the course topics and their concents are required. From the program in 2005, it is aimed for students to squirm out of the rate logic and become individuals who ask, question, analyze, evaluate, make inferences, look to the events with different perspectives.

1.1 The Purpose and Importance of The Study
To raise a generation, which assimilates the values specified in the content rather than the teaching of citizenship, human rights and democracy which constitutes a large part of the concents of the social studies, which can apply these values to all areas of life, has an utmost importance for the future of the country. The individuals who has citizenship sense,has adopted main universal human values, can show democratical attitude and behaviour in every area, has assimilated that differences are not discrimination elements, but a cultural wealth, has to be brought up. In this respect, understanding the student's attitudes towards social studies and issues involved in social studies such as citizenship, human rights, democracy, tolerance, respect for diversity in the teaching of the social studies have importance in mapping new roads in line with the data obtained. In this study, this issue is focused on and the process of developing a scale about the issue is operated.

2. METHOD
In this section, there are informations about the model of the research, working groups, data collection, data analysis and interpretation of data.

2.1 The Model Of Research
In this study, methods which are applied in order to improve scale have been used. ''Scale of Attitude Towards Social Studies, Citizenship, Human Rights, Respect For Diversity and Tolerance Issues For Middle School Students'' while being prepared, this scale has been complied with scale development criteria. The most important of these, validity, reliability operations. Scale development process is operated by doing factor analysis.

One of the most important elements in the stage of scale improvement is factor analysis. In factor analysis, the distribution of the values which measure the same structure is examined. The detection of matters which have the same features, which will measure the same structure is done by examining these values one by one. It can also be interpreted as classification and ranking of those included in the same group in a bag of mixed nuts.

Factor analysis is a multivariate statistics which aims to explore, to find few unrelated and conceptually meaningful new variables by bringing interrelated 'p' pieces variables together. There are two types of factor analysis approaches, exploratory and confirmatory. In the exploratory factor analysis, a process aimed at finding factors based on the relationships between variables; in the confirmatory factor analysis, the testing of a hypothesis or theory which is determined before about the relationship between the variables is involved (Büyüköztürk, 2011: 123).

In some sources, exploratory factor analysis also used as explonatory factor analysis. While Costella and Osborne (2005) see the explonatory factor analysis as a study to understand the existing structure, explain the confirmatory factor analysis as a study to test the existing structure (Cited by: Erkuş, 2014: 94).

2.2 Study Group
In order to do factor analysis, which is one of the most important elements at the stage of scale development, sample size have importance. There are different opinions about sample size. Tabachnick and Fidell (2001) gave figures on how much the sample size should be in factor analysis. They pointed out that in factor analysis for sample size 50 is too weak, 100 is weak, 200 is medium, 300 is good, 500 is too good and 1000 is perfect. According to these figures, the rulet hat in factor analysis there has to be at least 300 samples has been proposed. (Akt. Çokluk, Şekercioğlu ve Büyüköztürk, 2012: 206).

Kline emphasizes that in factor analysis a sample which consists 200 people as an absolute criteria usually would be enough to extract reliable factors, that where the factor structure is open and in small numbers this figure can be lowered up to 100, but it would be more appropriate to work with a big sample. (Cited by: Çokluk, Şekercioğlu ve Büyüköztürk, 2012: 206).

Sample size is also estimated on the basis of relative measures like matter and factor numbers. Kline (1994) suggests that sample size should be up to 10 times of the number of variables. Bryman and Cramer's (2001) recommendation for sample size is making applications as the number obtained by multiplying the number of variables by 5 or 10. (Cited by: Çokluk, Şekercioğlu ve Büyüköztürk, 2012: 206) As seen in this issue various methods are used. The common result is sample sizes should be in sufficient numbers. Otherwise, in the validity and reliability of the obtained data low values will appear.

The primary one among the important issues touched on by Şencan about the factor analysis is the evaluation of the load factor point. The low load factor point of a material indicates that it is not related to the factor mentioned strongly enough. There is widespread opinion in the literature that the minimum size for a load factor point of a substance should be .30, however there are also theorists who defend that this magnitude should be .40. In deciding the size of the load factor point, the size of the sample must be taken into account (Cited by: Çokluk, Şekercioğlu ve Büyüköztürk, 2012: 206).

According to what Şencan quoted from Kin-Yin, sample sizes are proposed to decide for a substance to remain on the scale (Cited by: Çokluk, Şekercioğlu ve Büyüköztürk, 2012: 206). The criteria of load factor and sample size belonging this, are as in the Table 1 below.

Table 1. Evaluation of The Load Factor and Sample Size

Faktor Load	Sample Size(Person)
.30	350 Person
.40	200 Person
.50	120 Person
.60	85 Person
.70	60 Person

In scope of the study, with the permission of Izmir Governorship, in Eserkent Akşemsettin İmam Hatip, Fevzi Çakmak, Cemil Meriç, Şehit Gazeteci Hasan Tahsin, Mustafa Baykaş, Şehit Halit Taş Middle Schools which are located in Izmir's Karabaglar district pilot scheme has been performed. In this pilot scheme which has been performed on behalf of the scale improvement to 600 participants have been reached.

2.3 Data Collection Tools

2.3.1 Personal Information Form
The personal information form developed by the researcher is used to obtain the personal information of the participants and is provided with the developed ''Scale of Attitude Towards Social Studies, Citizenship, Human Rights, Respect for Diversity and Tolerance Subjects For Middle School Students''. In the personal information form, to the participants questions about the age, gender,education level of parents,family's monthly income,number of siblings,social studies class notes,social studies education are asked.

2.4 Article Writing Process and The Creation of The Form of Scale
The preparation stage of a scale that can identify the attitudes of middle school students towards the social studies, citizenship, democracy and human rights subjects is created. In the process of the development of scale necessary infrastructure preparations are completed, social studies curricula and books are examined. 70 articles have been prepared within the program according to expert opinion. This 70-article pool is designed within the frame of expert opinions to apply pilot scheme to participants.While this 70-article pool is being prepared, participant's level of readiness and their state of development have been taken into consideration. In other words, preparing articles suitable for particicipant' standard has ben given attention to.

In the scale developed by researchers quintet Likert-type rating has been used. The method developed by Likert (1932) to measure attitudes also known as 'scaling with grading totals'. In this method, individuals are presented with a series of attitude statements. Indivudials usually can give answers to these statements by using 'I Totally Agree', 'I Agree', 'I Am Hesitant', 'I Agree' and 'I Totally Agree'. These categories can be in the triplet, quintet,septet and hendecasyllable forms (Erkuş, 2014: 78-79).

According to Tabachnick and Fidell, as a basic rule, each variable's load point must be judged as 0.32 and more. Comrey and Lee's evaluation is given in Table 2. (Tabachnick nd Fidell, 2001; Cited by: Çokluk, Şekercioğlu and Büyüköztürk, 2012:1 94).

Table 2. Comrey and Lee's Scale Variance Evaluation Criteria

Criteria	Evaluation
Being .71 explains %50 of the variance	Perfect
Being .63 explains %40 of the variance	Very Good
Being .55 explains %30 of the variance	Good
Being .45 explains %20 of the variance	Mediocre
Being .32 explains %10 of the variance	Weak

2.5 The Process of Data Collection and Analysis of Data
In the study, in the groups where datas are applied voluntariness is taken into consideration. In the collected data to determine whether the sample size is sufficient Kaise-Meyer-Olkin test and to seperate data into factors Bartlett Sphericity test have been used. In the exploratory factor analysis, for the detection of factors eigen-values-must-be-higher-than-1 rule and slope-debris graph have been used (Kalaycı: 2010: 324). For the reliability of scale's articles Cronbach Alpha internal consistency coefficient has been based on. Obtained data has been analyzed in SPSS 23 program.

Scale articles have been evaluated by using factor analysis, basic main scale has been prepared by paying attention to article's validity and reliability and their relationship with each other.

3. FINDINGS AND COMMENT
In this section, the validity and reliability studies conducted during the development of scale is described. Therefore, exploratory factor analysis and internal consistency coefficient results are included (Cronbach Alfa).

One of the methods used to test the content validity is consulting to an expert's opinion who has general information on research and who can examine the various aspects of research (Yıldırım and Şimşek: 2013: 290). In the study that has been conducted for this purpose, an article pool which in total consist of 70 article has been created according to expert opinion.

In Kalaycı (2005) factor analysis, in determining the sample size one of the important criteria is Kaise-Meyer-Olkin test results. Kaiser-Meyer-Olkin (KMO) is a test that compares the magnitude of the partial correlation coefficient with the size of the observed correlation coefficient. After the results of the test, a comment, that the factor analysis can't be contunied in case of lower ratings than .50, is made. The values for the sample size are given in Table 3. (Leech, Barrett and Morgan, 2005, Cited by: Çokluk, Şekercioğlu and Büyüköztürk, 2012: 207).

Table 3. Kaiser-Meyer-Olkin (KMO) Values Belonging To Developed Scale

Criteria	Evaluation
.50 - .60	Bad
.60 - .70	Weak
.70 - .80	Medium
.80 - .90	Good
.90 - more	Perfect

There are interpretations and the values of the scale devloped within the frame of the criteria below.

Tablo 4. KMO and Bartlett's Test (Developed Scale Values)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	0,859
Bartlett's Test of Sphericity Approx. Chi-Square	10020,934
df	2415
Sig.	0

When Table 4 is examined, at the scope of scale validity study, factor analysis and construct validity has been surveyed. Kaiser-Meyer-Olkin coefficient has been calculated as .859 and Barlett's Sphericity test has been statistically found meaningful. It is seen that survey article's factor load points range between .424 and .683. It i found that first factor's eigenvalue is 9.099 and the variance that it explains is % 12,999, second factor's eigenvalue is 4.519 and the variance that it explains is % 6,456. That the variance explained by the first factor is notable and the first factor's eigenvalue is less than three times that of second factor's can be considered as a proof that the scale is multi-dimensional. (Büyüköztürk, 2010: 137)

Graph 1. Factor Sizes According To The Developed Scale's Article Factor Loads

When Graph 1 is examined, it is seen that there are four different dimensions within the frame of factor analysis that has been made. After the vertical rotation of obtained data with 'varimax' the data below is obtained.

Table 5. KMO and Bartlett's Test (Matters Which Have Load Factor Less Than .30 Are Removed From The Scale and The Analysis is Re-Made)

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	*0,859*
Bartlett's Test of Sphericity Approx. Chi-Square	*10020,934*
df	*2415*
Sig.	*0*

When Table 5 is examined, at the scope of scale validity study, factor analysis and construct validity have been surveyed. Kaiser-Meyer-Olkin (KMO) coefficient has been calculated as .859 and Barlett's Sphericity test has been statistically found meaningful. It is seen that survey article's factor load points range between .126 and .501. It is found that first factor's eigenvalue is 9.099 and the variance that it explains is % 12,999, second factor's eigenvalue is 4.519 and the variance that it explains is % 6,456; third factor's eigenvalue is 3.146 and the variance that it explains is % 4.495; fourth factor's eigenvalue is 1,934 and the variance that it explains is % 2,763 .That the variance explained by the first factor is notable and the first factor's eigenvalue is less than three times that of second factor's can be considered as a proof that the scale is multi-dimensional. (Büyüköztürk, 2010: 137) With the evaluation of this data, it has been concluded that the scale is four-dimensional.

If the decision that articles will be removed from exploratory factor analysis is mad, then aticles must be left out of the analysis one by one. Because with the removal of an article a change may occur in other article's factor load point and this change can meet the order of article acceptance. In this respect it is logical to start the removal of articles with the one whose factor load pont is lowest. (Çokluk, Şekercioğlu and Büyüköztürk, 2012: 223).

In accordance with this explanation, the scale is rearranged and analysises are made again by removing the articles with low factor loads on scale one by one. As described above, in particular, with paying regard to the relationship between factor load point and sample size, the articles which have lower factor loads than .30 are removed from the scale and analysis is made again. There is information about the acquired data in Table 6.

Table 6. *KMO and Bartlett's Test (Matters Which Have Load Factor Less Than .30 Are Removed From The Scale and The Analysis is Re-Made)*

Kaiser-Meyer-Olkin Measure of Sampling Adequacy.	*0,903*
Bartlett's Test of Sphericity Approx. Chi-Square	*5904,861*
df	*861*
Sig.	*0*

When Table 6 is examined, at the scope of scale validity study, factor analysis and construct validity have been surveyed. Kaiser-Meyer-Olkin (KMO) coefficient has been calculated as .859 and Barlett's Sphericity test has been statistically found meaningful. It is seen that survey article's factor load points range between .160 and .540. It is found that first factor's eigenvalue is 8.331 and the variance that it explains is % 19.835 second factor's eigenvalue is 2.781 and the variance that it explains is % 6.621; third factor's eigenvalue is 1.649 and the variance that it explains is % 3.926; fourth factor's eigenvalue is 1,514 and the variance that it explains is % 3.604 .That the variance explained by the first factor is notable and the first factor's eigenvalue is less than three times that of second factor's can be considered as a proof that the scale is multi-dimensional. (Büyüköztürk, 2010: 137). With the evaluation of this data, it has been concluded that the scale is four-dimensional. Also, in the scale 5, 12, 14 and 24th articles are in the status of ''reversing entry''. While doing assessment this case has been paid attention to. Prepared scale's dimensions and the numbers of articles are given below in Table 7.

Table 7. *Matter Numbers and Dimensions Of Class Student's Attitude Scale About Social Studies Class, Citizenship, Respect for Human Rights and Diversity, Tolerance Issues*

Scale Dimesnions	Article Numbers
Attitude Toward Social Studies Class	7
Attitude Towards Citizenship Subjects	4
Attitude Towards Tolerance Value	4
Attitude Towards Human Rights and Respect For Diversity Values	9
Total Article Number	**24**

4.RESULT

At the scope of work, in order to determine middle school student's attitude towards social studies class and citizenship, respect for diversity,tolerance subjects which are included in social studies education ''Scale of Attitude Towards Social Studies,Citizenship,Human Rights,Respect For Diversity and Tolerance Subjects For Middle School Students'' is developed.As the study's result a four-factor scale which is consisted of 24 articles is nobtained. Based on expert opinions it is detected that scale's extent validity has exploratory factor analysis and scale's structure validity. Reliability analysis which is made by calculating Cronbach Alpha internal consistency coefficent as .86 shows that the scale has sufficient reliability coefficient. This study i carried out with 600 students who receive education in the middle schools which are located in Izmir's Karabaglar district. The number of participants is considered sufficient. However, the validity and reliabilty of the scale can also be confirmed with students in other cities and towns. Factor analysis can be made again by collecting data from larger study groups. Consequently, validity of the presented quaternary structure can be tested again.

The data obtained in the study seems reliable. Especially today, in order to place the fact that human life is valuable to all societies, citizenship, human rights, tolerance, respect for diversity values must be processed in a good way and passed on to the future generations. In this respect, more studies are needed which identify the situation and find out the shortcomings in the education of subjects like active citizenhip, global citizenship,human rights,democracy. One of these studies is more space work bout the subjects and scale development. As a result of the investigations, it is seen that especially in the field of attitude scale there isn't much work. The works that are done about this can bring about the disease's diagnosis and as a result, the treatment with it. At the end of the diagnosises, in which direction the negative conclusions are, is determined. What kind of plans and programs will be made for the improvement of these conclusions can be revealed.

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Addition-1: Scale of 7th Grade Students Attitudes Towards Social Studies, Citizenship, Human Rights,Respect For Diversity,Tolerance Subjects

Article No	SCALE ITEMS	I Totally Don't Agree	I Don't Agree	I Am Hesitant	I Agree	I Totally Agree
1.	Social studies is one of my favourite courses.					
2.	Being an active citizen by learning my citizenship rights and responsibilities is important to me.					
3.	Even a scientist from another nation and culture makes a technological innovation, I respect him.					
4.	I think in societies that have democratical values respect and tolerance in people's relations with each other will be in the forefront.					
5.	I get bored when I am studying social studies.					
6.	Being tolerant is an important power for the solution of social problems.					
7.	Cultural differences are like ashurb; every culture creates a seperate flavor without losing its properties.					
8.	I am interested in issues related to our civic dutie and responsibilities taught in social studies class.					
9.	Social studies class is important to me because it teaches our historical and cultural values.					
10.	I care about learning subjects about citizenship because they are related to life.					
11.	For peace and prosperity in society I think that respect for diversity is important.					
12.	I wouldn't attent to class if I didn't have to.					
13.	I don't hesitate being friends with people who have different skin colors.					
14.	I prefer to take another class rather than taking social studies.					

15.	I am glad that people around me are tolerant.					
16.	I respect friends who have different opinions than mine.					
17.	I enjoy studying social studies in my spare times.					
18.	I respect diversity because a person's pleasures are specific to him.					
19.	As a citizen of the Republic of Turkey, our civic rights and responsibilities mut be taught to all citizens.					
20.	I evaluate the fact that, believers of different religions were left free to live their religions in Ottaman Empire, as a positive political policy.					
21.	I am interested in subjects taught in soacial studies.					
22.	I respect diversity to create a living-together culture.					
23.	Tolerance is a glue that holds the language, religion,race,different nationalities together in peace and tranquility.					
24.	A country can become stronger by fostering its diversity.					

DEVELOPMENT OF STUDENT TEAM COMPETENCES WITH POTENTIAL TO BE UTILIZED IN PRACTISE

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ABSTRACT

Modern approaches to education at universities press for an increase in the proportion of independent work of students and their participation in real-life tasks and scientific procedures. This effort is directly proportional to increasing demands on students, their experience and practical skills. On the other hand the need for development of scientific and research activities together with requisite economic behaviour of universities is on the increase.

This paper is a report on the study focused on determination of differences, common behavioural characteristics and attitudes of students in various stages of a project processing. Further the study is concerned with competences of students in different grades of education, their motivation and attitude to work on the assigned tasks. It also detects an impact of students´ study structure on their performance and quality of their work and analyses students´ behaviour. On the basis of the qualitative analysis the study deduces incentives for an optimization of student team structure as a self-contained unit qualified for working on the real-life tasks taking into account specifics in arts oriented schools.

Keywords: team co-operation, student competence, team optimization, higher education

INTRODUCTION

Collaboration of universities with practice i.e. commercial and public administration entities is one of the important means leading to the increase in student employment rate in the labour market. The upward tendency to interconnect knowledge with practice is well promoted by the government, university managements and the entities of practice themselves.

This effort is protected including by the Strategic plan for educational, scientific, research, development and innovation, artistic and other creative activities of higher education for the period 2016- 2020, which was released by the Ministry of Education, Youth and Sports. Here is among the priority objectives mentioned increasing the skills of students and the university staff for the transfer of knowledge between academic and application spheres and develop cooperation with external partners in order to improve the relevance of research to practical applications and, ultimately, strengthen the capacity for commercialization of knowledge. Relevant aiming of university development undoubtedly resides in economic behaviour and collaboration with practice which works as a quality indicator of university through the mediation of indicators of employment rate, references, external communication etc. By involvement of students in these activities we can accomplish higher economic performance, interconnect students with practical sphere and raise their employment rate.

The faculty of Multimedia Communications of Tomas Bata University in Zlin closely cooperates with commercial companies and public sector. There exists a great amount of levels and forms of co-operation. Students throughout the faculty gain a whole range of practical experience during their studies. Mostly they cover educational stays, internships in agencies, participation on commercial projects, experience acquired within a taught subject Communication Agency and various competitions, etc. Such professional experience and contacts are both key factors in the employment rate of graduates and also an added value of study at the Faculty of Multimedia Communications.

In 2010 Centre for environmental issues of Charles University in Prague issued a publication titled "Methodology of team work and team creation for tertiary education" which focuses on processes, relationships and team dynamics in team co-operation. In the publication the team of authors addresses theoretical solutions and possible team creation approaches, their assessment, team dynamics and therefore it can serve as a methodological guide for coordination of team processes at university. This proposed study makes use of some of the theoretical solutions of the publication and at the same time it is grounded in other authors´ publications. In qualitative research it verifies the theoretical solutions in practice on the sample of students from two universities which are both art oriented. Primary data gathered from the research should be utilized for a formation of basic theoretical solutions contributing to a foundation of organization units consisting of students,

alternatively guarantors and educators. The meaning of these units resides in engaging students in science-research and economic activities at the university. „Also contributing to the increase in undergraduate student participation in research with faculty members is the fact that this activity has been widely proclaimed as highly desirable by various national organizations. Equally important, recent research has underscored the value of having a research experience as an undergraduate." (Shouping Hu, George D.Kuh, Joy Gaston Gayles, 2007).

Tertiary education is a sector which has a high share on society and economy development. Simultaneously it represents a foundation for a sustainable growth in the given state. In the Czech Republic the year 2014 was a turning point in era during which the quantitative expansion in the sphere of tertiary education took place. Nowadays a rapid decrease of students sets in due to the demographic slump and universities commence rather on quality of their activities and strengthening a value and relevance of the education perceived by students. In 2015 the Ministry of Education of the Czech Republic (hereinafter referred to as MŠMT) issued a document "A framework of tertiary education development up to the year 2020" which is a strategic document adjusting the basic development priorities of the Czech tertiary education; (2015) Rámec rozvoje vysokého školství do roku 2020 [On-line]. Besides that the document is concerned with so called transmissible competences which are one of the concepts of ascertainment of university graduate readiness to enter the labour market. In the long term MŠMT has been monitoring this aspect which helps to understand why some groups of graduate students prove more successful in the labour market (or in public life) and others do not. Among the transmissible competences we rate those skills and abilities which are required from the graduates by the Czech employers across the sectors far the most. With regards to the particular competences they are namely: ability to communicate and negotiate with people (communication skills), skill to identify and solve problems, ability to bear responsibility, skill to decide individually and ability of creative and flexible thinking and behaviour. The research which is a part of this document shows that there is a high number of university graduates with insufficient level of highly demanded competences required by employers which are the abilities to communicate and negotiate with other people. According to the assessment of the graduates themselves the university prepared them on the average level of these competences. The presented study follows on the "Framework of tertiary education development up to the year 2020" and deals with one of the aspects which is considered an important indicator of university graduates readiness to enter the labour market by MŠMT.

THE STUDY
This particular study was financed from the Internal Grant Agency of Tomas Bata University in Zlin. The aim of the study is to deduce impulses for student team structure optimization, as an autonomous functional unit competent to real assignment or task solving with regard to the specifics in focus of art oriented university, on the basis of qualitative analysis. The main objective of the study is a determination of differences and common characteristics in student behaviour and attitudes in different stages of project development. Other objective is ascertainment of student competences in different education levels, finding out the student motivation and attitudes to work on the assigned task, revelation of study structure influence on the performance and work quality, student behaviour analysis. The carried out research aimed to determine the range of competences, knowledge, abilities of students working in teams across various levels of education, their optimum number, composition and roles of those students engaged in the project, rate of educators or guarantors involvement and influence on successful project completion, influence of student study plan structure on project processing, student motivation and motivation factors, influence of experience gained at school and necessity of technical facilities and equipment for the successful project completion. The study was accomplished via a qualitative research by utilizing research methods of observation and group interviews. The research was performed with students from two universities by name University of Economics in Prague, the Faculty of Informatics and Statistics and Tomas Bata University in Zlin, the Faculty of Multimedia Communications. The study of the specialization of Marketing Communications at the Faculty of Multimedia Communications of Tomas Bata University in Zlin is purely focused on marketing, marketing communications, PR and other relating fields. On the other hand the students from the Faculty of Informatics and Statistics of University of Economics in Prague are educated in the field of multimedia in the economic practice. Apart from the basics of marketing they are educated in the area of multimedia which means that during their studies they attend subjects such as JAVA programming, audio-visual communication, principles and application of 3D graphics and the like. Their studies are more concentrated on multimedia, communication and information technologies. From the reason of a similar specialization of these study fields and due to the intersection of several study subjects the students of these study branches were selected for the research although their specializations are dissimilar by the diverse depth and width of marketing or multimedia orientation. In November 2015 a workshop was organized and during its course students worked on a creative assignment in teams consisting of the students of both universities. Students were chosen into the teams by the means of a random drawing but each team had to be created by representatives of both universities. Each team comprised 5 students where two or else three students were from the same university and vice versa. In the process of their work and following outcomes presentation

on the second day of the workshop a participant observation of the student teams took place. This procedure was followed by group interviews which were lead in accordance with a pre-set scenario.

The presented research was the first phase of a long-term research of students teamwork above mentioned universities, of which total duration is more than a year. During this time there will at least two other investigations within other joint creative workshops.

METHODOLOGY

Before the commencement of the research the target groups were defined as 2nd an 3rd grade students of the study field Multimedia in Economic Practice from the Faculty of Informatics and Statistics of the University of Economics in Prague and students from the 2nd to 4th grade from the study branch of Marketing Communications from the Faculty of Multimedia Communications of Tomas Bata University in Zlin. The total number of students participating in the research was 21. A scenario for the student team interviews was formed; instructing of observers was undertaken and at the same time the observation criteria were set: process and form of team roles division, frequency of team roles representation (Belbin, 2012), occurrence of conflicting situations in teams (in which phase, reason, solution), phases of team development (Adair, 2004), involvement of educators.

Adair´s system model, from which the complete construction of action leadership results, is comprised of three reciprocally influencing segments: task - team - individual in the context of environment. According to the author the main difference between a team and a group is that individual members of the team mutually complement each other whereas in the group the members are mostly interchangeable. In a well formed team a diversity and dissimilarity in a team is minded. A different status is appreciated; it will help the team group to achieve a goal. In accordance with Adair there are five methods of conflict solving - confrontation, cooperation, compromise, withdrawal or adaptation. These methods were monitored and recorded during the interview of all the student teams. Each of the teams goes through the phases of development in the course of their work. Various authors state different numbers and titles of the individual stages and characteristic features of the group development process. As a general rule from four to six stages are presented. Although the particular phases follow one after the other in a given order, they are distinctive by their length but with no clear borders. In this study B. Tuckman´s theory, which presents four phases of team development: forming, storming, norming and performing, was utilised. By the first phase he characterises dependency on a team leader, people meet and introduce among themselves, get to know an assignment and its objectives. During the phase of storming individual members try to make the group to satisfy their personal needs which is a reason for conflicts and emotional streaming emergence and a dispute over influence in the group may appear. Norming phase is distinctive by cohesion and exchange. In order to overcome a conflict a rule setting and group communication can aid. Collective attitudes, values and expectations are formed. In the last phase the team is capable of productive problem solving. The group works as one to achieve the goal. Individual relationships are stabilised. Those team development phases were recorded all the time during the student team work process within the observation method. The study makes use of a theory of Dr Meredith Belbin who is an author of team roles theory, which is described by the author as a "tendency to behave, contribute and enter the relationships with others in a certain way". Belbin distinguishes altogether nine roles - implementer, shaper/leader, coordinator, plant/innovator, resource investigator, monitor evaluator, team worker and finisher. The output of the Belbin´s study is besides other things a finding that a balance in a team is a key factor of success, not the level of intellect. The most successful teams are those with team members holding the most varied spectre of the roles mentioned above. In the proposed study Belbin Team Role Inventory was applied and filled in by the students before the group interviews were held. Concurrently the observers assigned the team roles to the students during their work on the task in accordance with the methodology. To achieve the pre-set goals - realisation of outcomes - following qualitative research methods were employed.

- hidden participant observation during the workshop including taking of an audio-visual record for the purpose of findings analysis and verification
- group interview - interviews with individual student teams participating on the workshop including taking of an audio-visual record for the purpose of findings analysis and verification

FINDINGS

From the realized study consisting of the observations and the group interviews it is evident that all four teams worked without any serious conflicts and dissimilarities. If the conflict appeared it was solved by a method of compromise. Members of all the teams reached a consensus regarding the necessary steps, set the deadlines naturally and in all cases just one, final, was set and met. All the teams preferred to continue working in a form of personal meetings. They all presented the completed task at full strength on which they agreed too. The study did not affirm assumption that the students would allocate particular tasks according to their specialization or different focus of study plans of their university but quite the other way around they all co-operated in each phase of the project and complemented each other. Three out of four teams consulted a participating educator about the course of their work. They evaluated the consultation as very seminal. The majority of consultations

occurred in the phase of performance and were related to the steering their course of actions the right way. As emerged from the interviews the motivation to the workshop participation was an opportunity to meet new people, acquire experience, visit new environment and gain new contacts. A diagnostics of team roles by Belbin resulted in findings that compositions of the teams were very heterogeneous regarding the team roles which was not premeditated but it resulted from casting lots. Merely in one team a leader who led the team was agreed upon. His team role was also affirmed by the Belbin Inventory. In the rest of the teams the leadership was taken over by students who were identified as implementers, plants/innovators or coordinators by the Belbin Inventory. Nevertheless despite the absence of the team role "leader" the teams worked effectively and reached as a high quality result as the team with the present team leader (according to the Belbin´s methodology).

The excerpt of interviews records after the workshop represents the point of view of participating students who acknowledge the possibility of cooperation with students from another university: "[female student UTB], I agree with you that because we were mixed in teams it was more beneficial also by the reason that when we were working in the teams where we did not know each other so well and therefore we were forced to improvise, co-operate, get to know. But I suppose that it is good that it was done this way and that we just do not plow our own furrow in Zlin because later we will come to the real job and find out that it is a bit different and this way we can put these perspectives together."

The development phases of each student team were recorded from the hidden participant observation. The Bruce W. Tuckman´s model was used for this purpose (Tuckman, 1999). From the graph below it is clear that the longest lasting time period was "performing" whereas the "norming" phase stretched for the shortest time (except the team A). The team A is remarkable by the longest norming phase and at the same time the fact that it was the only team with a leader confirmed also by the Belbin Inventory. In the cases where the phase of norming and standardization is too powerful the decrease in team creativity can appear. But this was not the case of this study. The high level of creativity typical for students from art oriented university probably suppressed or reduced the phase of norming to a minimum.

The

qualitative research did not reveal a difference in approach of the students to the assigned task in relation to their study field or university where they study. It implies that members of all the teams worked in all of the phases together. The research confirmed that students acknowledge co-operation with students from other university. This opportunity enables them different perspective on problematics, enriches them of various experience and practical knowledge, and complementing with others. In addition to other group interview questions the students were also asked for an opinion on an optimum number of team members. This is dependent on the task assigned. Nevertheless the average number suggested is 4 members. The higher number of members would make it impossible to communicate flowingly and effectively in the team and would disrupt decision processes. On the other hand a lesser number of team members would lead to ineffective and insufficient creative work results. Students stated that at the beginning of their studies respectively in the first grade of the university they lacked a

skill to create a complete and constructive concept without leaving important details out. From 1st to 3rd grade of their studies they broadened their knowledge of processes and methods in the field of marketing or utilizing of multimedia in practice.

Prior to and after the workshop all the participating students filled in a table "A perceived differences method" in which they checked their expectations (before the workshop) and their real impression from the workshop after its completion. The results of this method based on frequency of answers showed that: prior to the cooperation the students stated that it is dependent on a particular persons - students from which the team will be built. In accordance to their opinion the type of university and study field does not matter. After the workshop the majority considered the co-operation with other university students very positive. Their final impression from the collaboration with other university students exceeded their expectations. Regarding their expectations of conflicts the students were rather sceptic - they checked the option that the conflict may happen but the team will be able to solve it. At the end they evaluated the co-operation as effective and without complications. The same applies to the consultations with educators. In the tablet field "expectations" they admitted that they will probably make use of consultations and in the real assessment they not only consulted with educators but also evaluated that as very beneficial. In the assessment of the team work quality level they were very positive prior to the initiation of their work and believed that their team has a great chance to succeed. In the backward assessment they confessed that despite the overall satisfaction everything did not come up to their expectations.

A Perceived Differences Method – Expectations (prior to a wokshop)

Influence of co-operation with other university students	Co-operation with other university students will be a benefit (9x)	I do not care whether we are mixed or from the same university - it depends on particular people (11x)	Co-operation with other university students will rather decelerate and weaken our team
Occurrence of conflict situations in a team	Team will work without complications and effectively (3x)	Some conflict may appear but we will solve it (16x)	I expect that we will argue a lot and that we will hardly reach a consensus (1x)
Influence of knowledge and experience gained from university studies	We will for sure apply what we have learnt extensively (7x)	We will probably apply what we have learnt but we will mostly use common sense (13x)	I doubt that we will apply what we have learnt at university
Influence of educator/ consultant	We will certainly need consultation or advice (5x)	We may use possibility to consult (13x)	We will be self-sufficient (2x)
Tem co-operation quality level	Our team has a great chance to succeed (12x)	Sometimes it will not go well but it will not let us down (8x)	I cannot imagine that it will work

A Perceived Differences Method – Reality (after a wokshop)

Influence of co-operation with other university students	Co-operation with other university students was a benefit (16x)	It was not important from which university we were - it depended on results of individual work (3x)	Co-operation with other university students rather decelerated and weakened our team
Occurrence of conflict situations in a team	Team worked without complications and effectively (12x)	Although a conflict appeared we solved it (6x)	We argued a lot and it was hard to reach a consensus (1x)
Influence of knowledge and experience gained from university studies	We applied what we have learnt extensively (6x)	We applied some knowledge we have learnt but primarily we used common sense (13x)	We applied almost nothing from what we have learnt
Influence of educator/ consultant	The possibility to consult was beneficial (14x)	We used possibility to consult but it did not help much (3x)	We were self-sufficient (2x)
Tem co-operation quality level	Our team succeeded in every respect (7x)	Something did not go well but we are satisfied with a result (12x)	The team did not work as it was meant to

CONCLUSIONS

The study presents the results of qualitative research realized in pursuance of co-operative workshops of students from University of Economics in Prague, the Faculty of Informatics and Statistics and Tomas Bata University in Zlin, the Faculty of Multimedia Communications. The total number of participants was 21 from both universities. "Relevant prepared analysis of the students needs demonstrated already preallocated potential demand for education in particular areas and form but also the possibility of a synergistic effect of educational activities at their subsequent implementation in practice of the cooperating companies and institutions." (Šedová, Juříková, 2014, p. 18)

From the results it is evident that the student team co-operation is an essential element of university studies which cannot be underestimated and at the same time great importance is attached to so called transferable competences of students. Those competences help the students to be employed more easily, collaborate with colleagues at the workplace and to cope with everyday work responsibilities. Possible conclusions for

optimization of work teams comprised of university students are support and development of team work and its dynamics from the side of tertiary education providers.

It is requisite to stimulate the student practice, study visits, internships not only at the Czech institutions, companies and universities but also abroad. The motivation for students which should be appealed to is meeting with their peers from different specialization or study fields, acquiring new experience and practical skills, visiting new environment - see other places/cities and last but not least gaining contacts. The study affirmed affinity of study fields and consequent similar or identical working procedures of students. The student attitudes and work approach was very alike and the differences minimal although they had various theoretical base. Potential dissimilarities in opinions and approaches were considered very beneficial and useful for the team as same as for individuals. The study also validated that interdisciplinarity is a current trend and the right way to the student potential development and the universities themselves. Students stated that in the first year of their studies they were not skilled enough to create a complete and constructive concept and they did not know marketing and multimedia field processes and their theoretical base. They were taught these not earlier than in the first study year. We can therefore deduce that a student becomes competent to an individual creative activity at the earliest in the second grade of studies. And of course the longer the study the more considerable knowledge and experience is and also the more self-confidently and professionally the students perform. According to the results of the study optimal student team should encompass 3 to 5 students. In ideal case the Belbin team roles should be represented in the widest scope possible and the role of a leader, whose contribution to the team is mainly coordination, discipline and keeping the team´s balance, should be present primarily.

The qualitative research was a pretest the results of which cannot be generalised from the reasons of assignment and student specialization variability and variableness in many other factors which can influence the outcomes of the research. This study allows for specifics of a study at art oriented university. At different type of university dissimilar findings can be predicted. A similar study continuation with other university students with other specializations suggests itself. The process of the research is also influenced by a form and type of the assignment. Interesting and useful data would be brought by a research - comparison of student approach to the team co-operation on an international scale.

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Belbin Team Role Inventory

implementer, shaper/leader, coordinator, plant/innovator, resource investigator, monitor evaluator, team worker and finisher

DEVELOPMENT OF SUPPORT STRATEGIES FOR STUDENTS WITH DISABILITIES THROUGH THE SWOT ANALYSIS: A CASE STUDY OF THE CENTER FOR STUDENTS WITH DISABILITIES AT THE P UNIVERSITY IN KOREA

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ABSTRACT
Although the needs to support post-secondary education for students with disabilities are increased, the educational environment is still not enough. The purpose of this poster is to analyze the internal environment and external environment of a support center for students with disabilities using SWOT analysis and present the developmental strategies. The development strategies from SWOT analysis are to expand center's expertise, increase cooperation between the authorities, strengthen the notification and publicity campaign, expand production of useful information and accessibility, and establish the identity and mission of the center.

Key words: SWOT analysis, strategic analysis, support for university students with disabilities, Support Center for Students with Disabilities.

INTRODUCTION
Importance of education has been emphasized ever since due to the rapid changes in the educational environments and technology(D. Kim, D. Lee, S. Son, & H. Koh, 2015). However, the educational attainment of people with disabilities is still lower than nondisabled people(B. Hong, 2009). Only 43.4% of people with disabilities get a high school or higher education, whereas 71.1% of nondisabled people do in Korea (Ministry of Health and Welfare, 2014). Low educational attainment of the people with disabilities makes them socially disadvantaged.
The post-secondary education support policies for students with disabilities were established in the mid-1990s in Korea and the rates of university acceptance have increased steadily. But the support for students with disabilities is not satisfactory yet(T. Lee, Y. Oh, 2015). Education for People with Disabilities Act - 2007 mandates that universities establish a Support Center for Students with Disabilities to provide services to meet the needs of individuals with disabilities. However, more than half of the universities are still evaluated to be insufficient by the Assessment of Education Welfare Support for College Students with Disabilities (Ministry of Education, 2015). It is necessary to analyze the current support system for students with disabilities in the university and explore the ways to establish better school environments for them.

Method and Goals
   The purpose of this study is to identify strategies to provide better services for students with disabilities by analyzing internal/external environments of the Support Center for Students with Disabilities (which is a legally-supported official organization) on the basis of the case study of the P university.
The SWOT analysis was used to determine the factors such as strengths, weaknesses, opportunities, and threats of the Support Center for Students with Disabilities at the P university. Various materials were collected for the analysis such as laws, government policies for special education, survey reports, self-evaluation of the P university on the support for students with disabilities, and previous research etc. We developed our future directions for the center on the basis of the SO strategy, the WO strategy, the ST strategy, and the WT strategy, which are obtained from the SWOT analysis.

Results
Under the SWOT analysis, the factors on opportunities, threats, strengths, and weaknesses were identified. Any conditions on the external environments outside the Support Center for Students with Disabilities are analyzed as

opportunities and threats. The factors as opportunities include expansion of laws, development of government policies, etc. The factors as threats include the location of school (accessibility problem), lack of understanding of school members, lack of operational manuals, etc.

The internal conditions of the Support Center for Students with Disabilities are analyzed as strengths and weaknesses. The factors as strengths include the center as a legally-supported independent organization, professional qualification of the center staff, arrangement of assistive technology equipment, assistance for studying and campus living, etc. The factors as weaknesses include the lack of identity and unclear future plans (mission) of the center, communication problems about service information, etc.

The various strategies for the Support Center for Students with Disabilities were developed from the SWOT analysis. The main strategies include the following: First, the SO strategies include expanding the Center's expertise and increasing the active cooperation among the school authorities. Second, the WO strategies involve strengthening the notification of the center and increasing the publicity campaigns to improve awareness of disabilities. Third, the ST strategies include expanding the production of useful information and the accessibility to the center. Finally, the WT strategies include establishing the identity of the center and setting up the specific plans (mission) of the center.

Discussion

This study investigated the factors, such as strength/weakness/opportunities/threats, from the internal and external environments of the Support Center for Students with Disabilities at the P university, and derived the strategies from the SWOT analysis. Application of the strategies would improve the support system of the center. The results are expected to guarantee the quality of the university life of students with disabilities. Further research will be in order with respect to the execution, control, and feedback of conducted strategies.

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DEVELOPMENT OF THE SUCCESS RATE IN MATHEMATICS 1 AT THE COLLEGE OF POLYTECHNICS JIHLAVA (CZECH REPUBLIC) IN 2006–2015

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ABSTRACT

This paper addresses the development of the exam success rates in Mathematics 1 at the College of Polytechnics in Jihlava −CPJ (Czech Republic). The analysis used data from the school information system. We have observed the trends in development of the success rates with regard to individual CPJ study programmes in 2006-2015. Obtained material consists predominantly of categorical data, that is why the contingency tables analysis and correspondence analysis were used to assess the dependencies. The research showed that in these years the success rate in Mathematics 1 has been decreasing in all of the monitored study programmes. In general, technically oriented programmes (Applied Computer Science and Computer Systems) showed lower success rate in mathematics, while the success rate in the economic programmes (Finance and Management and Travel and Tourism) is higher. To reverse the trend of the growing failure rate we introduced the course called Seminar in Mathematics for students who failed the entrance test from high school maths. At the same time, we have been innovating the e-learning modules and working on the textbooks for Seminar in Mathematics that can be completed even within intensive summer and winter schools in mathematics.

INTRODUCTION

It is often said nowadays that the level of mathematical knowledge is decreasing in the Czech Republic. The same applies to the College of Polytechnics in Jihlava (CPJ), where students encounter mathematics in the following courses −Applied Computer Science, Travel and Tourism, Finance and Management and Computer Systems. One may expect future economists and computer experts to be equipped with some basic mathematical knowledge, which is a necessity for such professions. The objective of our research was, therefore, to assess the development of success rates in Mathematics 1 at the College of Polytechnics in Jihlava in the past 9 academic years. A detailed success rate analysis was carried out with regard to the respective CPJ courses. We used contingency tables analysis and Pearson's test of independence to test the dependencies. Row relative frequencies and the graphic outputs of correspondence analysis (correspondence maps) were used to test the character of dependence.

A paper by Zámková and Blašková (2014) focused on similar issues. The paper's objective was to assess the Mathematics-1 exam success rate at the Faculty of Business and Economics of Mendel University in Brno. Another article (Fonteyne et al, 2015) assesses the impact of mathematical knowledge and skills on Ghent University students' success rate in a statistics course. Similarly Kučera, Svatošová, and Pelikán (2015) analysed the relationship between the admissions mathematics test results and the success rate in Mathematics, and Mathematical Methods in Economics. A publication by Sonnert, Sadler, and Bressoud (2015) deals with the students' attitude toward mathematics in relation to the introductory calculus course and other relevant influential factors.

The impact of the decreasing quality of high school mathematical education on university success rates in mathematics was addressed by Kučera, Jindrová, and Vydrová (2013). Universities are accepting less talented students due to the fact that there are fewer eligible candidates. This is a result of decreased population. The authors examined the success rate on courses that require mathematical skills (statistics, operations research) via a questionnaire survey. Kouřilová and Bebčáková (2015) concluded that the mathematical knowledge of students coming from high schools is decreasing each year. Uysal (2007) compared the success rate in mathematics at selected schools in Turkey.

MATERIALS AND METHODS

Primary data was taken from the College of Polytechnics information system. The categorical data includes students' success rates in Mathematics 1 for the years 2006-2015 and relevant identification variables.

Mathematics 1 is supposed to provide students with basic knowledge of mathematical analysis and linear algebra.

Contingency tables present an easy way of displaying relations among categorical data. Depending on the character of the data we then used applicable tests of independence. According to Řezanková (1997), for the case of a contingency table of the r x c type (r is the number of rows, c is the number of columns) we most often use the test statistic:

$$\chi^2 = \sum_i \sum_j \frac{\left(n_{ij} - e_{ij}\right)^2}{e_{ij}}, \tag{1}$$

where e_{ij} is the expected frequency and n_{ij} the observed frequency. We use the statistic χ^2 in Pearson's chi-square test with asymptotically $\chi^2_{(r-1)(c-1)}$ distribution. The null hypothesis of the test assumes independence. For further details see Hindls (2003). The condition that maximum 20% of the expected frequencies are less than five must be met in order to use the Pearson's chi-square test, see Hendl (2006) and Agresti (1990). We use Fisher's exact test in other cases or we calculate the simulated p-value of χ^2 statistic, see Anděl (2005).

Correspondence analysis that was used for this study is a multivariate statistical technique, which allows the display and summary of a set of data in two-dimensional graphic form. It is traditionally applied to contingency tables −correspondence analysis decomposes the chi-squared statistic associated with this table into orthogonal factors. The distance between single points is defined as a chi-squared distance. The distance between ith row and i'th row is given by the formula

$$D\left(i, i'\right) = \sqrt{\sum_{j=1}^{c} \frac{\left(r_{ij} - r_{i'j}\right)^2}{c_j}}, \tag{2}$$

where r_{ij} are the elements of row profiles matrix $\mathbf{R}$ and weights c_j are corresponding to the elements of column loadings vector c^T, which is equal to mean column profile (centroid) of column profiles in multidimensional space. The distance between columns j and j' is defined similarly. The aim of this analysis is to reduce the multidimensional space of row and column profiles and to save maximally original data information (Hebák et al., 2007). The total variance of the data matrix is measured by the inertia, (see, e.g., Greenacre, 1984), which resembles a chi-square statistic but is calculated based on relative observed and expected frequencies. Unistat and Statistica software was used for primary data processing.

FINDINGS
In the surveyed period of time there were more women than men enrolled in the study programmes that include maths courses see [Table 1].

Gender	Number of students	Percentage
Men	3 216	39.2%
Women	4 988	60.8%
Total	**8 204**	

Table 1: Students of CPJ according to gender.

The frequency table see [Table 2] shows that when comparing the programmes that include maths, the majority of students enrolled in Finance and Management (FM) (57.8%), followed by the Travel and Tourism (TT) programme (24.4%). The lowest number of students enrolled in the technically oriented programmes of Computer Systems and Applied Computer Science, approx. 9%.

Study programme	Number of students	Percentage
Applied Computer Science (ACS)	703	8.6%
Travel and Tourism (TT)	1 998	24.4%
Finance and Management (FM)	4 743	57.8%
Computer Systems (CS)	760	9.3%
Total	**8 204**	

Table 2: Students of CPJ according to the study programme.

The programmes that include maths courses were attended mostly by full-time students (70%), see [Table 3].

Form of study	Number of students	Percentage
Part-time	2 386	29.1%
Full-time	5 818	70.9%
Total	**8 204**	

Table 3: Students of CPJ according to the form of study.

Row relative frequencies see [Table 4] show that the lowest maths success rate is in the technically oriented programmes (CS and ACS) −about 32%. Success rate in the economic programmes (FM and TT) is higher − around 45%. The observed p-value is less than 0.001, which implies strong statistical dependence.

Row relative frequencies	Succeeded	Failed
Finance and Management	44.99%	55.01%
Applied Computer Science	32.15%	67.85%
Computer Systems	32.24%	67.76%
Travel and Tourism	45.70%	54.30%

Table 4: Contingency table: Study programme and success rate in Mathematics 1.

Furthermore, row relative frequencies see [Table 5] and the graphic output see [Figure 1] show that the success rate in Applied Computer Science has been stagnating for a long period of time at 40% to 50%. Years 2012−2013 saw a significant turn and since then the success rate is maintained below 20%. The observed p-value is less than 0.001, which implies strong statistical dependence.

Row relative frequencies	Succeeded	Failed
2007/2008	42.70%	57.30%
2008/2009	38.55%	61.45%
2009/2010	46.67%	53.33%
2010/2011	41.67%	58.33%
2011/2012	49.15%	50.85%
2012/2013	12.68%	87.32%
2013/2014	14.63%	85.37%
2014/2015	19.57%	80.43%

Table 5: Contingency table: Applied Computer Science −monitored period of time and success rate in Mathematics 1.

Figure 1: Applied Computer Science −monitored period of time and success rate in Mathematics 1.

The correspondence map see [Figure 2] shows clearly that there has been a significant decrease in the success rate; in the figure years 2012–2015 are the closest to the F grade, which was therefore the most frequent grade in this period of time. The remaining years also show not very positive results −mainly D and E grades.

Figure 2: Correspondence map: Applied Computer Science −monitored period of time and final grades in Mathematics 1.

Row relative frequencies	Succeeded	Failed
2004/2005	65.40%	34.60%
2005/2006	72.33%	27.67%
2006/2007	84.62%	15.38%
2007/2008	61.17%	38.83%
2008/2009	35.43%	64.57%
2009/2010	42.43%	57.57%
2010/2011	37.85%	62.15%
2011/2012	40.00%	60.00%
2012/2013	42.11%	57.89%
2013/2014	34.47%	65.53%
2014/2015	33.50%	66.50%

Table 6: Contingency table: Finance and Management −monitored period of time and success rate in Mathematics 1.

Row relative frequencies see [Table 6] and the graphic output see [Figure 3] show that the success rate in maths as for Finance and Management has been even increasing at the beginning −from 65% to approx. 85%, but then, in 2008, there was a plunge to approx. 40%, and this value is maintained up until today. However, in the last two years, the success rate continued to decrease to under 35%. The observed *p*-value is less than 0.001, which implies strong statistical dependence.

Figure 3: Finance and Management −monitored period of time and success rate in Mathematics 1.

Figure 4: Correspondence map: Finance and Management −monitored period of time and final grades in Mathematics 1.

The correspondence map see [Figure 4] shows that F grades prevailed in 2010–2015. The earlier year of studies, the bigger the distance from the F grade, which implies lower frequency of its occurrence.

Row relative frequencies	Succeeded	Failed
2006/2007	48.80%	51.20%
2007/2008	43.33%	56.67%
2008/2009	40.86%	59.14%
2009/2010	41.67%	58.33%
2010/2011	34.44%	65.56%
2011/2012	35.48%	64.52%
2012/2013	15.52%	84.48%
2013/2014	12.77%	87.23%
2014/2015	11.70%	88.30%

Table 7: Contingency table: Computer Systems −monitored period of time and success rate in Mathematics 1.

Furthermore, row relative frequencies see [Table 7] and the graphic output see [Figure 5] show that the success rate in maths as for Computer Systems has been gradually decreasing from 50% to 35% (2011). With the year of 2012, the values dropped significantly to under 15%. The observed *p*-value is less than 0.001, which implies strong statistical dependence.

Figure 5: Computer Systems −monitored period of time and success rate in Mathematics 1.

The correspondence map see [Figure 6] shows clearly that the worst grades were achieved in 2012–2015, since in the figure, these values are placed the closest to the F grade, while they remain to be the furthest away from the rest of the grades. The previous years (2008–2012) saw slightly better results, but the values still fall within the F grade range, although it is closer to the rest of the grades. The best results were apparently achieved in 2006–2008, since the values are the furthest away from the F grade.

Figure 6: Correspondence map: Computer Systems −monitored period of time and final grades in Mathematics 1.

Row relative frequencies see [Table 8] and the figure see [Figure 7] indicate that the success rate of the Travel and Tourism programme has been steadily decreasing from values around 80% to about 35%, and these values have been maintained for three years afterwards. The observed *p*-value is less than 0.001, which implies strong statistical dependence.

Row relative frequencies	Succeeded	Failed
2007/2008	18.42%	81.58%
2008/2009	20.20%	79.80%
2009/2010	30.30%	69.70%
2010/2011	35.94%	64.06%
2011/2012	55.98%	44.02%
2012/2013	66.96%	33.04%
2013/2014	63.49%	36.51%
2014/2015	63.21%	36.79%

Table 8: Contingency table: Travel and Tourism −monitored period of time and success rate in Mathematics 1.

Figure 7: Travel and Tourism −monitored period of time and success rate in Mathematics 1.

DISCUSSION AND CONCLUSIONS

The analysis showed that the success rate in Mathematics 1 has been decreasing over the course of the monitored period of time. The results of the monitored period show, that technically oriented programmes (Applied Computer Science and Computer Systems) reached the lowest success rate in mathematics −around 32%. Based on this research, the success rate in the economic programmes (Finance and Management and Travel and Tourism) is higher −around 45%. The overall success rate in Mathematics 1 is therefore apparently not good and this issue needs to be addressed. Authors Kučera, Svatošová and Pelikán (2015) analysed the success rate in mathematics with respect to various factors. Our research showed that the students' success rates in Mathematics 1 are statistically significantly dependent on the study programme.

Detailed analysis revealed differences in the development trends among individual programmes of study. The success rate in Applied Computer Science started between 40% and 50%. The values dropped to 20% in years 2012 and 2013. The analysis proved, furthermore, that as for Finance and Management, the success rate has been increasing from 65% to 85%. Since 2008, the values have dropped significantly to under 40%. In the last two years, the success rate continued to decrease to fewer than 35%. As for Computer Systems, the success rate has been gradually decreasing from 50% to 35% (2011). Further decrease has followed since 2012, reaching 15%. The Travel and Tourism programme saw the success rate in maths drop from 80% to approx. 35%. Plus, the correspondence maps show that the majority of points representing the years are placed within the F (failed) grade range, meaning the F grade is truly the most frequent one. Good grades (A–C) on the other hand, are generally located far away from the points that represent respective years. The maths results achieved in programmes Applied Computer Science and Computer Systems are the most alarming −the majority of students are not capable of completing Mathematics 1. After comparison of our results and the results of the article by Zámková and Blašková (2014), it is clear that the most frequent grade obtained in mathematics at the Faculty of Business and Economics of Mendel University in Brno and also at CPJ is F −failed.

A publication by Fonteyne et al. (2015) recommends entrance basic mathematics test to target the potentially struggling students. Our school is currently implementing an internal project part of which there is a similar measure. The first seminar of the course Mathematics 1 includes an entrance-level basic high school

mathematics test. The students who pass the test can continue in attending the course Mathematics 1. Those who fail are reassigned to a special course called Seminar in Mathematics to practice high school maths and they immediately may drop the course Mathematics 1 and therefore will not lose their right to repeat the course.

The aforementioned project is in general going to form the base for further monitoring of success rate development trends and for the review of the efficiency of suggested measures. They are aimed at improving the success rate in Mathematics 1 and other mathematically oriented courses. As another part of the project, textbooks for Seminar in Mathematics are being created and the e-learning module is being updated −it shall include new tests and question banks matched with the topics taught where everything is explained in a simple and lucid way. The module also offers number of examples of exercises and opportunities to practice. Seminar in Mathematics may be completed in a form of an intensive summer or winter school in mathematics, where students learn to solve exercises and practice under the supervision of experienced CPJ's professors.

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DIGITAL GAMES AS A METHOD FOR E-LEARNING: EXAMPLE OF SCRATCH.MIT.EDU

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ABSTRACT

Over the past half century, video game play has gone frombeing a somewhat fringe activity to a ubiquitous part of modern culture. This modern culture we say, "Network Sociaety" (Castells, 2006) or "digital narrative" (Jenkins, 2006) game play was largely a social experience, and they explained the pleasure of gaming as largely one of socializing with friends. Other groups (Kurt, 2011) say that gaming describes from personal experience numerous video games and the relationships they have created with learners.

In addition to their commercial popularity, digital games have captured the attention of training professionals and educators. There are several reasons for this professional interest. First, there has been a major shift in the field of learning from a traditional, didactic model of instruction to a learner-centered model that emphasizes a more active learner role. This article represents a shift away from "learning by listening" model of instruction to one in which students "learning by gaming". In accordance with firts part of this article, have been discussed what is game/gaming within digital culture and digital age.

New digital technologies provide opportunities to create learning environments that actively involve students in problemsolving. Video games is that some empirical evidence exists that games can be effective tools for enhancing learning and understanding of complex subject matter. Second part of this article, purpose to explain game based learning. Morover in this part to be claimed instructional model as a technology-assisted learning method. Accordingly, purpose of this article is to present and elaborate a model of instructional games and learning. The goal is to examine the unique aspects of games that can enhance learning. Discussion addresses the application of this approach to the design and implementation of effective training games. Instructional games are primarily seen as a means to enhance intrinsic motivation, extrinsic motivation is also important. The goal is to develop learners who are self-directed and self-motivated, both because the activity is interesting in itself and because achieving the outcome is important. In this part to be detailed analyzed content of "scratch.mit.edu" web site. As a result this article will offer suggestions for be developing digital game/video game/ gaming for stroytype learning or digital/e-learning.

Key words: Digital game, Video Game, E-Learning, Digital Culture, Scratch.mit.edu

GAMING WITHIN DIGITAL AGE

Over the past decade, the popular press, media scholars and now educators have been paying closer attention to computer and videogames (hereafter referred to as videogames) (Herz, 1997, Cassell & Jenkins, 1998; Poole, 2001). Creatively, videogames push the boundaries of interactivity, immersive environments, community design, and digital storytelling. Technologically, games push the boundaries of consumer-grade real time simulation and artificial intelligence. Culturally, they are changing the way we play, learn, and interact, quintessential sites of broader shifts in knowledge consumption and production (de Castell and Jenson in press; King, 2001; Scholder & Zimmerman, 2003; Squire, 2003). Games are in a transitional phase of cultural status, and it is no longer unusual to see game exhibits at art museums, or university courses on gaming. The last 18 months have brought us dozens of academic, government, and industry conferences focused on the academic study of games, a substantial portion of which are dedicated to games and learning. Games provide interests in new domains and inspire design. Squire shares his experience with peers and how games have been shown to spark interest-driven learning among students and teachers alike. They establish new interests that the student further explores and investigates. They inspire students to pursue questions and answers to developing questions while playing. Finally, they create an environment that leads to intrinsically motivated

authoring. Students have been shown to pursue communities and activities outside of the game to accomplish altruist goals.

Digital Natives: This term coined by Prensky (2001a, 2001b, 2006) explains a lot about these students' characteristics in the context of the growing technology in the 1990s, but has also been fraught with considerable controversy. They are branded as —digital natives because —digital is their native language. They are —native speakers‖ of the language of computers, video games, and the Internet and have spent their entire lives surrounded by computers, cell phones, and all the gadgetry of the digital age. As you walk across campus, you will notice that these teen and 20-something students have wires coming out of every part of their bodies. Attached to those wires are MP3 players, iPods, Zunes, Zens, iPhones, RAZRs, BlackBerrys, or the latest techy gizmo or thingamajig (Junco & Mastrodicasa, 2007; Mastrodicasa, 2007; Oblinger, 2008a). (*Note:* Palfrey and Gasser [2008] use —the first generation of digital natives‖ in the title of their book, but claim —generation‖ is an overstatement and inappropriate term; they prefer —population‖).

In *Video Games and Learning*, Kurt Squire (2011: 80-82). Squire's extensive knowledge and accomplishments permeate through his extensive examples of various games and their impact on social interactions, communities of learning, and culture. Games provide interests in new domains and inspire design. Squire shares his experience with peers and how games have been shown to spark interest-driven learning among students and teachers alike. They establish new interests that the student further explores and investigates. They inspire students to pursue questions and answers to developing questions while playing. Finally, they create an environment that leads to intrinsically motivated authoring. Students have been shown to pursue communities and activities outside of the game to accomplish altruist goals.

Green and Seitz (2015) The term *video games* refers to thousands of quite disparate types of experiences, anything from simple computerized card games to richly detailed and realistic fantasy worlds, from a purely solitary activity to an activity including hundreds of others, from a strictly antagonistic/competitive experience to a strictly friendly/ pro-social experience, from nothing more than a simple set of rules to a full and highly immersive fiction.

According to Rene Hobbs (2010: 51) just owning technology, playing video games, or using online social networks with having the habits of mind, knowledge, skills and competencies needed to be successful in the 21st century. Playing video games was fun, as they introduced both historical and geographical concepts in a visually appealing way. Remarkably, educational gaming has remained relatively stagnant since the initial introduction of *The Oregon Trail*. For well over two decades the controversies surrounding video games have riddled the growth and implementation of game-based learning environments.

What makes a video game, a "good" game, from an educational perspective? As an educator beginning to explore the possibilities of gaming, I find that violence is one of the most concerning topics for both colleagues and parents. Certainly the controversy surrounding violence and video games goes beyond the scope of this review, however, it is important to further define what a good educational video game actually looks like.

Over the past decade, the popular press, media scholars and now educators have been paying closer attention to computer and videogames (hereafter referred to as videogames) (Herz, 1997, Cassell & Jenkins, 1998; Poole, 2001). Creatively, videogames push the boundaries of interactivity, immersive environments, community design, and digital storytelling. Technologically, games push the boundaries of consumer-grade real time simulation and artificial intelligence. Culturally, they are changing the way we play, learn, and interact, quintessential sites of broader shifts in knowledge consumption and production (de Castell and Jenson in press; King, 2001; Scholder & Zimmerman, 2003; Squire, 2003). Games are in a transitional phase of cultural status, and it is no longer unusual to see game exhibits at art museums, or university courses on gaming. The last 18 months have brought us dozens of academic, government, and industry conferences focused on the academic study of games, a substantial portion of which are dedicated to games and learning.

Game Based Learning
Game-based learning can be integrated into educational curriculums and how research can be developed and accomplished to demonstrate the benefits of game-based learning to education. His love of teaching with game-based approaches, his excitement for the future of game-based learning, and his desire to be a part of it are apparent throughout the book.

Kurt Squire (2008: 189-190) designed and implemented an afterschool program for kids designed to initiate them into a gaming community of practice, that is, a community organized around a key practice (e.g., becoming good *Civ* players).40 We designed a series of custom scenarios making the game easier to learn and easier to play. These custom games were designed to speed game play, allowing players to have the kind of rapid game-play analysis/replaying of games that was core to the Apolyton community. Students were encouraged to play

with partners, and most players kept close ties to friends' games throughout the first week. Finally, we decided to have adult gamers play alongside the students, in order to better model the kind of thinking in which we wanted students to engage, such as modeling advanced game play or using maps and other resources as tools for game play. As the adults achieved successes (and losses), they shared their strategies with students, in part in an effort to emulate the kinds of thinking occurring at Apolyton University.

While the examples are extensive and provide significant insight into the game-based learning environment of a teacher and researcher, the entries can become monotonous and the ideas seem to wander at times. Moreover, given that they are persistent virtual spaces played in real time yet instantiated in digital graphics and architectural code, they function as a highly visible and therefore thoroughly traceable medium (Moore, Ducheneaut, & Nickell, 2005) for the study of cognition, learning, and literacy in online digital contexts.

Not all technology-assisted learning needs to fit the stereotype of the digital native. Further, digital immigrant professors do not need to speak a new —language in order to be effective. Some are excellent teachers who have adopted learner-centered methods with and without computers. The incorporation of technology in the learning process should be context-specific. Jenkins (2007) expresses similar concerns about Prensky's categories. He says that "digital natives" implies all students share a common body of technology knowledge that they have all mastered. In fact, the term masks their different degrees of access to and comfort with the emerging technologies. Also, rather than focusing on the inadequacies of the —digital immigrants, he argues we should recognize what they bring with them from the old world which is still valuable. Actually, a significant percentage of professionals working in Silicon Valley are —immigrants who can probably out-compute most of the —natives. Prensky's digital and cultural divide between these groups also short circuits thinking about meaningful collaborations across these generations.

The game creating successful in helping students build more robust conceptual models of physics, but left few directions for players to go after playing the game. The game did little (outside the cut scene) to suggest to students how these concepts related to electricity or magnetic phenomena seen in the world around them. Similarly, the game did little to suggest what a successful player might do to extend this interest *beyond* the game, such as in science career.

Modern video games have evolved into sophisticated experiences that instantiate many principles known by psychologists, neuroscientists, and educators to be fundamental to altering behavior, producing learning, and promoting brain plasticity (for reviews, see Bavelier, Green, Pouget, & Schrater, 2012; Gentile & Gentile, 2008; Green & Bavelier, 2008). Video games, by their very nature, involve predominately active forms of learning (i.e., making responses and receiving immediate informative feedback), which is typically more effective than passive learning (Michael, 2006). In addition, this active learning usually occurs in a variety of situations, thus promoting generalization of learning (Schmidt & Bjork, 1992). Most video games also use a dynamic degree of difficulty that increases along with player skill, ensuring that players are continuously challenged.

Furthermore, many games use a combination of internal reinforcement (e.g., positive social interactions and feelings of competence; Przybylski, Rigby, & Ryan, 2010) and external reinforcement (e.g., points, badges, etc.; King, Greaves, Exeter, & Darzi, 2013). This reinforcement promotes significant time spent on task, which is the best single predictor of positive learning outcomes. In addition, this time is typically distributed over many days, weeks, or even years—a practice schedule that produces more effective learning than when experience is amassed into only a few sessions (Baddeley & Longman, 1978). Finally, video games are highly physiologically arousing and activate reward systems of the brain that drive brain plasticity (Bao, Chan, & Merzenich, 2001; Kilgard & Merzenich, 1998). Thus, there is a strong scientific basis to suspect that video games, when properly designed, have the potential to strongly alter the brain and behavior.

In the cognitive domain, perhaps not surprisingly, the types of games that are of interest are those that have complex 3D settings, that feature quickly moving targets that pop in and out of view, that necessitate substantial visual processing of the periphery, that include large amounts of clutter and task-irrelevant objects, that require the player to consistently switch between highly focused and highly distributed attention, and that require the player to make rapid, but accurate decisions. Games that share these features are referred to as "action video games" (Green & Bavelier, 2012)

There is a tacit model of learning that is inherent in most studies of instructional games. First, the objective is to design an instructional program that incorporates certain features or characteristics of games. Second, these features trigger a cycle that includes user judgments or reactions such as enjoyment or interest, user behaviors such as greater persistence or time on task, and further system feedback. To the extent that we are successful in pairing instructional content with appropriate game features, this cycle results in recurring and self-motivated game play. Finally, this engagement in game play leads to the achievement of training objectives and specific learning outcomes.

Figure1. Input- Process Game Model

According to Garris, Ahlersve Driskell (2002: 445) There are several benefits that this perspective offers. First, the traditional inputprocess- output model of learning emphasizes single-trial learning, a learner performing a task over a single trial. Although the current model adopts the input-processoutput framework, the key component is the *game cycle* that is triggered by specific game features. A central hallmark of game play is not that users play a game and then put it down but that users are drawn into playing a game over and over. In fact, a young person engaged in a computer game may often have to be *told* to turn off the game or to stop playing. We view the game cycle as iterative, such that game play involves repeated judgment-behavior-feedback loops. That is, game play can lead to certain user judgments or reactions such as increased interest, enjoyment, involvement, or confidence; these reactions lead to behaviors such as greater persistence or intensity of effort; and these behaviors result in system feedback on performance in the game context. Thus, the game cycle is a defining characteristic of computer game play—that users are engaged in repetitive play and continually return to the game activity over time. It is this feature of computer game play that training professionals hope to capture and incorporate in instructional applications.

A second advantage of this model is that it provides a structure to organize and integrate the literature on instructional games. Perusing the research literature on games, the reader is faced with a perplexing variety of descriptive terms and conceptual approaches. For example, some researchers have described the essential elements of games by referring to game features, others described games in terms of user reactions or responses to game use, and others described games in terms of the learning outcomes that are achieved.

In the following, we elaborate the model provided in Figure 1 by presenting an overview of research on game characteristics, the game cycle, and learning outcomes. Furthermore, we provide a list of cognate research that addresses each content area. Our goal is to make the implicit model of instruction underlying much game research explicit and to provide a common language and approach for examining the instructional use of computer games. Garris, Ahlersve Driskell(2002: 446)

Scratch.mit.edu As a Example Project for Educational Game
In this part analiysis detailed content of "Scratch.mit.edu" web site. Firts of all Scratch, is designed and maintained by the Lifelong Kindergarten group at the MIT Media Lab. And completely free. With Scratch, you can program your own interactive stories, games, and animations — and share your creations with others in the online community. Scratch helps young people learn to think creatively, reason systematically, and work collaboratively — essential skills for life in the 21st century.

Also Scratch is a programming language and online community where you can create your own interactive stories, games, and animations -- and share your creations with others around the world. In the process of designing and programming Scratch projects, young people learn to think creatively, reason systematically, and work collaboratively.

Scratch For Parents
Scratch is a programming language and an online community where children can program and share interactive media such as stories, games, and animation with people from all over the world. As children create with Scratch, they learn to think creatively, work collaboratively, and reason systematically.

What is the age range for Scratch?
While Scratch is primarily designed for 8 to 16 year olds, it is also used by people of all ages, including younger children with their parents.

What resources are available for learning Scratch?
If you're just getting started, there's a **step-by-step guide** available inside Scratch, or you can download the **Getting Started guide (PDF)**. The **Scratch Cards** provide a fun way to learn more. For an overview of Scratch resources, see **Scratch Help**.

What is the Scratch online community?
When participating in the Scratch online community, members can explore and experiment in an open learning community with other Scratch members from all backgrounds, ages, and interests. Members can share their work, get feedback, and learn from each other.

What are the guidelines for the Scratch Online Community?
The MIT Scratch Team works with the community to maintain a friendly and respectful environment for people of all ages, races, ethnicities, religions, sexual orientations, and gender identities. You can help your child learn how to participate by reviewing the **community guidelines** together. Members are asked to comment constructively and to help keep the website friendly by reporting any content that does not follow the community guidelines. The Scratch Team works each day to manage activity on the site and respond to reports, with the help of tools such as the **CleanSpeak** profanity filter.

What is your privacy policy?
To protect children's online privacy, we limit what we collect during the signup process, and what we make public on the website. We don't sell or rent account information to anyone. You can find out more about our privacy policy on our**frequently asked questions page**.

Is there a way to use Scratch without participating online?
Yes, the Scratch offline editor lets you create projects without joining or accessing the online community. Visit the **Scratch 2.0 offline editor** download page for instructions on how to install it on your computer. (If your computer does not support the latest version, try the **Scratch 1.4 offline editor**.)
Over the course of a year, we piloted the game in a variety of contexts, ranging from middle schools to high schools to MIT courses.9 We found that the game was most successful for two types of students: MIT students who were struggling to understand the concepts behind the ideas they were learning in their textbooks (which were typically represented through physics formulas), and secondary school students who were struggling readers disaffiliated with school. High-achieving MIT students resisted the game somewhat, suggesting that it was a "crutch" of sorts for those who could not "hack" harder problems. Secondary school students generally responded favorably, and in our tests, on average, did better than those learning via traditional means (including experiments and visualizations). We saw the highest gains, however, with those students who were struggling readers, and who traditionally reacted negatively to the experiments (e.g., they saw experiments as a chance to goof off in class, and were usually off task).

Figure 2. Used-Languages in Scratch

Scratch is used in more than 150 different countries and available in more than 40 languages. To change languages, click the menu at the bottom of the page. Or, in the Project Editor, click the globe at the top of the page. To add or improve a translation, see the translation page.

In addition to targeted games are professional role-playing games—games that situate learners in the roles of engineers, biologists, or forensic scientists in the process of solving complex scientific problems. These games offer an intriguing mix of sociocultural and constructivist learning theory. As a sociocultural learning theorist might want to see, they set up roles for players to inhabit, and all problem solving, game play, and argumentation take place within the service of those roles build learning games. Also Students' attention span is a function primarily of their level of interest in an activity; they can play video games for hours; use a *variety of strategies* that will keep your students *engaged in different ways*; move rapidly through content or, better yet, let them *move at their pace* using the technology

Figure 3. Scratch in Schools

Students are learning with Scratch at all levels (from elementary school to college) and across disciplines (such as math, computer science, language arts, social studies). Educators share stories, exchange resources, ask questions, and find people on the ScratchEd website.

The MIT/Madison team (led by Eric Klopfer and me) has produced several iterations of alternate reality role-playing games, using them to teach high school earth sciences, undergraduate environmental engineering, undergraduate scientific writing, and various middle school topics. These games seek to place learners in roles in which they confront authentic challenges central to the domain, providing them access to authentic resources and tools that extend their cognition. All tools and resources are situated within game-play mechanics designed to produce collaboration that scaffolds and supports scientific thinking. In these games, for example, players might try to ascertain the cause of a mysterious death of a friend thought to be caused by environmental health problems, or try to solve a contemporary fictional urban planning dilemma by traveling back in time to interview residents of a neighborhood.

CONCULUSION and SUGGESTIONS
Video Games and Learning provides many situations for the game-based learning researcher or developer to discover and potentially employ in their educational environment. The idea is to develop worlds that are worth understanding, which support multiple readings mediated by interpretive communities of practice, developing multiple compelling trajectories through the space, and supporting

Figures 1 highlight two key processes: Induction into the community and propulsion out of the community. At first glance, one would think that induction into communities would be simple: Which media has a stronger attractor than video games? However, we have found that this is not always the case. Students do not always "see" (or even value) the roles available to them, such as becoming an expert *Civilization* player. In our early studies, it was not uncommon to have a student question whether participation in a game-based learning program would help them in school or on standardized tests. Identifying and promoting examples of expert gaming

identities, ideally in the form of advanced participants who already embody them, may be an important step in induction. This point also highlights the importance of such communities being multiaged, fostering significant opportunities for interaction between novices and experts—something rare in most schools but common to learning outside of schools. The second process is that of propulsion out of the community toward new communities of practice.

In general, the research supports that digital games can facilitate learning, but it is difficult to draw stronger conclusions about the educational impact of digital games at this point because relatively few games have been tested against other teaching and learning approaches. MIT Scratch.mit.edu can investigate effect for designed players.

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DIMENSIONS OF THE COMMUNICATION THROUGH FACEBOOK: ANADOLU UNIVERSITY OFFICIAL FACEBOOK PAGE

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ABSTRACT

Potential users of official Facebook page of Anadolu University are approximately 6000 staff, 30000 formal students, and 2,5 million students and graduates of Open Education System. Being one of the most preferred social media tools both in Turkey and other countries, Facebook has become one of the public relation channels for institutions. Number of the followers of Facebook page of the university was 170.315 on 11th of February, 2016. It was observed by the researcher that most of the followers were students from Open Education System.

Interaction and feedback are considered as significant as the posts in the communication through social media. Whether the feedbacks and messages are received and understood or not are comprehended from the reactions of the target audience in a healthy communication. The dimensions of communication between Anadolu University and its target audience through official Facebook page were examined in terms of contents of the posts and feedbacks in this study.

INTRODUCTION

One of the social media accounts of Anadolu University is its Official Facebook page which is run by Social Media Coordinatorship. Potential users of this page are approximately 6000 staff, 30000 formal students, and 2,5 million students and graduates of Open Education System. The page functions as a public relations tool for people who do not have any relationship with the university. It is open for all users. Number of the followers of the page was 170.315 on 11th of February, 2016.

Resource: https://www.facebook.com/anadoluuniversitesi

The process that runs through Facebook is a communication activity and the messages of the site admin are delivered to the users via Facebook. Users participate in communication process voluntarily through various choices including their likes, comments and shares. Institutional social networks are considered as one of the up to date and popular ways of providing beneficial information to broad masses of people in and out of the institution and people from other institutions. As for users, it is considered as a tool for being aware of the activities related to the institution; for being informed and aware of various issues related to them; and for following the possible developments and innovations.   One of the most important dimensions of this communication built through social networks is social gains that are obtained by feeling as a part of a whole and sharing this with counterparts and friends. "Social gains are related to multiple knowledge, skills and attitudes, and the distinct ones can be listed as setting clear, positive and two-way communication; gaining knowledge from social environment through culture and language interaction; displaying reflective thinking skills; considering people equal in terms of prestige and behaving in accordance with this; understanding and cooperating with others; and having an understanding based on solidarity." (Karaağaçlı p.66)

Social networks are regarded as one of the significant communication channels in terms of the system they are in and the other students in the system for particularly distance education students. In addition to this official web page, there is another Facebook page for students at Anadolu University Open Education-System, and this page is also followed intensively by the students in the system as an effective interaction process especially through the comments of the students. This study aims to examine the dimensions of the communication via social media channel between Anadolu University and its official Facebook page in terms of content of the messages and feedbacks.

AIM

Main aim of this study is to analyze dimensions of the communication developed among Anadolu University employers, students and graduates through Facebook, which is an effective social media medium. With regards to this aim, following questions were tried to be answered:

1. What are the contents of the posts that are published on official Facebook page of Anadolu University?
2. Who are the users?
3. What content type of posts attract interest of users more? And what type of posts receive more feedback?
4. What type of posts are commented? And What kind of a connection exists between the posts and user comments?
5. What is the level of administration participation to post feedbacks?
6. How are the comments related to the post in terms of various types?
7. What does the communication through Facebook tell us considering feedbacks?

METHOD

The study was conducted through content analysis method. "There are two main approaches to analyze the Internet and interface. Characteristics of users including their habits and durations of using the Internet are investigated through user-based approach which is the first one of these approaches. As for the latter one which is content-based approach, the texts created at the Internet medium and their contents are analyzed through this approach. Since the Internet is both a massive area from one side and an individual area from another side, these texts facilitate various analyses that can be used in various areas" (Çomu, 2014: 27). For this reason, the study was designed on content-based approach.

Scope and Sample

Posts of Anadolu University official Facebook page, which is one of the official social media accounts of Anadolu University, and feedbacks given to these posts by users constituted the scope of the study

December 2015 posts from Anadolu University official Facebook page were taken as samples for the study. Retrospective months were also examined during the conduction of the study, and due to the variety of posts and quantitative intensiveness, only the posts and feedbacks that were sent in December were chosen as samples of the study.

Data Collection and Analysis

Since the Internet texts are in a constant change, it is usually difficult to study online with such hyper texts. For this reason, in order to conduct the study appropriately, especially the posts with numerous comments needed to be recorded. The site was started to be observed since September to form research data, decide on the titles that would be studied on and to constitute coding instructions. Then, the posts and comments of December 2015 were recorded between 27th of December and 3rd of January, and they were turned into offline data which couldn't be changed anymore.

Primarily, coding instructions and coding tables were constituted for content analysis. As a result of preliminary studies that were conducted to check whether the instructions were suitable for objective inquiry, ncessery corrections were made and the study was completed in the framework of identified principles. The codes that were created by the researcher within the light of coding instructions were turned into numerical data and commented through tables. Feedbacks that could not be coded were excluded from the study.

FINDINGS and DISCUSSION

Anadolu University official Facebook page can be grouped into two categories in terms of the contents of the posts. First group comprised of posts related to Open Education System (OES) including announcements, TRT Okul (TRT School; a TRT channel for education) programs, recent introductory films and e-certificate programs. As for the second group, which is not directly related to OES, called "Campus", scientific activities of Anadolu University, culture and art activities, news, posts with up to date contents such as messages, condolences and celebrations exist in this group.

Table 1: Post Contents and User Feedbacks									
Posts		Number of Posts		Like		Comment		Share	
		f	%	f	%	F	%	f	%
OES	OES Announcement	23	11.3	6335	23.0	2630	64.5	1673	59.6
	TRT School	30	14.7	1161	4.2	268	6.6	28	1.0
	Introductory Film	2	1.0	194	0.7	188	4.6	2	0.1
	e-certificate	1	0.5	110	0.4	15	0.4	37	1.3
	Total	**56**	**27.5**	**7800**	**28.3**	**3101**	**76.0**	**1740**	**62.0**
CAMPUS	Scientific Act.	47	23.0	2446	8.9	202	4.9	64	2.3
	Culture-Art Act.	53	26.0	2928	10.6	65	1.6	14	0.5
	News	33	16.1	1566	5.6	68	1.7	16	0.6
	Message-condolence-celebration	13	6.4	12231	44.4	631	15.5	971	34.5
	Daily life	2	1.0	585	2.2	11	0.2	4	0.1
	Total	**148**	**72.5**	**19756**	**71.7**	**977**	**24.0**	**1069**	**38.0**
OVERALL TOTAL		**204**	**100**	**27556**	**100**	**4078**	**100**	**2809**	**100**

Facebook user feedbacks that were classified as like, comment and share were examined in terms of post subjects. Rate of OES group was found to be 27,5% regarding the number of posts whereas the rate for Campus group was 72,5%. Culture-art activities had the highest rate with 26% among all other posts. Approximately ¾ of posts were from Campus group and ¼ from OES.

As for user feedbacks, "Message-condolence-celebration" posts had the highest rate of likes with 44,4%. On the other hand, "Announcement-information" title among the OES posts was the most frequently commented post with 64,5%; it was the most frequently shared content with 59,6% as well. It can be inferred from these findings that a high number of students enrolled in Open Education System used this page actively. In addition, the same group's sharing the posts with a rate of 60,2% showed that the page was used as an expanded communication tool among group members to inform each other.

Table 2: Comment Rates of Posts				
Posts		Number of Posts	Commented Posts	%
OES	Announcement-Information	23	23	100
	TRT School	30	18	60.0
	Introductory Film	2	2	100
	e-certificate	1	1	100
CAMPUS	Scientific Act.	47	19	40.4
	Culture-Art Act.	53	17	32.0
	News	33	15	45.5
	Message-condolence-celebration	13	13	100
	Daily life	2	2	100
OVERALL TOTAL		**204**	**110**	**53.9**

Commenting on a post is a significant component that completes communication as an explicit feedback type in communication that is executed through Facebook. Post contents are examined in terms of receiving comments, in other words the written feedback given by users in Table 2. It can be seen from Table 2 that the rate of comments given to the contents were higher in OES group in general than the other group.

All of the Posts of Campus group; announcement-information, introductory film, e-certificate, message-condolence-celebration and daily life received comments with 100% rate. The high rate of comments regarding announcements-information post contents in OES group was remarkable in the Table.

Table 3: Relationship between Posts and Comments							
Posts		**Comment relevant to the post**		**Comment irrelevant to the post**		**TOTAL**	
OES		**f**	**%**	**f**	**%**	**f**	**%**
	OES Announcement	977	24.0	1653	40.5	2630	**64.5**
	TRT School	7	0.2	261	6.4	268	**6.6**
	Introductory Film	15	0.4	173	4.2	188	**4.6**
	e-certificate	15	0.4	-	-	15	**0.4**
	Total	**1014**	**25.0**	**2087**	**51.1**	**3101**	**76.0**
CAMPUS	Scientific Act.	32	0.7	170	4.2	202	**4.9**
	Culture-Art Act.	6	0.1	59	1.5	65	**1.6**
	News	20	0.5	48	1.2	68	**1.7**
	Message-condolence-celebration	94	2.3	537	13.2	631	**15.5**
	Daily life	5	0.1	6	0.1	11	**0.2**
	Total	**157**	**3.7**	**820**	**20.2**	**977**	**24.0**
OVERALL TOTAL		**1171**	**28.8**	**2907**	**71.2**	**4078**	**100**

Relationship between the posts and comments made on these posts were examined in terms of being relevant or irrelevant in Table 3. According to this, the rate of relevant comments in total was 28,8% whereas the rate of irrelevant comments was 71,2%. In other words, it can be said that there was a high rate of inconsistency between posts and comments. Inconsistency rate for OES posts was 76,0%, and 24% for the other group. These findings implied that there was a problem in terms of post-comment relationship for OES users. Especially the "announcement-information" category in this group received the highest rate both in terms of relevancy (24%) and irrelevancy (40,5%). It was observed by the researcher that all irrelevant posts from all post groups belonged to OES students. OES students considered this page as a channel to find answer to their problems; share various things among each other; and interchange each other's opinions and feelings.

In accordance with the timing of the study, content of the irrelevant comments were mostly related to exam venues, exam results, exam entrance conditions, fees, pass grades and credits, exemption, student affairs including password, id card and documentation issues, e-learning materials, access problems to the system, and their own successes and failures.

There is a mutual communication process in Anadolu University official Facebook page. Response rates of administrator are examined in Table 4 in terms of comment types and relevancy and irrelevancy of them with the posts. Comment types are listed under three main titles as question, state notifications, and feeling-opinion transmission. Perceptibly, the comments made to receive information about a subject were categorized under the title of question; notifications or detections about a problem on a subject under the title of status notification; and expressing their own opinions and feelings were categorized under the classification of feelings.

Comment Type	Post-relevant Comment		Response of Admin		Post-irrelevant Comment		Response of Admin		TOTAL COMMENTS		TOTAL RESPONSES	
	f	%	f	%	f	%	f	%	F	%	f	%
QUESTION	255	21.8	141	12.0	1202	41.3	662	22.8	1457	35.7	**803**	**19.7**
STATE	563	48.1	77	6.6	1083	37.3	91	3.1	1646	40.4	**168**	**4.1**
FEELING	353	30.1	2	0.2	622	21.4	16	0.6	975	23.9	**18**	**0.4**
TOTAL	**1171**	**100**	**220**	**18.8**	**2907**	**100**	**769**	**26.5**	**4078**	**100**	**989**	**24.2**

Table 4: Response Rates of Administrator

According to the data shown in the table, questions had the highest frequency rate of responses with 19,7% as it had been expected. Irrelevant content of the question did not prevent communication; on the contrary, it increased response rates. In addition to the questions, administrator responded to state and feelings as well with a relatively lower rate. The content of the administrator responses was also important at this point. Most of the responses were in the form of directing to the page where they should look for the answer through giving related link. However, the same question was seen to be asked repetitively, and the administrator gave the same answer repetitively as well. It can be inferred from this that users expected to see the answer directly on the page as a response to their question instead of going to the link.

Table 5- Relationship Between Comments in the Form of Question and Post Contents

Posts		QUESTION								TOTAL	
		Relevant				Irrelevant					
		Positive		Negative		Positive		Negative			
		f	%	f	%	f	%	f	%	f	%
OES	OES Announcement	146	10.0	83	5.7	662	45.4	95	6.5	986	**67.7**
	TRT School	1	0.1	-	-	95	6.5	23	1.6	119	**8.2**
	Introductory Film	-	-	1	0.1	59	4.0	15	1.0	75	**5.1**
	e-certificate	14	1.0	-	-	-	-	-	-	14	**1.0**
	Total	**161**	**11.1**	**84**	**5.8**	**816**	**55.9**	**133**	**9.1**	**1194**	**81.9**
CAMPUS	Culture-Art	1	0.1	-	-	10	0.7	5	0.3	16	**1.1**
	News	2	0.1	1	0.1	18	1.2	1	0.1	22	**1.5**
	Scientific Act.	3	0.2	3	0.2	33	2.3	30	2.1	69	**4.7**
	Message-condolence-celebration	-	-	-	-	116	8.0	40	2.7	156	**10.7**
	Total	**6**	**0.4**	**4**	**0.3**	**177**	**12.2**	**76**	**5.2**	**263**	**18.1**
OVERALL TOTAL		**169**	**11.5**	**88**	**6.0**	**991**	**68.2**	**209**	**14.3**	**1457**	**100**

Relationship between comments in the form of question and post contents were examined in accordance with being positive and negative in terms of relevancy, and the findings are shown in Table 5. The existence of consistency between the content of question and the post in a positive structure was considered as relevant-

positive.   For example, the question, *"Overall mean of the exams are between 40 and 50. So what grade should I take from the fall term final exam to pass my lesson?"* directed to the post titled, "Open Education System Fall Term Midterm Exam Results Have Been Announced" on 28th December, 2015 was accepted as a question in relevant positive question group.

The post titled "Anadolu University Successfully Accomplished one more Exam Period," on 24th December, 2015 received the question, *"Okay, the exam was successful but why haven't the results been announced yet?"* It was an example for relevant but negative question type.

The question, *"Will the summaries of the units after unit 4 be shared at e-learning beta?"* among the comments related to the post titled, "Anadolu University Presents; Lifelong Education with Open Education (Introductory film)" published on 19th December, 2015 was considered as irrelevant positive question type.

The question, *"Why hasn't e-seminar lesson of unit six of Cost Accounting been uploaded to the system yet?"* sent as a comment to new year celebration post of the rector of Anadolu University on 31st December, 2015 was an example for irrelevant negative question type.

Examining Table 5 in terms of post contents, it could be seen that the rate of the questions related to Open Education System (81,9%) was considerably higher than other the other group (18,1%). The category that received the highest rate of questions with 67,7% was Open Education System announcements.

Regarding positiveness and negativeness of questions, it could be observed that the rate of positive questions (11,5%) was higher than the rate of negative questions (6,0%). This situation was the same for questions that were irrelevant to the post. The rate of positive questions was 68,2%, and 14,3% for negative questions for this category. As a result, majority of the questions constituted irrelevant ones to the post. It implies the efforts of students to be informed through this channel. Moreover, the researcher observed that similar questions were asked various times and successively which meant that the other questions and responses to them were not read by students. For this reason, the number of questions increased more.

The interesting thing in addition to the prominent rates in the table was all post titles had irrelevant questions even if they were positive except e-certificate subject. It was particularly astonishing to find irrelevant questions under the title of Message-Condolence-Celebration.

Table 6- Relationship between comments indicating state and post contents										
Posts		**STATUS**							**TOTAL**	
		Relevant				Irrelevant				
		Positive		Negative		Positive		Negative			
		f	%	f	%	f	%	f	%	f	%
OES	OES Announcement	109	6.6	422	25.6	201	12.2	350	21.3	1082	65.7
	TRT School	1	0.0	2	0.1	30	1.8	61	3.7	94	5.7
	Introductory Film	1	0.0	9	0.6	11	0.7	53	3.2	74	4.5
	Total	**111**	**6.6**	**432**	**26.3**	**242**	**14.7**	**464**	**28.2**	**1250**	**75.9**
CAMPUS	Culture-Art	-	-	-	-	7	0.4	19	1.2	26	1.6
	News	1	0.0	-	-	3	0.2	11	0.7	15	0.9
	Scientific Act.	6	0.4	2	0.1	21	1.3	52	3.2	81	4.9
	Message-Cel.-Cond.	8	0.5	2	0.1	40	2.4	220	13.4	270	16.4
	Daily life	-	-	-	-	1	0.0	3	0.2	4	0.2
	Total	**15**	**0.9**	**4**	**0.2**	**72**	**4.3**	**305**	**18.7**	**396**	**24.1**
OVERALL TOTAL		**126**	**7.6**	**437**	**26.6**	**314**	**19.0**	**769**	**46.7**	**1646**	**100**

State notifications are examined in Table 6 in terms of their relevancy with the post from positive and negative aspects.

The comment, *"I will watch your movie after the exam, but if I have a good exam, I will watch it with more pleasure,"* to the post titled, "Ahmet Kural and Murat Cemcir have a message for the students of Anadolu University," posted on 10th December, 2015 was an example for positive and relevant state notification.

The comment, *"Dear authorities of Anadolu University, they cannot be opened. You oblige us to summary books,"* to the post titled, "Unit summaries of 130 lessons including the units you are responsible for Final exam," posted on 25th December, 2015 was an example for negative but relevant state notification.

The comment, *" The diploma they give you after you graduate from OEF is not different from any formal diploma when you want to be employed for public sector. You do not only study some drudgery lessons such as Turkish and History as in open universities, but also all of the lessons in the department,"* to a post that was about the announcement of exam results posted on 28th December, 2015 was an example for irrelevant but positive state notification.

One of the comments given to a post published on 25th December 2015, titled, "Anadolu University Open Education System Unit Summaries and Audio Summaries" was "*no make-up exam, no summer school, how can we pass? Wait for the next year if you fail a lesson; there is no such an injustice."* This comment was an example for irrelevant and negative state notification.

State notification rates were 75% for Open Education System whereas it was 24,1% for other groups. Irrelevant-negative state notifications consisted majority for almost all posts considering the table as a whole. Only OES announcements had a higher rate of negative notifications with 25,6%. As it was seen in question type comments, all of the post types were used a tool to make irrelevant and negative notifications. It was even striking to abuse posts published for success wishes, teachers' day celebrations or condolences for someone who died of a traffic accident with irrelevant and negative notifications.   Students of Open Education System consider this page as a channel for their state notifications.

Table 7- Relationship between comments indicating feelings and opinions and post contents											
Posts		**FEELING-OPINION**								**TOTAL**	
		Relevant				Irrelevant					
		Positive		Negative		Positive		Negative			
		f	%	f	%	f	%	f	%	f	%
OES	OES Announcement	182	18.7	83	8.5	148	15.2	240	24.6	653	67.0
	TRT School	-	-	-	-	13	1.3	29	3.0	42	4.3
	Introductory Film	-	-	1	0.1	12	1.2	14	1.4	27	2.7
	Total	**187**	**18.7**	**84**	**8.6**	**173**	**17.7**	**283**	**29.0**	**722**	**74.0**
CAMPUS	Culture-Art	2	0.2	-	-	4	0.4	3	0.3	9	0.9
	News	5	0.5	7	0.7	5	0.5	10	1.0	27	2.8
	Scientific Act.	18	1.9	2	0.2	5	0.5	22	2.3	47	4.8
	Message-Cel.-Cond.	42	4.3	7	0.7	45	4.6	72	7.4	166	17.0
	Daily life	4	0.4	-	-	-	-	-	-	4	0.4
	Total	**71**	**7.3**	**16**	**1.6**	**59**	**6.0**	**107**	**11.0**	**253**	**25.9**
OVERALL TOTAL		**253**	**26.0**	**100**	**10.2**	**232**	**23.7**	**390**	**40**	**975**	**100**

Feedbacks od users including their opinions and feelings are examined in terms of their contents considering their being relevant or irrelevant and being positive or negative in Table 7. *"Thanks God, Same to final exams, my Godddd!"* was an example for positive and relevant opinion notifications that was written as a comment to the post titled "Open Education System Fall Term Midterm Results have been Announced," posted on 28th of December 2015.

The announcement published on 1st December 2015 was, "you can reach unit summaries and audio summaries from   http://eogrenme.anadolu.edu.tr by entering Beta E-learning Services section." A comment made to this

announcement was, *"I haven't seen anything useful. It is nothing more than time consuming."* This was an example for relevant but negative opinion notification.

The comment made on the post sent by the Rector of Anadolu University on 12th of December, 2015 about a traffic accident that caused death of some students in Van was, *"I congratulate Anadolu University for the services it provides despite some deficiencies."* This was an example for positive but irrelevant opinion notifications.

The post titled "Happy New Year – Anadolu University", on 31st of December, 2015 received a comment as, *"Thank you but we will fail. I am a student from agriculture department. You have made it much more difficult."* which was an example for irrelevant and negative opinion notification.

This group of comments consisted of mostly posts related to Open Education System with a rate of 74%. Irrelevant and negative opinions on posts had a percentage of 29,0 for this comment group. Users expressed their comments including their feelings and opinions regardless to the content of the post as in all other post contents. It was clearly seen that as in other posts, even the celebration or condolence posts were used as tools for irrelevant and negative opinion and feeling sharing by students.

CONCLUSION

It can be construed from existing outlook of communication carried out through Anadolu University official Facebook from the perspectives of Open Education System students that the students who receive distance education needed communication more than the ones who receive face to face education. From this point of view, other communication channels of Anadolu University Open Education System should be investigated as well. More than a hundred Open Education System bureaus that serve students in all provinces and some bigger towns to provide them necessary information they needed and receive better service act as face to face communication channels. Besides, a Facebook account called Open Education E-Learning Portal, which was the only platform during the conduction of the study, Instagram, Twitter, Youtube and i-tunes official accounts serve as tools for announcements and briefings. Moreover, the interaction center that informs students on the phone, ask-watch-learn links on Open Education System main webpage, e-mail, TRT School TV programs (such as Frequently asked questions), digital bulletins and mobile phone messages are among other informative tools for announcements and briefings. Despite all these channels, what can be said about reasons for students' preferring Anadolu University official Facebook page as an information tool that much intensively? Observations of official Facebook page opened for open education students during the implementation of the study showed that students preferred to follow Anadolu University official page rather than that page. This can be explained with open education students' developing a sense of belonging to Anadolu University in a way; on the other hand, it can be explained with community and attractiveness of Facebook medium peculiar to itself. As for whether they were aware of the existence of the other page, it can only be speculated. The fat that students used Anadolu University page as a communication tool among each other can be accepted as a sign for the necessity of interaction among themselves. Though, there are various official and nonofficial open and closed Facebook groups especially on the basis of departments. Communication among groups is usually based on information sharing about lesson contents and exams.

E-learning service that was prepared for Open Education System students was put into service within a new structure under the name of "Anadolum (my Anadolu) e-campus" in January 2016 when this study was proceeding. In this framework, a new page under the name of "OEF Anadolum – Anadolu University Open Education System" replacing Open Education System official Facebook page. Number of the members of the page was more than 120000by June 2016. Previous Open Education page was opened in 1999 and it has almost 40000 members but it is not active anymore. The researcher thinks that using "Anadolu University" as a title either in its official page or recently opened page has affected the popularity of the page significantly.

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DISCRIMINANT ANALYSIS AS A TOOL FOR ANALYSING STUDENT'S PREFERENCES CHOOSING ONLINE OR TRADITIONAL COURSE FOR A REPEATED EXAM

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ABSTRACT
In this paper it is demonstrated that multivariate linear discriminant analysis technic can be a good approach for analyzing students' preferences when they can freely choose between the traditional form of learning in a classroom and the online form of learning. Using this method a meaningful statistical model can be established to give criteria for separation of students with different preferences. The model includes those variables (personal traits and characteristics of students) which have significant contributions to identifying the two different students' populations.

INTRODUCTION
In this study students' preferences are analyzed when they can freely choose between the traditional form of learning in a classroom and the online form of learning. Both versions of the same course (Mathematics 2.) were offered for those students who had failed to pass the exam and they were obliged to repeat it once again. The online version of the course is based on a stream of short video lessons. Full-time and part-time (correspondence) students could choose either versions of the course.

In our previous study *(Bognár-Horváth 2015)* this problem was investigated with different statistical technics using basic two-sample statistical tools like t-tests, Mann-Whitney tests to identify the students' characteristics which can make distinctions between those who prefer the online course and those who choose the traditional one. Furthermore binary logistic regression was deployed to estimate the differences of the odds (ratios of probabilities) for different layers of students choosing the online or the traditional form. Their ages, gender, ICT skills and student status (full-time or correspondence) basically affect their choice.

Surprisingly full-time students prefer the online course format rather than correspondence students. To find some explanation to this unexpected result another model was set up to identify the variables separating the students either belonging to the group of full-time or to the group of correspondence students.
In this model students' attitude to learning proved to be decisive. Correspondence students have strong motivations to learn while full-time students admittedly less diligent in their study.

Hence this second model gives an indirect explanation to this strange preference, namely that students' attitude to learning severely affect their choice. Since full-time students are "lazier" they choose the online video lessons instead of the classroom work.

Why is it worth to study this problem also with discriminant analysis? In linear discriminant analysis when you use linear combination of values of predictor variables you can get directly which variable contribute to the separation and how dominant a variable compared to the others. If you use standardized variables the coefficient of a variable in the discriminant function gives the numerical value of the relative importance of this variable.

Theoretically discriminant analysis works well if the assumptions of multivariate normality and equality of variance-covariance matrices are met. However Lim, Loh and Shih *(Lim-Loh-Shih 2000)* concluded that discriminant analysis has a mean error rate close to the best even in the case of binary valued attributes. The purpose of this study is to demonstrate the use of this method for a special educational situation.

Although logistic regression does not require multivariate normality or equality of variance-covariance matrices of the variables in the groups to be compared (online-traditional), discriminant analysis somewhat superior to logistic regression from statistical and practical perspective.

THE STUDY
In this study students' preferences were investigated at the College of Dunaújváros in Hungary among those 128 students who enrolled to the course of Mathematics 2 in the academic year 2013/14. All these students have failed at least once to pass the exam of this subject previously and they were obliged to take the course once again. Both full-time and correspondence students were allowed to freely choose between the traditional or the online form of the same course.

The classroom course was taught according to the time schedule of the correspondence education, 20 contact hours a semester. The online course was available through the institutional Moodle LMS system. It was built up as a stream of short video lessons with quizzes and self-tests and it was supported by optional synchronous consultation with the instructor. Both courses ended up with oral examination, however in both courses students could earn 40 % of total scores by midterm tests.

73 students enrolled to the traditional classroom course and 55 students chose the online form. In the third week of the semester they were asked to take part in a survey related to this study. 80 students answered to the 36 questions, 44 traditional and 36 online students. The questions were organized into 3 main groups. 1. *Personal data, place of residence.* 2. *ICT related questions.* 3. *Motivation, learning habits, attitude related questions.*

We used linear discriminant analysis as the statistical method to evaluate the answers and to establish those features of the students which might have influenced their choices.

FINDINGS
Some of the findings are below.
Altogether 36 variables were used to describe a student's characteristics. Several variable selection method were applied to perform the discriminant analysis. Here the findings of that study is reported when only those variables are considered in the discriminant analysis which proved to be significant in a previous bivariate ANOVA comparison. (This is a different technic than in our previous study when Mann-Whitney test were used. This is why not the same variables were selected.)

In the Online-Traditional bivariate comparison the variables below proved to be significant:

1. MaturTime: Time elapsed from the mature examination in years
2. LikeICT: Preference score of using ICT on a 5 point scale
3. Gender: Dichotomous variable (Male, Female)
4. Status: Dichotomous variable (Full-time Student, Correspondence Student).

	Wilks' Lambda	F	df1	df2	Sig.
MaturTime	,950	4,082	1	78	,047
LikeICT	,937	5,248	1	78	,025
Gender	,950	4,128	1	78	,046
Status	,848	13,977	1	78	,000

Table 1: Tests of Equality of Group Means in the Online –Traditional analysis

All observed significance levels are below 0.05. The Wilks' Lambda statistic in Table 1 is calculated as the ratio of the within-groups (traditional and online) sum of squares to the total sum of squares. It is the proportion of the variance not explained by differences between groups. The smallest 0.848 Wilks' Lambda and the smallest 0.000 significance values are for Status. Small values occur when most of the observed variability can be attributed to differences between groups. Hence according to this bivariate comparison the Status of students seems to be most dominant.

In the discriminant analysis we are looking for the so called canonical discriminant function in which linear combination of the predictor variables best separate the groups. When these four variables above play role as predictor variables the coefficients of the predictor variables are:

	Function 1
MaturTime	,062
LikeICT	,267
Gender	-,405
Status	,780

Table 2: Standardized Canonical Discriminant Function Coefficients in the Online –Traditional analysis

These coefficients serve as weights in the linear combination of the predictor variables. According to this the 0.78 value for Status shows that the relative importance of the student status is almost two times more than the gender of the student and practically three times more than the ICT preference. Surprisingly full-time students prefer the online course and the correspondence students choose the traditional form (It comes from the signs of the coefficients, not detailed here.). Women prefer the traditional course and men prefer the online version. Not surprisingly those who like ICT choose the online course more dominantly. The time elapsed from the mature exam is almost negligible compared to the others.

To see how well this discriminating function works it always good to check how much percent of the original cases (students) is correctly specified by this function. According to Table 3 exactly 70% of the original grouped cases are correctly specified.

		Course	Predicted Group Membership		Total
			Traditional	Online	
Original	Count	Traditional	37	7	44
		Online	17	19	36
	%	Traditional	84,1	15,9	100,0
		Online	47,2	52,8	100,0
Cross-validated[b]	Count	Traditional	35	9	44
		Online	17	19	36
	%	Traditional	79,5	20,5	100,0
		Online	47,2	52,8	100,0

a. 70,0% of original grouped cases correctly classified.
b. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.
c. 67,5% of cross-validated grouped cases correctly classified.

Table 3: Classification results in the Online –Traditional analysis

In Figure 1 the histogram of the values of the discriminant function (discriminant scores) is shown. The vertical lines represents the group centroids' average which serves as the criterion for the separation. It can be seen that the separation works relatively well for the traditional group and not so well for the online group.

Figure 1: Histogram of the discriminant scores in the Online –Traditional analysis

Since it is concluded that the student status is the most dominant factor in separating the students into groups preferring either the traditional or the online courses it is worth to set up another discriminant model when the question is: what features or personal traits best separate the students into full-time or correspondence students. The variable selection method is the same, bivariate ANOVA comparison.

In the Full-time - Correspondence bivariate comparison the variables below proved to be significant:

1. Age: The age of the student in years
2. LikeICT: Preference score of using ICT on a 5 point scale
3. BurdenContact: What extent do you agree "Contact hours are burden" on a 5 point scale
4. WhyNotSucc: Why did you fail? Dichotomous variable (My fault, Outer circumstances)
5. Diligent: How diligent you are? (Rather lazy, Sometimes lazy, Diligent)

	Wilks' Lambda	F	df1	df2	Sig.
Age	,770	23,248	1	78	,000
LikeICT	,943	4,680	1	78	,034
BurdenContact	,898	8,854	1	78	,004
WhyNotSucc	,852	13,542	1	78	,000
Diligent	,878	10,798	1	78	,002

Table 4: Tests of Equality of Group Means in the Full-time - Correspondence analysis

When these five variables above play role as predictor variables the coefficients of the predictor variables are:

	Function 1
Age	,588
LikeICT	-,215
BurdenContact	,377
WhyNotSucc	-,272
Diligent	,353

Table 5: Standardized Canonical Discriminant Function Coefficients in the Full-time – Correspondence analysis

These coefficients show the relative importance of the predictor variables in separating the students into either the full-time or the correspondence group. Undoubtedly the age of student is the most decisive factor (0.588). The rather large value of the BurdenContact variable coefficient (0.377) reveals that students having less time to travel and spent time with contact hours choose the correspondence status. Both the Diligent and the WhyNotSucc variables indicate that full-time students' attitude to learning is below the correspondence students who are more motivated. The coefficients (0.353 and -0.272) are also relatively large. The negative sign of the LikeICT coefficient corresponds to the fact that full-time students who are younger prefer ICT more than the older correspondence students. The -0.215 coefficient shows that this variable is not negligible either.

According to Table 6 76.3% of the original grouped cases are correctly specified.

		Status	Predicted Group Membership		Total
			Correspondence	Full-time	
Original	Count	Correspondence	38	14	52
		Full-time	5	23	28
	%	Correspondence	73,1	26,9	100,0
		Full-time	17,9	82,1	100,0
Cross-validated[b]	Count	Correspondence	34	18	52
		Full-time	7	21	28
	%	Correspondence	65,4	34,6	100,0
		Full-time	25,0	75,0	100,0

a. 76,3% of original grouped cases correctly classified.
b. Cross validation is done only for those cases in the analysis. In cross validation, each case is classified by the functions derived from all cases other than that case.
c. 68,8% of cross-validated grouped cases correctly classified.

Table 6: Classification results in the Full-time - Correspondence analysis

In Figure 2 the histogram of the values of the discriminant function (discriminant scores) is shown. The vertical lines represents the group centroids' average which serves as the criterion for the separation. It can be seen that the separation works relatively well for both groups.

Figure 2: Histogram of the discriminant scores in the Full-time - Correspondence analysis

CONCLUSIONS

In this paper the use and applicability of linear discriminant analysis is shown for a special educational situation. First the separation criteria are analyzed for student who choose the online or traditional form of the same mathematics course. The student status (Full-time or Correspondence) proved to be the most dominant prediction variable. Furthermore the separation criteria for students to be Full-time or Correspondence student were investigated. Besides their age and their less time to spend with contact hours their attitude to learning proved to be dominant.

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DISCUSSION ON THE PROSPECTIVE TEACHERS' UNDERSTANDING LEVEL OF ELECTRIC CHARGE

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ABSTRACT
The present study was conducted to analyze the understanding level of the prospective teachers studying in the second grade of elementary mathematics undergraduate program, on the topic of electric charge which is taught in compulsory Physics II. Totally 45 prospective teachers, 36 women and 9 men, have participated the study. The data of the study were obtained through a feedback form including four different open ended questions, which were prepared by the researcher based on expert opinion. The answers given to the open-ended questions by the prospective teachers were read and analyzed, and grouped according to their content, similarity and closeness. The grouped answers, the number of the prospective teachers writing the answering and their percentages were entered in relevant tables created and the required evaluations are performed. The fact that 22.1% of the prospective teachers do not know that a matter is loaded with electric charge, 62.1% of them do not know that a matter with electric charge can attract another applicable neutral matter, 60.0% do not know grounding of an electric charged matter and 86.7% do not know that electric charge has quantum property show that their understanding level on the static electricity topic is very low. The fact that generally a high percent of the prospective teachers not knowing electrical charge and its properties, a basic topic taught in elementary and secondary school and at the university, brings the requirement of using methods and activities enabling the students to be active rather than a teacher and centred teaching system in the physics courses in undergraduate programmes. The prospective teachers who have performed learning-purpose writing activities stating in the studies that they have better understood and learned physics topics on which they have written letters or summaries brings the opinion of using these activities for teaching the topic of electrostatic.

INTRODUCTION

It is a generally observed or experienced situation that a comb being used for combing hair in a medium with dry air attracts paperpieces. An inflated balloon sticking on the wall or ceiling of a room with dry air for quite a time after being scrubbed with wool is another simple experiment regarding this. Matters that act like a comb or inflated balloon are called electrified matters or matters with electric charge (Serway and Beichner, 2000). Electric charge is an intrinsic property of the fundamental particles that form matters. Under normal circumstances, matters are loaded with two available charges (positive and negative charge) at equal quantities or numbers. Matters with equal negative and positive charge are called as neutral (Halliday, Resnick and Walker, 2014).

When an uncharged (neutral) glass rod is rubbed with a silk cloth, a certain amount of electrons are transferred to the silk cloth from the glass rod and the glass rod is loaded with positive (+) charge. When a neutral plastic rod is rubbed with a piece of fur, a certain amount of electrons are transferred from the fur to the plastic and the plastic rod is loaded with negative (−) electric charge (Young and Freedman, 2010). When a matter is rubbed with another one, the electric charge does not occur at that time, electric charge is already in that matter. Electrification happens when the electric charge (electrons) is transferred from a neutral matter to another. Generally, when two matters interacts one gives away electrons while the other takes, and the matter losing electron is loaded with positive electric charge and the one obtaining electron is loaded with negative electric charge. The situation effective in the loading with electric charge is an electron exchange .

Electrically charged matters interact by applying force to each other. Like charges or matters with like charges apply repelling force to each other, while opposite changers or matters with opposite charges apply attracting force to each other (Serway and Beichner, 2000; Halliday, Resnick and Walker, 2014). When a neutral plastic rod is rubbed with woollen cloth, a certain amount of electrons are transferred from the woollen cloth to the plastic and the plastic rod is loaded with negative (−) electric charge. There remains an excess of positive charge behind at the amount of the negative charge being transferred to the plastic rod, and the total charge never changes, it always remains stable. This property gives the electric charge the characteristic of conservation.

The positive charge belongs to proton while the negative charge belongs to electron. Proton and electron has the same amount of electric charge ($e = 1.6 \times 10^{-19}$C). The smallest electric charge in the nature is the charge that an electron has. Therefore, the load of the electron is accepted as the base load. That an electric charge (Q) is always found in the nature as the integer multiples of electron charge (e), the base load unit, ($Q = ne$, $n = 1, 2, 3…$) is

defined as being quantized (Serway and Beichner, 2000). In other words, that the electric charge (q) of a matter being equal to the integer multiples of electron charge (2e, 10e, 53e, 95e…) not the rational multiples (2,5e, 14,8e, 51,7e…) of an electron charge (e = $1.6x10^{-19}$C) shows the electric charge is quantized.

An electrically charged matter may attract any susceptible neutral conductive matter. When a positively charged test globule is approached from the side close enough to a neutral conductive sphere hung on aninsulating stringand that does not contact with any matter or surface, the electrons gather on the side of the neutral sphere close to the test globule, and on the distant side, where electrons are lost, there will be an excess of protons. By this way, quantity of electric charge of the neutral conductive sphere remaining the same (unchanging) gather in two areas on the surface of the sphere. Asthere is an excess of electrons on the side of the neutral conductive sphere closer to the test globule while there is an excess of protons on distant side, electrostatic attracting force applied by the test globule to the neutral conductive neutral sphere is greater than the repelling force. If the stringed neutral conductive sphere is close enough and the friction is very small to be ignored, test globule attracts the neutral sphere. At the time of contact, some of the electrons gathered on the side of the neutral sphere surface close to the test globule are transferred to the test globule and the neutral conductive sphere losing its property of being neutral becomes positive charged and thus is repelled by the test globule. In short, anelectrically charged matter can attract a susceptible neutral conductive sphere, can load with its charge at the time of contact and then repel it.

Although electric charge is a basic topic taught in elementary and secondary schools and at universities, it is thought that the prospective teachers' understanding level on this topic is not at the desired level. It is anticipated that using student-active methods and activities in the teaching of electrostatics will increase the understanding levels of the prospective teachers of this topic.

The purpose of the present study isto analyze the understanding level of the prospective teachers studying in the second grade of elementary mathematics undergraduate program, on the electric charge topic which is taught in compulsory Physics II course.

METHOD
Totally 45 prospective teachers, 36 women and 9 men, who are at the second grade of the department of elementary mathematics, faculty of education in a state university, and who take the compulsory course of electric and magnetism (Physics II) have participated in the study. A feedback form including four different open ended questions, which was prepared by the researcher based on expert opinion is used in the research to determine the understanding level of the prospective teachers electric charge topic. It is thought that open-ended questions may bemore effective in differentiating the candidates'answers to the questions about electrostatics from predictions and determining them in a valid and reliable way. The open-endedquestions used in data collection were asked the prospective teachers two weeks after the electrostatics topic is explained according to the content of the course and in line with the semester program.The answers given to each open ended question by the prospective teachers, the grounds or the explanations of the answers were read and analysed and grouped according to their content, similarity and closeness. Grouped answers, explanations of the answers (if available), total number of the prospective teachers as women and men and their percentages were reflected to the relevant tables in different columns. At the end of each table, comments and explanations about the data were noted. In addition to their written remarks of the prospective teachers on the questions about electric charge, semi-structured interviews were conducted with 6 randomly selected people. In the interviews, it was observed that the prospective teachers used the similar statements that they had written before.

FINDINGS AND COMMENTS

Table 1: The answers of the prospective teachers to the question: "What does a matter loaded with electric charge mean to you (how can it be explained)?"

Answers Written	Number of Women	Number of Men	Total	%
It means the matter is loaded with either (+) or (−) charge	16	2	18	40.0
It means it is not neutral, that is (−) charges are not equal to (+) charges	5	2	7	15.6
It means it exchanges charges with a matter with electric charge	5	1	6	13.3

It means that there are electrons in the matter	1	1	2	4.4
It means that there are positive or negative charges in the matter	1	1	2	4.4
It means that it has an electric field	1	-	1	2.2
It means the creation of protons and electrons	1	-	1	2.2
It means that a comb rubbed with wool attracts the paper pieces	1	-	1	2.2
It means that (+) and (−) charges move in it freely	-	1	1	2.2
It means that matter gains electric as a result of interaction	1	-	1	2.2
Other answers (Electricitymay be connected ...)	4	1	5	11.1
Total	36	9	45	100

The words "to you" added to the end of the question "What does a matter loaded with electric charge mean to you?" has the aim of motivating the prospective teachersto share/write their opinions without hesitation when answering the question. All prospective teachers writing an answer in their points of view without leaving the first question unanswered confirms that these two words had a positive effect.

The first question was actually asked to understand how a a very basic concept is constructed in the prospective teachers's minds. Such answersas "It means that a matter has electrons", "It means the creation of protons and electrons", "It means that (+) and (-) charges freely move in it", "It means that a matters gains electric as a result of interaction" and "Electricity may be connected" among the written ones show that prospective teachers have trouble (22.1%) in a basic definition as a matter loaded with electric charge.

Table 2: The answers of the prospective teachers to the question "Does a positively charged (+) test globule attracts a neutral conductive sphere that is hung with an insulating string, immobile and does not contact with any surface if it is approached to it from the side by holding its non-conductive handle, or not? Why?"

Answers Written	Grounds of the Answers	Number of Women	Number of Men	Total	%
Attracts	Because a neutral sphere has both (+) and (−) charges. Negative charges gather on the side of the neutral sphere close to test sphere and the attraction is provided	8	3	11	24.4
	As the neutral sphere has (−) charges, test globule attracts that negative charges	3	1	4	8.9
	Neutral matter attracts (+) and (−) charged matters	1	-	1	2.2
	-	2	-	2	4.4
Does not attract	Because in neutral sphere, negative and positive charges are equal to each other. Negative charges gather on the side of the neutral sphere close to test globule	5	-	5	11.1
	They have to be loaded with opposite charges in order to attract	5	2	7	15.6
	As the test globule repels (+) charges and attracts (−) charges, it stays in balance	-	1	1	2.2
	Because the load of the neutral mater $F = k\frac{q_1 q_2}{d^2}$ is zero ($q_2 = 0$), no attraction force is created ($F = 0$)	-	1	1	2.2
	-	1	-	1	2.2
Negative charges of the sphere gather on the side of the test globule		3	-	3	6.7
I don't know		5	-	5	11.1
Other answers (I didn't understand what is meant; it should repel, it is better if it repels)		1	1	2	4.4
No reply		2	-	2	4.4
Total		36	9	45	100

When the answers of the prospective teachers in Table 2 are analysed, it can be observed that they mostly do not have the idea that an electrically charged matter can attract a susceptible neutral matter. The percentage of those who find the answer does not attract as true and try to explain it with their own grounds is 31.1%. When we consider the prospective teachers who say does not attract without any grounds, I don't know, give other answers and no answer, this percentage rises up to 62.1%. For the prospective teachers who took electric and magnetism course, this percentage is quite high. In other words, prospective teachers' level of understanding on static electric

is low. It is very striking that the number of prospective teachers explaining the answer attracts with acceptable grounds is only 11 (24.4%).

Table 3: The answers of the prospective teachers to the question "What does grounding an electrically charged matter (a conductive sphere, an electroscope) mean to you?"

Written Answers	Number of Women	Number of Men	Total	%
It means the neutralization of a matter	15	3	18	40.0
It means that negative charges are transferred to earth	13	3	16	35.6
It means that excess electric charge is released and the matter is loaded with only one charge	2	-	2	4.4
It means the transfer of excess electric to earth	-	2	2	4.4
It means sharing and decreasing of the charge	1	-	1	2.2
I don't know	2	1	3	6.7
Other answers (It means that the matter is loaded with negative charge, (+) and (–) charges gathers on different sides...)	3	-	3	6.7
Total	36	9	45	100

For the question "What does grounding an electrically charged matter mean to you?", the answers as neutralization of a matter or a matter becoming neutral can be accepted as directly true without any problem. The answer "It means that negative charges are transferred to earth" is problematic. If a matter is negatively charged in the beginning, the answer "It means excess negative charges being transferred to earth" can be acceptable. However, here, a general condition is being asked. It can be seen by reviewing the answers in Table 3 that the percentage of the prospective teachers who could not explain grounding an electrically charged matter is very high (60.0%) and their level of understanding is low.

Table 4: The answers of the prospective teachers to the question "What does a quantized electric charge mean? Explain it."

Written Answers	Number of Women	Number of Men	Total	%
It means that electric charge is an integer	-	1	1	2.2
It means that electric charge consists of packages	3	-	3	6.7
It means that electric charge is conserved	4	1	5	11.1
I guess there was Oil-drop Experiment of Millikan about this	2	-	2	4.4
I know but I can't explain it exactly	2	-	2	4.4
I don't know	20	6	26	57.8
What is quantum?	1	1	2	4.4
Other answers (Quantum ensures charge transfer...)	3	-	3	6.7
No answer	1	-	1	2.2
Total	36	9	45	100

Proton and electron has the same amount of electric charge ($e = 1.6 \times 10^{-19}$C). The smallest electric charge in the nature is the charge that an electron has. Therefore, the load of the electron is accepted as the base load. Electric charge being quantized means that electric charge is always found in the nature as the integer multiples of electron charge (e), the base load unit, ($Q = ne$, $n = 1, 2, 3…$).When the first two answers are examined, it can be said that electric charge is discrete (quantized), it cannot have every value (rational value), they are not stated well and they should be rearranged. In the oil-drop experiment, Robert Millik an may have found/understand the value of the electron charge and that the charge is quantized. However, there, it is not asked by which experiment it was found, but how the property of the electric charge being quantized is explained. We can say that all the other answers are wrong. Considering the answers of the prospective teachers, we can come to the conclusion that they mostly (86.7%) do not know the property that electric charge is quantized.

In addition to the prospective teachers' remarks taken in written to the open ended questions to determine their level of understanding about electric charge, semi-structured interviews were conducted with randomly selected 6 people. In the interviews, it was observed that the opinions and answers of the prospective teachers confirmed their

previous written statements/remarks and were very similar to them. Among the original answers obtained from 6 different people for different questions, 4 of them are presented below.

An electrically charged matter means a matter that is not neutral, that is its (+) and (-) charges are not equal

I don't know I wrote the answers just like this for most of the questions

I think grounding is the transfer of the electrons to earth

As I've written previously, what is quantum? If I had known what quantum was, I might have answered that question

CONCLUSION
Of the prospective teachers participated in the study, 22.1% could not explain that a matter is loaded with electric charge, 62.1% could not explain that an electrically charged matter can attract another susceptible neutral matter, 60.0% could not explain the grounding of an electrically charged matter and 86.7% could not explain that electric charge is quantized. Although electric charge is a basic topic taught to the study group in elementary and secondary school and at university, it can be observed from the findings of the study that the prospective teachers' understanding level on this topic is not at the desired level. When the statements in the tables, which include the written answers of the prospective teachers to the questions of the study are reviewed thoroughly, it can be said that electrostatics is not generally conceptually constructed in their minds truly and meaningfully. Considering the results of some of the semi-experimental studies at elementary, and secondary school and undergraduate levels (Reaves, Floversve and Jewell, 1993; Yıldız and Büyükkasap, 2011a, 2011b, 2011c; Yıldız, 2012; Bozat and Yıldız, 2015), it is thought that using learning purpose writing activities may be useful in teaching electric charge topic. After the electric charge topic is explained to prospective teachers, they maybe asked to write/prepare a learning purpose writing activity (letter, summary, banner, poster...) for high school students.

Since a prospective teacher engaged in a writing activity will be on his own, she/he designs her/his own solutions for the problem, thinks and sees the deficient or sufficient parts of her/his designs, the desire and effort to eliminate the deficiencies may trigger a set of ideas and designs, even results in some small researches to be performed. In short, it may enable the writer to use her/his intelligence and skills. At the stage of writing, asthe respondents are younger high school students, the writer may use examples that can be associated with daily life and can be easily understood in order to be more explanatory. All these may enable the prospective teachers engaging in writing activity for learning to properly construct the electric chargetopic in their minds and learn it permanently.

It has become compulsory for the instructors or teachers to abandon their roles of doingand explaining everything in physics courses. In teaching electrostatics, the instructors should allow for dialogues which the students try to persuade each other by their own statements and explanations relevant to the concepts and properties related to the topic or for discussions which contrary ideas are spoken take place rather than being the one who does and explains everything. Prospective teachers participating in the discussions or just being present in the discussion environment may find the opportunity of thinking and then using their ideas and explanations. The usage of methods and activities, which enable prospective teachers to use their intelligence and skills, is thought to make it possible for them to learn the related topic better and also increase their level of understanding.

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DISTANCE TRAINING IN SPECIAL EDUCATION: PARTICIPANTS' ATTITUDES AND PREFERENCES

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ABSTRACT
This study investigated the attitudes of participants in distance education, and their preferences about the type (synchronous, asynchronous, with on-campus meetings, by mail), the educational material (printed, digital, audio-recorded, videotaped), the course delivery (telephone, mail, computer-based communication, teleconference or other methods of synchronous learning etc.) and teaching or means of interaction (e-mail, discussion groups, text-chat, voice chat, audio-conference, video-conference, virtual classroom, etc.) of a distance education program in special education. The impact of age, gender, and frequency of computer use on participant attitudes and preferences were examined. Sixty one adults participated in a distance education (blended) program in special education that combined synchronous and asynchronous learning. The findings could be used to design future distance education programs in special education, and could also be used as a basis for designing new research in this field.

INTRODUCTION
Although most studies have concluded that distance education is more effective than face-to-face instruction, some studies have revealed that technology complicates the process of learning and education (Pant, 2005). There is also an impression that distance education is not of the same quality as traditional classroom-based education (Bernard, Brauer, Abrami, and Surkes, 2004). Differences in learning style and personality characteristics, the isolation felt by distance learners and lack of self-management and independent learning skills are some of the disadvantages compared to traditional education (Bernard et al., 2004).

Some authors believe that the main disadvantage of distance education is the isolation of students and the lack of interaction with fellow-students and the teacher (Leporini & Buzzi, 2007). On the other hand, technology such as audio, video, and computers is used to facilitate home-based study and bridge the instructional gap of physical contact between the teacher and students (Pant, 2005). Since 1960, distance education has evolved teaching methods and techniques for teacher–student and student–student interaction, such as online conferencing. Those methods provide teachers and students with a broad selection of means for overcoming the obstacles of time, place, and pace (Baggeley, 2008).

Many educational organizations have adopted the "blended" model to achieve greater effectiveness in distance education programs (Franco, 2007). In this case, additional teacher-students meetings are provided by the curriculum. Face-to-face contact allows the teacher to expand specific issues (Rosenblum, 2001) and to provide an opportunity for students to learn and practice in an experiential way in topics that cannot be taught differently (Lueck, 2001).

Distance education seems to be an appropriate choice of education module for those students who do not have the ability to attend a conventional classroom program (Koustriava & Papadopoulos, 2014), however, there is a series of factors that might risk the success of a distance learning program (Koustriava & Papadopoulos, 2014). If students are not comfortable with online learning as a new experience, or with the tools they are offered (e.g. specific technology), then a distance learning course is more likely to fail (Koustriava & Papadopoulos, 2014).

Positive attitudes can help participants to manage stress and tune in to the requirements of online learning. Bernard et al. (2004) found that beliefs about distance education constitute a positive predictor of achievement in distance education programs. On the other hand, negative perceptions may lead to higher dropout rates, the limitation of satisfaction, and absence of a strong motivation to learn (Muilenburg & Berge, 2005). Many questionnaires have been created to investigate the attitudes (Bernard et al., 2004; Mishra & Panda, 2007; O'Malley & McCraw, 1999; Tekinarslan, 2008) and/or the readiness (Bernard et al., 2004) of the prospective participants in a distance education program.

Mitchell and Geva-May (2009) have noted the poor increase of faculty acceptance towards online learning compared to acceptance of online learning by institutional decision-makers. The same authors propose that faculty acceptance of online learning is influenced by attitudes related to four variables that affect practice change: intellectual reluctance, support, change and cost-benefit (see, Mitchell & Geva-May, 2009).

Many universities apply distance education programs to train teachers of children with visual impairments. Some of these universities have now replaced the previous programs, which were conducted using the traditional education model, with distance education programs (Arter, McLinden & McCall, 2001). The lack of local training centers may be a key reason why teachers choose to attend a training program on issues concerning education of children with visual impairments via distance learning (Cooper & Keefe, 2001; McLinden, McCall, Hinton & Weston, 2007).

METHOD
The aim of the study was to investigate the attitudes of participants towards distance education, and their preferences concerning the type (synchronous, asynchronous, with face-to-face meetings, or by mail), the educational material (printed, digital, audio-recorded or videotaped), the course delivery (via telephone or mail, with computer-based communication, by teleconference/synchronous learning etc.) and teaching or interaction means (e-mail, discussion groups, text-chat/ voice chat, whiteboard, audio-conference, video-conference, virtual classroom, etc.) in a distance education program in special education. Moreover, the impact of age, gender, and frequency of computer use on participant attitudes and preferences were examined.

Participants
Sixty-one adults took part in the research. The sample consisted of 12 males and 49 females. Their ages ranged from 23 years to 57 years ($M = 31.6$, $SD = 6.88$). All students used personal computers at home. Forty-three (70.5%) out of 63 students used computers for more than two hours per day, 15 (24.6%) students 1-2 hours per day and 3 (4.9%) used them 1-2 hours per week.

Participants were recruited from the 130 students who participated in a 400 hour distance education program by the University of Macedonia (in Greece). Sixty one out of the 130 students agree to participate in this research.

Participants attended a blended learning (hybrid learning) program in special education that combined synchronous and asynchronous learning. The 400 hours of the program were organized as follows: 44 hours were devoted to on-campus courses, 56 hours to courses via teleconference, and 300 were devoted to self learning through homework (involving the writing of three review articles and one research article). Educational materials included printed and digital books, notes and scientific documents. The students also had access to scientific journals and books that were included in international databases.

Instruments and Procedures
Participants completed a questionnaire consisting of three sections. The first included questions about the demographic data of the participants (age, gender, frequency of computer use, etc.)

Prior to completing the second section of the questionnaire, participants were informed about distance education by reading a text. This text consisted of 120 words including a definition of distance education, and a description of synchronous and asynchronous ways of teaching. The text was carefully composed to prevent participants from being influenced in any way.

The second part of the questionnaire consisted of four closed questions concerning attitudes towards distance education. These questions were included in similar questionnaires that have been used in previous studies (Bernard et al., 2004; Koustriava & Papadopoulos, 2014; Mishra & Panda, 2007).

The responses to the questionnaire were based on a five-point Likert scale (totally disagree, disagree, don't know, agree, totally agree). There were both positively formulated (Q1, Q3) and negatively formulated items (Q2, Q4). To calculate the total score for each participant and for all the participants in aggregate, the positively formulated items were scored as follows: *totally disagree* = -2, *disagree* = -1, *don't know* = 0, *agree* = 1, *totally agree* = 2. The negatively formulated items were scored in reverse (for example, *totally disagree* = 2). For instance, if a participant answered "agree" to item Q1 (Distance education increases the quality of teaching and learning) one point would be added to their score. The higher the score the more positive the attitudes of the participants towards distance education. A score equal to zero indicated a neutral attitude towards distance education.

The third part of the questionnaire consisted of four closed-ended questions concerning the participant's preferences regarding: 1) the type of distance education program in special education (the suggested options were synchronous, asynchronous, with on-campus meetings, and by mail); 2) the educational material (the suggested options were printed, digital, audio-recorded, and videotaped); 3) the course delivery (the suggested options were telephone, mail, computer-based communication, attending *mandatory* or *optional* seminars, summer courses and meetings on weekend, teacher's feedback on student homework, and teleconference or other methods of synchronous learning); and 4) the means of teaching or interaction (the options suggested were e-mail, discussion groups, text-chat, voice chat, whiteboard, audio-conference, video-conference, and virtual classroom/ tele-classroom).

Participants were asked to indicate their preferred answers to each closed-ended question. For every question, participants were able to choose more than one answer. A description about the means included in the suggested answers was given in order to avoid misunderstandings due to the limited experience of participants regarding the specific means. Descriptions were carefully composed to prevent participants from being influenced in any way.

After completion of the on-campus courses, teleconferences and the second homework, a digital version of the questionnaire was sent to all participants by e-mail, and they completed and sent it back after a predetermined period.

RESULTS

The means and the standard deviations (SDs) of the total scores and the score for each question concerning attitudes were calculated. The results are presented in Table 1. According to these mean scores and the Likert scale on which the answers were based, the participant answers revealed slightly positive attitudes towards distance education as a whole ($M = .87$).

Participant answers to the first question revealed slightly positive attitudes towards distance education whereas the answers to the fourth question indicated neutral attitudes. On the other hand, participant answers to the second and the third questions revealed strongly positive attitudes. There were no answers suggesting negative attitudes towards distance education.

Table 1. Mean (M) and standard deviation (SD) regarding attitudes towards distance education

	(M)	(SD)
Q1: Distance education increases the quality of teaching and learning»	.64	1.02
Q2: Distance education makes me feel uncomfortable	1.34	.75
Q3: I am willing to communicate via digital means with the teacher and my classmates	1.43	.74
Q4: The lack of immediate feedback and responses to questions is an attribute of distance education which is discouraging for me.	.07	1.17
Attitudes (total)	.87	.62

Almost all participants (93%) chose synchronous learning as the most preferred type of distance education program, more than half (57.4%) of them chose on-campus meetings, and 25% selected asynchronous learning. Only three participants chose communication by mail.

Most participants chose both printed (75.4%) and digital (73.8%) material as the preferred form of education material, almost half (45.9%) picked videotaped material, and only eight participants (13.1%) chose audio-recorded educational material.

Almost all (90.2%) the participants selected "teleconference and other methods of synchronous learning" as the most preferred course delivery, more than half (59%) chose "computer-based communication", almost half (47.5%) of the participants chose "attending optional or mandatory seminars or summer or weekends' meetings", and "teacher's feedback on student homework" (42.6%). Finally, a few participants (about 10%) chose "communication via mail" and "communication via telephone".

Participants were also asked to declare their preferences about means of teaching or interaction in a distance education program. The results revealed that the "virtual classroom" was the most preferred mean (85.2%). Many of the participants (72.1%) selected "voice chat" and almost half the participants chose "discussion groups

(forum, blog, newsgroup, mailing list)" (52.5%), "whiteboard" (57.4%), "video-conference" (47.5%) and "e-mail" (49.2%). Finally, almost 30% of participants chose "audio-conference".

In order to determine the impact of age, gender, and frequency of computer use on participant attitudes and preferences, linear multiple regression analyses were performed (see Tables 2-7), using the age, gender and frequency of computer use variables to predict attitudes and preferences. Significant individual predictors revealed regarding "attitudes", "preference for printed educational material", "preference for digital educational material", "preference for audio-recorded educational material", "preference for text-chat/ voice chat", and "preference for audio-conference".

Multiple regression analysis (see Table 2) yielded an adjusted R^2 of .053 ($F = 2.107$, $p = .110$) concerning "attitudes". Age was a significant individual predictor of "attitudes" ($\beta = .309$, $p < .05$). The more advanced the age of a student, the more positive the attitudes towards distance education.

Table 2. Multiple regression for variables as predictors of 'attitudes'

Variable	B	Std. Error	Beta	t	p
Age	.110	.050	.309	2.212	.031
Gender	-.022	.828	-.004	-.026	.979
Frequency of computer use	.653	.548	.155	1.191	.239

Multiple regression analysis (see Table 3) yielded an adjusted R^2 of .072 ($F = 2.515$, $p = .068$) concerning "preference on printed educational material". Age was a significant individual predictor of "preference on printed educational material" ($\beta = -.328$, $p < .05$). The more advanced the age of a student, the lower the preference in printed educational material.

Table 3. Multiple regression for variables as predictors of 'preference on printed educational material'

Variable	B	Std. Error	Beta	t	p
Age	-.020	.009	-.328	-2.366	.021
Gender	-.007	.144	-.006	-.046	.963
Frequency of computer use	-.145	.095	-.196	-1.523	.133

Multiple regression analysis (see Table 4) yielded an adjusted R^2 of .288 ($F = 8.970$, $p < .01$) concerning the "preference on digital educational material". Significant individual predictors of "preference for digital educational material" were gender ($\beta = -.287$, $p < .05$) and frequency of computer use ($\beta = .487$, $p < .01$). The greater the frequency of computer use, the stronger the preference for digital educational material. Furthermore, it seems that males prefer digital educational material more than females.

Table 4. Multiple regression for variables as predictors of 'preference on digital educational material'

Variable	B	Std. Error	Beta	t	p
Age	.001	.008	.021	.174	.863
Gender	-.317	.131	-.287	-2.412	.019
Frequency of computer use	.377	.087	.487	4.329	.000

Concerning the "preference for audio-recorded educational material" multiple regression analysis (see Table 5) yielded an adjusted R^2 of .288 ($F = 2.034$, $p = .120$). Gender was a significant individual predictor of "audio-recorded educational material" ($\beta = -.289$, $p < .05$). Males prefer audio-recorded educational material more than females.

Table 5. Multiple regression for variables as predictors of 'preference on audio-recorded material'

Variable	B	Std. Error	Beta	t	p
Age	.001	.007	.017	.123	.903
Gender	-.246	.117	-.289	-2.107	.040
Frequency of computer use	-.062	.077	-.104	-.797	.429

Multiple regression analysis (see Table 6) yielded an adjusted R^2 of .035 ($F = 1.716$, $p = .174$) regarding the "preference on text-chat/ voice chat". Age was a significant individual predictor of "preference on chat/ voice

chat" ($\beta = .287$, $p < .05$). The more advanced the age of a student, the stronger the preference on "text-chat/ voice chat".

Table 6. Multiple regression for variables as predictors of 'preference on text-chat/ voice chat'

Variable	B	Std. Error	Beta	t	p
Age	.019	.009	.287	2.030	.047
Gender	-.025	.156	-.022	-.160	.873
Frequency of computer use	.047	.103	.060	.455	.651

Concerning the "preference on audio-conference" multiple regression analysis (see Table 7) yielded an adjusted R^2 of .048 ($F = 1.992$, $p = .126$). Age was a significant individual predictor of "preference on audio-conference" ($\beta = .321$, $p < .05$). The more advanced the age of a student, the stronger the preference on "audio-conference".

Table 7. Multiple regression for variables as predictors of 'preference on audio-conference'

Variable	B	Std. Error	Beta	t	p
Age	.022	.010	.321	2.286	.026
Gender	.014	.160	.012	.088	.930
Frequency of computer use	.034	.106	.042	.321	.750

CONCLUSIONS

The answers of the participants in the questionnaire regarding their openness to participate in a distance education program revealed positive or strong positive attitudes, however, it seems that the lack of immediate feedback and responding to participants' questions is an attribute of distance education that generates concerns to them.

In addition, the greater the age, the more positive were attitudes towards distance education. This is probably due to the limited free time that older people have, combined with an increasing need for continuing education. Choosing a distance learning program can facilitate this need.

An important conclusion of the present study is the strong preference of participants for synchronous communication between the teacher and students. Almost all the participants preferred synchronous communication through teleconference and the other methods of synchronous education. Moreover, the virtual classrooms were the top preference for means of teaching or interaction. The "virtual classroom" was one of the most preferred options, because this method compensates for the teacher's natural presence, which seems to be important to adults, by providing the advantages of an interpersonal contact.

Many participants stated their preference for "text-chat/ voice chat" which is also a type of synchronous communication. Only 1/4 of the participants preferred asynchronous communication and few the communication via mail or via telephone.

Another conclusion is the preference of participants for on-campus communication and training. This finding supports the inclusion of blended courses. Almost half the participants preferred to include face- to -face meetings in a program, as well as optional or mandatory seminars, summer courses or weekend meetings.

There seemed to be strong preferences about the two basic forms of educational material, printed and digital. An expected finding was the strong preference for digital educational material by participants who use computers more frequently.

The older a student, the less the preference for printed educational material, and the stronger the preference for "text-chat or voice chat", and also for "audio-conference". This is an unexpected finding considering that age affects attitudes to computer technology (Kraus & Hoyer, 1984), with older people more resistant to using newer technologies than younger (Czaja & Sharit, 1998), however, we can't draw a reliable conclusion as only eight participants were over 40 years old, and only two over 45 years.

Findings of present study can be useful in planning distance education programs in special education. Moreover, they can be used as a basis for planning new research in this field.

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DİNLERİN AHLAK İLKELERİ BAĞLAMINDA MERHAMET ANLAYIŞININ NİHAİ TEZAHÜRÜ: ÖLDÜRMEME PRENSİBİ

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Özet

Dinler ahlaki esaslar çerçevesinde kendi aralarındaki bazı farklılıklara rağmen insanlığın refah ve huzuru için bir takım ilke ve kurallar getirmiştir. Yine dinler, nihai hedef olarak hitap ettikleri topluluklara ahlaklı ve erdemli bireyler yetiştirmeyi öngörmektedirler. Nitekim dinlerin ahlaki mesajlarına bakıldığında altın kural biçiminde tanımlanan *"Kendine yapılmasını istemediğin bir şeyi başkasına yapma"* kapsamındaki ilke genel geçer bir ahlaki kural olarak kabul edilmektedir. Bu bağlamda dinlerin ortak noktada buluşabileceği değerlerden biri de merhamet ve onun nihai tezahürü olan öldürmeme prensibidir. Merhametin temel teşkil ettiği ilkeler çerçevesinde dinler cana kastı, canlılara zarar vermeyi yasaklamıştır. Her din kendi konteksinde bu fiillere karşı müeyyideler ortaya koymuşlardır.

Anahtar Kelimeler: *Ahlak, Merhamet, Öldürmeme, Ahimsa*

Giriş

Tüm dinler insanlık tarihi sürecinde adalete, iyilik yapmaya, hukukun üstünlüğüne, sevgi, hoşgörü ve barışa çağırmışlardır. Buna karşın öldürmeye, haksızlığa, şiddete, hırsızlığa, birey ve toplumun yapısını bozacak fiilleri de yasaklayarak müeyyide uygulamıştır. Esasında dinler bu bakış açılarıyla değerler sistemi oluşturmuş ve bunu da ahlaki ilkelerle temellendirmiştir. Dinlerin sunmuş olduğu bu ahlaki prensipler, kendi teolojilerinin inanç ilkeleriyle desteklenmiştir. Nihayetinde dinlerin merhamet anlayışlarının nihai tezahürü öldürmeme prensibi karşısındaki tavırları, bu olaya yönelik yaptırımları ve ortaya koydukları genel ahlaki ilkeler burada ortaya konmaya çalışılacaktır.

1. Ahlak

Değerler dünyasında insanın en temel sorunlarından birini oluşturan ahlakla ilgili her disiplin kendine göre bir tanım yapmıştır. Bu tanımlar arasında kaybolmaktan ziyade kelime anlamından hareketle ahlakı ifade etmek gerekmektedir. Yunanca ve Arapçada karakter anlamlarına gelen *ethos* ve *hulk* sözcüklerinden türeyen ahlak, insanın başka varlıklarla belirli kurallara göre gerçekleşen ilişkiler toplamıdır. İnsanın söz konusu bu ilişkileriyle diğer varlıklara yönelen fiillerini düzenleyen, anlamlandıran ilke, kural ve değerler bütünüdür (Cevizci, 2002, s. 3.). Bu bağlamda ahlak, insanda yerleşmiş bir karakter yapısına işaret eden, huy, hal ve hareket tarzı gibi anlamlara gelen bir tavırdır. Ahlak aynı zamanda bireylerin iradi fonksiyonlarıyla ilgilenen, zamana, toplumlara ve kültürlere göre değişiklik gösteren davranışlara karşılık zorunlu ve değişmeyen davranış kurallarına işaret etmektedir (Kılıç, 1992, s. 2.).

Kuşkusuz din ve ahlak arasındaki ilişki düşünce tarihinde üzerinde durulması gereken olgulardandır. Bu bağlamda tarihi süreçte dinden ahlaka ve ahlakta dine doğru giden bir metot izlenebilmiştir. Her iki metodu açacak olursak birincisinde teolojik bir ahlak ikincisinde ise ahlaki bir teoloji kurulmaya çalışılmıştır (Aydın, 1999, s. 306, Yıldırım, 2014, s. 93). Tabiidir ki teolojik ahlak temellendirilmesinde vahye dayalı dinler ön plana çıkmaktadır. Bu anlayışta Tanrının iradesi, ahlaki değerin veya ahlak yasasının sebebi, ahlak alanının tamamlayıcısı ve teşvik edicisidir. Tanrı, kozmolojik anlamda her şeyin sebebi olduğu gibi ahlakın da temel sebebidir (Aydın, 1999, s. 308, Yıldırım, 2014, s. 93). Ahlak- din ilişkisi bağlamında neyin iyi neyin kötü olduğu dini otorite tarafından bildirilmektedir. Ahlak, dinin yaklaşımı söz konusu olduğundan dini otorite tarafından yapılması ve men edilmesi gereken bildirilmekte ve insanların buna uymaları istenmektedir. Bu noktada din, ahlaka kural koyucu tarzda yaklaşmakta, bireysel ve toplumsal anlamda müeyyide uygulamaktadır (Yıldırım, 2014, s. 95).

1.1. Ahlak Öğretileri ve Dinler

Esasında dinler kutsal metinlerinde ahlaki konulara vurgu yaparak mensuplarına ahlaki değerler üzerine kurulu sistem sunarlar. Bu sistem çerçevesinde ilkel kabile inanışlarından ilahi dinlere kadar tüm dinler inanırlarına bağlayıcı değerler yüklemektedir. Yine bu kapsamda özellikle uzak doğu dinlerinde ahlaki mesajlar daha çok ön plana çıkmaktadır.

Hint kökenli dinlerin mesajlarında ahlaki vurgular belirgin düzeyde kendini göstermektedir. İnsanın olgunluğa ve mükemmelliğe ulaşması tüm yaşam boyu devam eden bir süreçtir. Hint geleneği, insanlarda dengeli bir kişilik gelişimine imkân tanıyacak bir hayat felsefesi üretmeyi amaçlamaktadır (Köylü, 2010, s. 25, Yıldırım, 2014, s.

98). Yine Hint dinlerinde insanın kendisini kontrol etmesi, temiz tutması ve sürekli teyakkuzda olması gereklidir. İnsanlar, öldürmeme, çalmama, zinadan kaçınma, yalan söylememe ve zarar verici alışkanlıklardan uzak durmalıdır. Bütün bunlar dini gelenek içerisinde yer alan ahlaki kurallardır. Hint dinlerindeki ahlaki öğretiler ideal insan tipolojisi de çizmektedirler. Buna göre ideal kişi şehvet, nefret, maddi hayata aşırı tutumlardan vaz geçen, cömert, erdem, feraset ve bilge karakterli kimselerdir (Yıldırım, 2014, s. 100).

Ahlak hakkında vahye dayalı dinlerin karakteristik özelliği emir ve yasakların tanrısal kökenli görünümüdür. Bu noktada en başta Yahudilik ve İslamiyet'te Tanrı açıkça yasa koyucu ve ahlaki planda değer yapıcıdır. Yahudilikte Musa'ya verilen "On Emir" şeriat ve ahlak konusunda Tanrının müdahalesini yansıtmaktadır. Tanrı Yahve adına boş yere yemin etmemeyi, yalan söylememeyi, çalmamayı, fitne çıkarmamayı, zulmetmemeyi, adaletsizlik yapmamayı ve öldürmemeyi öngörmektedir. Bu kurallar Yahudi inancı açısından mutlak anlamda bağlayıcı niteliktedir.

Ahlak anlayışı çerçevesinde İslam dininde en büyük kriter hiç şüphesiz Kur'an ayetleridir. Kur'an insanın her şeyden önce ahlaki meziyetlerle süslenmesini, bunu hayatın bir şiarı haline getirilmesini istemektedir. Nitekim Kur'an bütünlüğü bağlamında insanın iyiliği emir, kötülüğü nehiy olarak algılaması amaçlanmaktadır. Diğer taraftan yeryüzünde fesat çıkarmak, yalan söylemek, hırsızlık, zina ve şiddetle kınanan boş yere insan öldürülmesi gibi fiiller kesinlikle yasak kapsamında tutulmaktadır. İslam ahlak profilinde yaratıcı bireysel ve toplumsal daha da ileri bir aşamada tüm varlıklara faydalı olan işlevlerin teşvik edilmesini bunun karşısında da zararlı eylemlerinden de uzak durulmasını emretmektedir.

2. Merhamet ve Öldürmeme

2.1. Merhamet
Dinlerin inanç temelli desteklenen ahlaki ilkelerinden ve dinleri ortak bir noktada birleştirebilen değerlerden biri de hiç şüphesiz merhamet anlayışıdır. Merhametin eş anlamlısı olarak kullanılan ve hemen aynı karşılığı veren kavram ise sevgidir. İnsanların kalbinde fıtrat olarak var olan merhamet ve sevgi dini inançlarla da pekiştirilmiştir.
Acımak, şefkat göstermek, iyilik ve lütuf anlamlarına gelen merhamet, öncelikle Tanrının bütün yaratılmışlara yönelik ihsanını ifade etmektedir. Bunun yanında insanlarda bulunan, onları hemcinslerinin ve diğer canlıların sıkıntılarına duyarlı olmaya ve yardım etmeye sevk eden acıma duygusunu belirtmektedir. Bu bağlamda merhamet, insanlar arasındaki duygu birliğinin, dayanışma ve paylaşmanın başta gelen etkenlerinden bir olarak görülmektedir.

Merhamet kavramı aynı zamanda rahmet sözcüğü ile de eş anlamlı olup genellikle rahmet kelimesiyle ifade edilir. Merhamet insanlar arasındaki duygu birliğinin, dayanışma ve paylaşmanın başta gelen amillerindendir. İnsanlara nispet edildiğinde duygusal bir anlam yüklenirken Allah'a nispette O'nun fiili sıfatı olarak kabul edilmesi, dolayısıyla Allah hakkında duygusal manada değil O'nun yarattıklarına ihsanı, af ve mağfireti biçiminde anlaşılması gerektiğine dikkat çekilmektedir. Esasında şefkat ve merhamet gibi duygular Allah'ın insanların içine koyduğu birer iyilik aracı olup asıl amaç muhtaç ve çaresizlere yardım edip sıkıntılarını gidermektir (Karaman, 2013, s. 212).

2. 2. Öldürmeme Prensibi
Merhamet anlayışının en önemli tezahürlerinden biri hiç şüphesiz başta insan dâhil canlıları öldürmeme, onlara zarar vermeme prensibidir. Bu çerçevede tüm dinler herhangi bir canlının hayatına son vermek anlamındaki öldürme fiiline şiddetle karşı durmuştur. Bu eylemi işleyenleri hem dünya hayatında hem de diğer âlemde cezalandırma yoluna gitmişlerdir. Diğer taraftan dinlerin bazıları kendini koruma ve devletin işlediği fiiller haricinde bazıları ise insanla birlikte diğer tüm canlıları sebepsiz yere öldürmeyi yasaklamışlardır.
Merhamet anlayışının nihai tezahürü öldürmeme prensibi kapsamında tüm dinlerde sebepsiz yere cana kıymak yasaklanmıştır. Bu durum aynı zamanda insan hakları ve ahlak ilkeleri bağlamında değerlendirilmektedir. Dinlerin yasaklamış olduğu cana kıyma ya da daha geniş bir açıdan canlılara ve tabiata zarar vermeme algısı direkt olarak insan vicdanı ile alakalıdır. Nitekim dinler de en başta insanın vicdanına hitap etmektedir. Dinlerin yasaklamış olduğu öldürmeme prensibi ile ilgili olarak tüm dinlerin kutsal metinlerinde karşılık bulmak elbette mümkündür. Ancak burada ağırlıklı olarak kendi geleneğimizde ilahi ya da semavi dinler diye nitelediğimiz Yahudilik, Hıristiyanlık ve İslam'daki mesajlara ağırlık verilecektir. Diğer taraftan özellikle Hint dinlerinde kendisini gösteren canlılara zarar vermeme ilkesine de değinmek gerekecektir.

İlahi dinlerin ilki Yahudilikte öldürmeme prensibi Tanrı Yahve'nin Musa'ya göndermiş olduğu on emre dayanmaktadır. Esasında bu prensip daha önce Nuh'a gönderilen emir ve yasaklarla aynı ölçüdedir. Tora'da Nuh'un yedi kuralından bahsedilmekte ve insanların bunlara uyulması istenmektedir. Putlara tapmamak, adam öldürmemek, Tanrıya küfürden kaçınmak, hırsızlık yapmamak, zinadan kaçınmak, adaletli davranmak, canlı

hayvanlardan et koparıp yenilmemesi hallerinde insanlar uyarılmışlardır. Nuhilik olarak da kabul edilen bu ilkeler, tektanrıcılığı ve evrensel ahlak prensiplerini içermektedir (Adam, 2015, s. 127). Yahudilikte Nuh kurallarının paralelindeki On Emir'de de benzer ilkeler belirlenmiştir. Tanrının Musa aracılığıyla verdiği bir nevi anayasa denilen, ölümsüz olan, Tanrısal ahlak ve toplumsal düzen öğeleri içeren buyruklar Yahudiler tarafından "On Emir" diye anılır. Bu on sözün sıralanması dahi gelişi güzel değildir. İlk dört emirde var olan kurallar, insanın Tanrı ile ilişkilerini, beşincisi kişinin ailesiyle, altıdan ona kadar olanlar da insanın toplumla ilişkilerini düzenlemektedir. (Suzan Alalu vd.. 1996, s. 159). Bunlar şu şekildedir:

1. Seni Mısır diyarından çıkaran Tanrı benim. Benden başka Tanrı olmayacak

2. Kendin için yontma put yapmayacaksın. Hiçbir şeyin resmini yapıp tapmayacaksın.

3. Tanrının adını boş yere ağzına almayacaksın.

4. Cumartesi gününü daima hatırlayıp onu kutsal kabul edeceksin.

5. Babana ve annene hürmet edeceksin.

6. Öldürmeyeceksin.

7. Zina yapmayacaksın.

8. Çalmayacaksın.

9. Komşuna karşı yalancı şahitlik yapmayacaksın.

10. Komşunun evine, malına, ırzına göz dikmeyeceksin (Çıkış, 20, Tesniye, 5).

Yahudilikte emir ve yasakların muhatabı olan insan yaradılış özelliğiyle kutsal kabul edilmektedir. Zira insan Yahudi inancında Tanrının kendisine benzeterek yaratmış olduğu en önemli varlıktır. Nitekim insanın bu özelliği bizzat Tanrı tarafından bilerek verilmiş ve imtiyaz sahibi kılınmıştır (Bkz. Tekvin, V/1). Tanrının yaratmış olduğu insanın öldürülmesi de aynı kıymette yasaklanmıştır. Çünkü Tanrı tarafından bu kadar değer verilen bir varlığın hayatına son verilmesi Tanrıya ve insana karşı bir karşı gelen biçiminde algılanmıştır. Dolayısıyla On Emir'deki öldürmeme ilkesi hem insana saygıyı hem de tüm canlılara zarar vermeme anlayışına teşmildir.

Yahudi dini inancında altıncı emir olarak da yerleşen bu kuralla bireyin en önemli değeri olan yaşama hakkı korunmakta ve insan hayatının kutsallığına değinilmektedir. Bir insanın bir başka suçsuz insanın yaşamına son vermesini yasaklayan bu emirle bireyle toplum ilişkileri düzenlenmektedir (Suzan Alalu vd.. 1996, s. 162).

Yahudilikte kişinin hayatını koruması hususunda neler yapabileceği Tanah'ta şu şekilde dile getirilmektedir: *"Gelin ey çocuklar, dinleyin beni: Size Rab korkusunu öğreteyim. Kim yaşamdan zevk almak, iyi günler görmek istiyorsa, dilini kötülükten, dudaklarını yalandan uzak tutsun. Kötülükten sakın, iyilik yapın, esenliği amaçlayın, ardınca gidin. Rabbin gözleri doğru kişilerin üzerindedir. Kulakları onların yakarışına açıktır. Rab kötülük yapanlara karşıdır. Onların anısını yeryüzünde siler. Doğrular yakarır, Rab duyar, bütün sıkıntılardan kurtarır onları. Rab gönlü kırıklara yakındır, Ruhu ezginleri kurtarır. Doğrunun dertleri çoktur, ama Rab hepsinden kurtarır onu. Bütün kemiklerini korur, hiçbiri kırılmaz. Kötü insanın sonu kötülükle biter, cezasını bulur doğrulardan nefret edenler. Rab kullarını kurtarır, O'na sığınanlardan hiç biri ceza görmez"* (Mezmurlar, 34/11-22).

Hıristiyan inancında da Yahudilikte olduğu gibi en kutsal fiillerden biri canın korunmasıdır. Zira insanın sahip olduğu en önemli hak yaşam hakkıdır. Bu açıdan Hıristiyanlıkta Tanrının bahşetmiş olduğu yaşam hakkının korunması en büyük görevlerdendir. Öyle ki tüm yaşam Tanrının insana sunmuş olduğu bir armağandır. Aynı şekilde tanrının insana verdiği nimetlerin başında Tanrısal beden gelmektedir. Tanrıdan insana emanet verilen bu beden sayesinde Tanrı insan ruhunda yaşamaya devam etmektedir (I. Korinliler, III/16). Bu çerçevede insanın bedeni koruması, onu yok etmemesi, başka bir cana kıymaması ilahi bir yükümlülüktür. Nitekim Hıristiyanlıkta cana kıyılması Tanrının lütfettiği hayatı ortadan kaldırmak şeklinde algılandığından kesinlikle yasaklanmıştır. Bu hususta İsa Mesih meşhur dağdaki vaazında "öldürmeyeceksin!" tabirini kullanarak bu fiilden insanları men etmiştir. Yine İsa Mesih, Yahudilikte Musa'ya gönderilen On Emre dikkat çekerek atalarımızın adam öldürmeme konusunda uyarıldığını ve bunu yapanın da yargılanacağı gerçeğini insanlara hatırlatmıştır (Matta, V/21).

Hıristiyan inancında İsa Mesih hayatın kaynağı ve insanların ışığı olarak nitelendirilir. Başlangıçtan beri var olan bu kaynak Tanrı ile birlikteydi ve Tanrı insanları çok sevdiği için biricik oğlunu dünyaya, insanlar arasına, onları kurtarmak amacıyla göndermiştir. İsa Mesih'in şahsında simgelenen hayat ve ışık onu takip edenleri karanlıkta bırakmayacak ve nihai kurtuluşlarına yol açacaktır (Yuhanna, I/1-6). Hayatın Tanrısal bir bedene dayandırıldığı, İsa Mesih'in yaşamıyla da temsil edildiği vurgulanan bu yaşamı korumak tabiidir ki en büyük sorumluluktur. Buradan anlaşıldığı gibi Hıristiyan inancında insanın nihai görevi Tanrısal bedene zarar vermemek, boş yere bedenlere kıymamaktır. Her ne olursa olsun, hangi inanca aidiyet görülmeksizin insanın taşıdığı can bir emanet ve onu korumak ibadettir.

İslam inancına göre hayatı ve ölümü yaratan hiç şüphesiz Allah'tır. Bu bağlamda insan hayatı Allah'ın bir takdiri sonucu insana bahşedilen en büyük nimetlerdendir. Hayat Allah'ın insana bir emaneti olduğundan onun korunması da insanın üzerine düşen en büyük görevlerindendir. Kur'an'da boş yere cana kıymanın karşılığı olarak ebedi azap gösterilmiş ve insanların bu eylemlerden uzak durması açıkça belirtilmiştir. *"Her kim bir insanı öldürürse tüm insanları öldürmüş gibi olur. Ama kim de bir insanın hayatını korur ve kurtarırsa bütün insanlara hayat bahşetmiş olur"* (Maide, 5). Yine öldürme olayı bir inanana karşı yapılmışsa cezası net bir şekilde belirtilmiştir. *"Kim bir mümini kasten öldürürse, onun cezası temelli olarak cehennemde kalmaktır. Allah ona gazap etmiş, onu lanetleyip rahmetinden uzaklaştırmış ve yine onun için dehşetli bir azap hazırlamıştır"* (Nisa, 93).

Kuşkusuz İslam dini cana kastetme hususunda hukuki planda bir takım esaslar ortaya koymuştur. Bireylerin yaşam haklarına yönelik saldırılar karşısında cezai yaptırımlar getirilerek insan hayatı korunmaya gayret sarf edilmiştir. Yahudilikte olduğu gibi İslamın temel kaynağı Kur'an'da başta öldürme olmak üzere bir takım cezalara kısas şeklinde uygulama ön görülmüştür. Nitekim Kur'an bu hususta şöyle bahsetmektedir: *"Haklı bir sebep bulunmadıkça Allah'ın dokunulmaz kıldığı cana kıymayın. Bununla birlikte biz haksız yere öldürülen kişinin velisine yetki verdik. Bu konuda yetki verilen kişi kendince adaleti gerçekleştirmek adına bir kişiye karşılık iki veya daha fazla kişiyi öldürmek gibi bir aşırılığa kaçmasın. Çünkü o kişiye böyle bir yetki verilmekle gerekli yardım zaten yapılmıştır"* (İsra, 33).

İslam dininin öldürme konusundaki gerek hukuki gerekse de ahlaki açıdan koyduğu müeyyideleri insan hayatını korumaya yöneliktir. Bu çerçevede adam öldürmenin yanında kız çocuklarının diri diri gömülmesi ve intihar hususunda da bu fiillere yasaklar getirilmiştir. Her ne kadar intihar olayında Kur'an'dan direkt karşılığı olan bir ayet olmasa da adam öldürme fiilinin kapsamına girdirilmiştir. Böylece intihar olgusu da cana kastetme biçiminde aynı sonuca götüren bir fiil olarak kabul edilmiştir. Kur'an canı alacak olan tek iradenin ancak Allah olduğunu vurgulamıştır. Kur'an çocukların doğarken cinsiyetleri yüzünden öldürülmesini kınamış ve uygulamanın çirkinliğini gözler önüne sermiştir. *"Vaktiyle diri diri gömülen kız çocuğunun, hangi günahından dolayı öldürüldü? Diye hesabı sorulacak"* (Tekvir, 8-9). Diğer taraftan insanın kendi canına kıyması olan intihar olayında delil olarak şu ayete yer verilmektedir: *"Ey Müminler! Karşılıklı gönül rızasıyla, fakat harama bulaşmadan ticaret yapın ama sakın haksız yollarla birbirinizin malını yemeyin. Birbirinizin mallarını gayri meşru yollarla yemek suretiyle kendinizi ve kardeşlerinizi mahvetmeyin. Allah size karşı pek merhametlidir"* (Nisa, 29). Burada mahvetmek fiiliyle insanın kendisine çeşitli yollardan zarar vermesiyle birlikte canına kıyması şekliyle de yoruma gidilmiştir. Ayrıca Kur'an'da çeşitli ayetlerde geçen *"...kendi kendinizi tehlikeye atmayın"* (Bakara, 195), *"Hiç şüphesiz canı veren de canı alan da biziz. Dolayısıyla fani olan her şeyin asıl sahibi biziz ve biz ilelebet bakiyiz"* (Hicr, 23) ifadeler de intihar olayının yasaklığına delil olarak kullanılmıştır.

İlahi dinlerin dışında öldürmeme prensibiyle ilgili en çarpıcı ve bir o kadar da orijinal yaklaşımlar Hint kökenli dinlerden gelmektedir. Özellikle Buddizm ve Caynizm'deki "Ahimsa" prensibi çerçevesinde kendini gösteren canlılara zarar vermeme anlayışı dikkat çekmektedir. Sanskritçe bir kelime olan ahimsa, yaralamama, incitmeme, öldürmeme, kan dökmeme, şiddetten uzak durma, acı ve ıstıraba neden olmama gibi anlamlara gelmektedir. Dolayısıyla düşünsel, sözel ve fiziki açıdan hiçbir canlı varlığı incitmeme biçiminde ifade edilmektedir. Ayrıca bu kavram, diğer varlıklara karşı şevkat, merhamet ve sevgi hissine sahip olunmasını da içermektedir (Arslan, 2008, 71). Budha'nın öğretisini benimseme, öğrenme ve onun yolunda ilerleme ahimsa prensibini temel alan bir düşünce ve davranış ortaya koymayı gerektirir. Şiddet insanlık tarihinde her zaman var olduğu için insanlar onu ortadan kaldırmaya çaba sarfetmeli, şidetin yerini barış almalıdır (Arslan, 2008, 75).

Buddizm'de canlılara zarar vermeme (ahimsa) prensibi Budha'nın ortaya koyduğu beş esastan ilki ve en önemlisidir. *"Bütün canlılar şiddet ve ölümden korkar. Kendini onların yerine koy; kesinlikle öldürme ve başkalarının öldürmesine neden olma". "Canlı varlıkları öldürme ve başkalarının öldürmesine neden olma ve başkalarının öldürmesine izin verme. Bir kimse bir toplumda ister güçlü ve cesur ister güçsüz ve korkak olsun bütün canlı varlıklara yönelik şiddete karşı koymalıdır".* Buddizm'de canlı yaşamının korunmasına yönelik mesajlara çok sık rastlanmaktadır. Yine bunlardan birinde keşiş hayatındakilerin dahi bu ilke dikkat etmesi beklenmektedir. *Bir keşiş kasıtlı olarak bir kurtçuk ve karınca öldürmemelidir"* (Arslan, 2008, 74).

Caynizm'de ahimsa prensibi, şiddetten uzak durma, incitmeme anlamlarının yanında yaşam sahibi herhangi bir varlığa zarar verme arzu ve isteğinin yokluğu anlamına gelir. Caynizm ahimsa prensibini sadece insanlarla sınırlı tutmayarak bütün canlıları kapsam alanına alır hayat sahibi olan ya da bu potansiyeli içeren tüm varlıkları bu kategoriye dahil eder. Yine Caynizm'e göre canlıları korumak sadakaların en yücesi ve makbulüdür. Saf niyetli ve dikkatli olmak ahimsanın en önemli iki hasletidir. Diğer taraftan Caynizm mensuplarını katı bir vejeteryan diyet yapmaya teşvik eden tek dindir. Buna göre keşişler, bitki ve hayvan ürünlerinden olan yiyeceklerden uzak dururlar. Alkol, uyuşturucu, süt ve bal gibi nesneleri kullanmazlar (Arslan, 2008, 76).

SONUÇ

Merhametin temel teşkil ettiği ilkeler çerçevesinde dinler cana kastı, canlılara zarar vermeyi yasaklamıştır. İnsanlık tarihi sürecinde dinler adalete, iyilik yapmaya, hukukun üstünlüğüne, sevgi, hoşgörü ve barışa çağırmıştır. Diğer taraftan öldürmeye, haksızlığa, şiddete, hırsızlığa, birey ve toplumun yapısını bozacak fiilleri de yasaklayarak müeyyide uygulamıştır. Nitekim dinler herhangi bir canlının hayatına son vermek anlamındaki öldürme fiiline şiddetle karşı durmuştur. Bu eylemi işleyenleri hem dünya hayatında hem de diğer âlemde cezalandırma yoluna gitmiştir. Yine dinlerin bazıları kendini koruma ve devletin işlediği fiiler haricinde bazıları ise insanla birlikte diğer tüm canlıları sebepsiz yere öldürmeyi yasaklamıştır. Hülasa dinlerin yasaklamış olduğu öldürmeme prensibi ile ilgili olarak tüm dinlerin kutsal metinlerinde karşılık bulmak elbette mümkündür.

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DOES GENERATION Y REALLY STOP PURCHASING DIGITAL MUSIC?

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ABSTRACT

The global recording industry is passing through a new transition in the fast-evolving digital market place with music streaming a key component of this growth. Artists and entrepreneurs must embrace new ideas, business models and channels to accommodate the change. Globally in 2014 the digital music industry reached US$6.85 billion in revenues but ownership and piracy issues are always stumbling blocks to the industry's sustainable growth. Entrepreneurs therefore need to adapt to changing consumption habits as digital music consumer habits are changing fast and digital music labels need to rethink their strategies to keep pace with new technology. In Thailand, those born between 1981 and 2000 are known as Generation Y which is one of the largest consumer segments in the country with a lifetime spending potential of over USD $5 trillion. Additionally, these Generation Y as digital music consumers are also the largest owners of smart phones within the population and some of the most connected individuals on earth. This study therefore aims to identify factors and methods that affect this huge markets' decision to purchase and download digital music.

Keywords: attitude, idolatry, perceived behavioural control, subjective norms, SEM

INTRODUCTION

Digital music distribution began with the illegal file-sharing activities of the late 1990s (Klym, 2005) and exploded when the software tool 'Napster' arrived on the scene in 1998 (Lamont, 2013). It however wasn't until Apple's iTunes Music Store release in 2003 that legal downloading of digital music began and by 2006 iTunes had taken control of 80% of the legal digital music downloading market in the U.S. (Klym, 2005). However, illegal copying and sharing of files has continued to explode with streaming a new threat to the Thai music industry.

In 2015 digital music sales globally grew to $US 6.9 billion (IFPI Global Music Report, 2016) and for the first time digital overtook all other forms of recorded music. In 2014 however, Thailand's music market dropped from US$304 million in 2010to US$279 with experts indicating this trend will continue at nearly one percent per year through 2019 (Digital platforms lift Thai media, 2016), with digital music piracy being the No. 1 threat to the Thai music industry.

Thailand's downtrend is consistent with a global trend as despite growing digital music revenue, in a 10 year period from 2003 to 2013, global music sales dropped from $US23.3 billion to $US15 billion dollars (IFPI Global Music Report, 2016).This nonstop decrease in collective revenue is most primarily due to the increase in illegal music downloads and music streaming from smartphones and tablets. And according to research from Chiou, Huang, and Lee (2005) music piracy is the greatest single threat facing the music industry worldwide today.

Another study titled 'Generation Y' Leads the Way on Smartphones' stated that the Generation-Y users (born between 1981 and 2000) are the most likely age group to own smartphones (eMarketer, 2013). According to the Siam Commercial Bank Economic Intelligence Center (2015), this same Generation-Y is the largest consumer segment in the country and are the biggest generation ever (unlikely to ever be surpassed) with a spending potential rivalling that of Generation-X in 2015 having a lifetime spending potential of THB 160 trillion (USD $5 trillion).

The researchers therefore see several factors coming together that will continue to enhance and expand the digital music business in Thailand. One component is the trend in smartphone ownership and use which is soaring among Thais. Thailand's smartphone ownership is expected to reach 100% in the next four years and reshape the mobile landscape and consumer behavior (Kewaleewongsatorn, 2015). In the age group between 16-34 (Generation Y) most owned smartphones with the average Thai spending nearly four hours a day on it.

LITERATURE REVIEW

PURCHASING INTENTION

Kotler and Armstrong (2001) discussed the dimensions of purchase intention as well as how consumers obtained their information and from what sources and concluded that product information and their sources was crucial as it was done at the beginning of the purchase investigation process which could affect the rest of the consumer's decision making process.

Chiang and Dholakia (2003) also examined online consumer buying and determined that the information acquisition stage consisted of three important variables including convenience, the product's characteristics and product pricing. Kotler (2000) stated that willingness to buy is a measurement of effective consumer behavior.

Suki, Ramayah, and Suki (2011) studied Malaysian consumers' intention towards software piracy, and determined that there was a significant and positive relationship between subjective norms and attitudes and consumers' intention towards software piracy. This is consistent with Cronan and Al-Rafee (2008) which determined previous music piracy and a consumer's sense of morality affected a person's intention to pirate digital material. Lin, Hsu, Kuo, and Sun (1999) showed that Information Services staff piracy is directly influenced by their opinions, subjective norms, and perceived de-individuation. Buchan (2005) which expanded on research by Ajzen (1985) determined that there was a significant relationship between subjective norms and attitudes with IT staff opinions about ethical issues clearly influencing purchase intention. Additionally, social factors were shown to have a significant influence on attitude formation.

ATTITUDE

In 1937 Murphy, Murphy, and Newcomb (1937) proclaimed that attitude was the most important concept in the entire field of social psychology. Ajzen and Fishbein (1980) later argued that attitudes are comprised of beliefs and evaluations regarding expected outcomes. Al-Rafee and Cronan (2006) studied digital pirating attitudes and concluded that it is influenced by beliefs about the outcome of behavior, happiness and excitement, age, the perceived importance of the issue, the influence of significant others, and Machiavellianism.

Attitude therefore is considered by many to be a crucial factor in the loss or generation of revenues for the music industry. Attitude has been found to significantly affect an individual's intention to behave ethically or unethically (Fishbein & Ajzen, 1975; Ajzen & Fishbein, 1980; Ajzen, 1988, 1991; Olson & Zanna, 1993). Therefore, understanding the dimensions of attitude will lead to the further understanding of the influences on ethical behavior intention (Leonard & Cronan, 2005).

IDOLATRY

A fan is a person who is enthusiastically devoted to something or somebody, such as a band, which is a shortened version of the word *fanatic*. The word first became popular in reference to baseball enthusiasts deriving from English around 1550 with the word 'fanatic' meaning "marked by excessive enthusiasm and often intense uncritical devotion".

Hyatt (2014) went on to discuss the hierarchy of fandom which was listed as;

1. Super fans attend live events and purchase both music and other items such as t-shirts.
2. Engaged fans' are the active online audience who are newsletter subscribers, blog readers, video watchers, RSS subscribers, and active social media engagers.
3. Ambient Fans are the passive online audience which use social media such as Twitter, Facebook, MySpace, Last.fm, etc. but don't actively communicate with the artist.

Godin (2008) argued the Internet has ended mass marketing and revived the human social unit called 'tribes'. Founded on shared ideas and values, tribes give ordinary people (fans) the power to lead and make big change. Jenson (1992) also discussed fans and noted two common characterizations of fans; the obsessed individual and the hysterical crowd with fans engage in "artificial relations" with celebrities to compensate for the lack of authentic social relations in the isolated modern day society. Einerson (1998) also indicated that these 'tribal fans' felt remorse about buying pirated goods of artists they idolized.

SUBJECTIVE NORMS

According to two leading theories of attitude–behaviour relations, the theory of reasoned action (TRA) and the theory of planned behaviour (TPB), subjective norms and attitude are independent variables with a significant causal relationship to intention (Ajzen & Fishbein, 1985). Ajzen (1991) in a review of the theory of planned behavior restated that intentions to perform behaviors of different kinds can be predicted with high accuracy from attitudes toward the behavior, subjective norms, and perceived behavioral control. Liao, Liu, Lu and To (2008) confirmed that attitude and subjective norms had a very significant influence on consumers' intention of purchasing digital products. This is consistent with additional studies by Chang (1998), Shepherd and O'Keefe

(1984), and Al-Rafee and Cronan (2006) which also found that subjective norms influence attitudes to purchase digital music.

PERCEIVED BEHAVIOURAL CONTROL
According to Terry and O'Leary (1995) two variables comprise the notion of perceived behavioural control (PBC) which include behavior control and efficacy expectancies. Trafimow, Sheeran, Conner, and Finlay's (2002) results from four studies on Ajzen's (1988, 1991) concept of PBC determined that it is an amalgamation of two variables termed 'perceived control' and 'perceived difficulty'. Lin (2013) discussed what was termed as 'free mentality' which is a strong belief that everything online should be free which has significantly affected the development of e-commerce. This is consistent with Yoon (2011) which stated that digital piracy has posed a significant threat to the development of the software industry and the growth of the digital media industry.

From the above conceptual review and development, the researchers developed the following six hypotheses:

> H1: Idolatry has a direct influence on Purchasing Intention
> H2: Idolatry has a direct influence on Attitude
> H3: Subjective Norms has a direct influence on Attitude
> H4: Subjective Norms has a direct influence on Purchasing Intention
> H5: Perceived Behavioural Control has a direct influence on Purchasing Intention
> H6: Attitude has a direct influence on Purchasing Intention

PROPOSED CONCEPTUAL MODEL

Figure 1: Conceptual Framework

METHODOLOGY
This research aims to model the structure of the factors that influence the willingness of Thai 'Generation Y' to buy music in digital form. The researchers have therefore set out to determine the details and procedures of the methods as follows:

DATA COLLECTION AND ANALYSIS
For this research the researchers will use both quantitative and qualitative research from both primary and secondary data. The researchers will use the following steps for the study:

STUDY OF SECONDARY DATA

Secondary data will be comprised of published research, internet materials, media reports, and data which will be synthesized and analyzed. This secondary data will also be used for the development of the 13 variables and the structural equation model in understanding the variables that effect purchasing intention by Generation Y as digital music users.

THE QUANTITATIVE RESEARCH
Quantitative research will be performed from the primary data by collecting a questionnaire from the target sample of Thai Generation Y as the digital music users. The questionnaire used to collect the data will be structured and written in a realistic, easy-to-understand format which is deemed to be reliable and reasonable. The measurement instrument or questionnaires will utilize a 5-Point Likert Scale (Likert, 1970) as a tool for research. Further reliability validation will be undertaken as follows:

1. The review of the questionnaire will be conducted by 5 experts in their fields to validate the investigation questions and the use of rhetoric and the simplicity and comprehension of the questions.
2. During the question trial period, the questions will undergo a continual rigorous review and inspection for their clarity and ability to the meet the objectives of the research.
3. Improvement of the questions for clarity and comprehension will be undertaken when there are any problems during the trial period.
4. Data collection and statistical analysis will be performed.

THE QUALITATIVE RESEARCH
Qualitative research involves confirming the model of the quantitative research and for this research will be a collection of interviews with industry professionals involved in the music industry including 1 music industry executive, 1 label executive, 1 digital music download manager and 2 music industry scholars.

THE SAMPLE SIZE
Schumaker and Lomax (2010) stated that structural equation modeling (SEM) uses a variety of models to show the relationships between observed variables with the goal being of providing a quantitative test of a theoretical model. The models developed using SEM can be tested to show how sets of variables define concepts and how they are related.

The goal of SEM is to determine the extent to which the model is supported by the data that is gathered during research (Schumaker & Lomax, 2010) and since SEM is capable of statistically modeling and testing complex phenomena, it has therefore become the preferred method for confirming (or not) theoretical models, quantitatively.

Another very important consideration is the intended sample size with most authors recommending a sample size of at least 100 for good results generation (Schumaker & Lomax, 2010; Cunningham, 2008; Weston & Gore, 2006; Worthington & Whittaker, 2006). Meldrum (2010) further stated that a sample size smaller than 100 should not be used in SEM as it is unreliable. Therefore, based on the 13 variables of the model and with the use of a 20:1 ratio which is deemed to be highly reliable, a minimum of 260 Thai Generation Y as the digital music users are anticipated for the survey.

RESEARCH TOOLS
Quality and content will be monitored with tools used in the research and as a measurement of quality. Both content validity and reliability will be assured by the 5 listed experts above in their respective fields with an evaluation index consistent with the content and the purpose of the research. Additionally, the index of Item-Objective Congruence (IOC) developed by Rovinelli and Hambleton (1977) will be employed to carry out the screening of questions to a group of 10 initially in the pilot study.

The IOC is a procedure used in test development for evaluating content validity at the item development stage. This measure is limited to the assessment of unidimensional items or items that measure specified composites of skills. The method prescribed by Rovinelli and Hambleton (1977) results in indices of item congruence in which experts rate the match between an item and several constructs assuming that the item taps only one of the constructs which is unbeknownst to the experts. The research will then proceed to select items that have an IOC index higher than 0.5, which will be considered acceptable.

DATA ANALYSIS
Descriptive statistics are used to describe the basic features of the data in a study which provides simple summaries about the sample and the measures and form the basis of virtually every quantitative analysis of data (Subong, 2005). For the proposed structural equation modeling, an analysis will be conducted on the frequency, percentage,

mean and standard deviation as appropriate to determine the relationship of the factors that influence the purchasing intention of digital music by Thai Generation Y.

QUALITATIVE DATA ANALYSIS

To confirm the results of the quantitative analysis, the researchers will conduct interviews with those involved with innovation and business management in the digital music industry and then to proceed to interpret the qualitative information.

CONCLUSION

The technology is now in place to access and use digital music formats but the purchasing intention of Generation Y is a key variable to the industry's profitability and sustainability. From the literature review, it has been established that the intent to purchase digital music occurs because of consumers' idolatry and modeling of their music idols. Furthermore, due to subjective norms factors which influence others such as friends and family, the intent to purchase is also enforced. While perceived behavioural control is also a vital part. These three variables are speculated to have a direct and positive influence on the intent to purchase digital music by Generation Y. The idolatry and subjective norms should also affect the attitude, the intermediate variable that affects their willingness to purchase digital music.

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DOES TRAINING LEARNERS ON LANGUAGE LEARNING STRATEGIES HAVE ANY EFFECT ON LANGUAGE ACHIEVEMENT?

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ABSTRACT

This study aims to find out whether training learners on language learning strategies has an effect on foreign language learning achievement or not. The population is Kocaeli University 2013- 2014 education year Foreign Languages School students. This study is an experimental study in which randomly chosen experimental and control classes take part, and only the experimental classes were trained on language learning strategies for the defined period of time and observed until the end of the first term on their use of the language learning strategies. At the beginning of the first term, language learning strategies survey was conducted as pre-test, and at the end of the term it was conducted again as post- test. The results indicate that after training the frequency of the use of the strategies increased, and also the number of the strategies they used increased. Moreover, The significant difference between the overall averages of the first term grades of beginner/ elementary level control and experimental groups shows that training students on language learning strategies may lead to better foreign language achievement, particularly in lower levels.

INTRODUCTION

Language learning processing strategies exist and influence second language acquisition (McLaughlin, Kinbourne, Cole, Bates & MacWhinney, Wode, Winitz). Some of the researchers who examined and analyzed learner language have referred to universal language processing strategies, such as overgeneralization, transfer and simplification. The operation of these strategies should be considered as one cause of learner errors and the changing nature of the learners' interlanguage system (Taylor, 1975; Richards, 1975; cited in Wenden& Rubin, 1987). Analysis of learner language has also yielded information on communication strategies learners use when faced with a gap between communicative need and linguistic repertoire (Faerch& Kasper, 1983). These studies on universal language processing strategies and communication strategies focus on the cognitive processes involved in second language acquisition.

How learners approach the task of learning a second language is the subject of cognitive science defined as "a systematic inquiry into our thinking selves… a discipline devoted to exploring how our minds work (Hunt, 1982; 17 cited in Wenden & Rubin, 1987). The understanding of the workings of the mind is expressed in a variety of questions (Hunt, 1982; 29 cited in Wenden & Rubin, 1987), these questions are;

- Do we learn what we learn primarily as a result of mere repetition- or of comprehension- or of the linkage of new material to previously known material?
- By what methods do we locate, in our memories, whatever we want to remember?
- Has what is forgotten merely faded out, or been erased or merely misfiled?
- Does the human mind spontaneously come to reason along the lines of formal logic or does it, instead, have a quite different natural logic of its own?
- What do we do that enables us to see, at some point, that certain things can be grouped into a coherent category, or that a general rule can be extracted from a series of experiences?
- Do we learn to imitate grammatical speech as we grow up or are grammatical structures genetically prewired in the brain's language area?
- What are the processes we use consciously or unconsciously when solving problems both great and small and can the individual's problem solving ability be improved by training?
- What do highly creative people do that ordinary people don't do?
- What kinds of thinking go on unconsciously, as contrasted to those kinds that are conscious?
- How is our thinking affected or skewed by our sex, age, personality, and background?

Cognitive science bases its assumptions on these questions. Information comes in through our sense receptors. At this time selected items of information are attended to, identified, and, then, moved into the short-term or working memory. In short-term memory a series of mental operations are applied to this information. Then, the changed or modified product is stored in long-term memory to be retrieved when it is needed. The mental operations that encoded incoming information are referred to as processes. The changes brought about by these

processes are referred to as organizations of knowledge or knowledge structures. The techniques actually used to manipulate the incoming information and, later, to retrieve what has been stored are referred to as cognitive strategies.

The literature on learning strategies in second language acquisition emerged from a concern for identifying the characteristics of effective learners. Research focusing on the "good language learner" (Naiman et. Al. 1978; Rubin, 1975; cited in Wenden& Rubin, 1987) had identified strategies reported by students or observed in the language learning situations that appear to contribute to learning. The literature showed that students do apply strategies while learning a second language and that these strategies can be described and classified.

Learners need assistance to learn autonomously and teachers play a key role in providing this (Benson, 2001; Gardner & Miller, 1999; Sinclair, McGrath & Lamb, 2000). "Learning training is a key for teachers to help learners autonomously including two important areas: raising learner awareness of how languages are learned and providing them with the skills they need to do it" (Logan & Moore, 2004; p. 1). Tudor (1996; p. 37) describes learning training as "the process by which learners are helped to deepen their understanding of the nature of language learning and to acquire the knowledge and skills they need in order to pursue their learning goals in an informal and self- directed manner".

Dickinson (1988) states that there are three main components to provide a successful learner training:
• Training learners in the processes and strategies for language learning
• Raising learner awareness of how the target language operates
• Focusing on the theory of second language acquisition

The need for learner autonomy extends beyond the foreign/ second language classroom and beyond the time learners spend acquiring another language (Wenden, 1998). Therefore, learner training activities are expected to prepare learners for lifelong learning (e.g. Westhoff, 1990; Eriksson, 1993; Dam, 1995; Shiels, 1993; Thomson, 1996). Benson (2003) states that the aim of training is to enable learners to become effective agents of change within their educational context.

Cohen (2003) states that strategy training aims to provide learners with the tools to do:
• Self- diagnose their strengths and weaknesses in language learning
• Become aware of what helps them to learn the target language most efficiently
• Develop a broad range of problem- solving skills
• Experiment with familiar and unfamiliar learning strategies
• Make decisions about how to approach a language task
• Monitor and self- evaluate their performance
• Transfer successful strategies to new learning contexts (p.1)

Many researchers have explicitly stressed the importance of learner training for learner autonomy (e.g. Holec, 1981; Huttunen, 1986; Cotterall, 1995; Dickinson, 1995; Dam 1995; Oxford, 1990; Wenden, 1991). Holec (1985) explains the aim of the training as preparing learners to direct their own learning so that they may gradually move from a state of dependence on a teacher to the greatest degree of independence or autonomy possible in a particular set of circumstances. Benson (2001; p.146) states that "there is good evidence that learner development programs can be effective in improving language learning performance. Research done on learner training indicates that training learners on language learning strategies has a positive effect on learners' language proficiency.

For example, Alparda (2010) investigated the effect of learner training on students' ability to benefit from Computer Assisted Language Learning (CALL) effectively and found that it appeared to have a positive effect on students' motivation to attend the lab lessons and engage in the lab activities. Balkır (2007) concludes that learner training and awareness building activities have resulted in a significant improvement in learners' perceptions of responsibility and a moderate increase in their motivational level. Torun (2010) revealed that teaching vocabulary learning strategies explicitly helps learners adopt more strategies, which leads to vocabulary development. The experimental group was observed to use more vocabulary learning strategies after the treatment and while there was no statistical difference between the control and the experimental groups in terms of proficiency before the treatment, the subjects in the experimental group improved their vocabulary knowledge much more than the control group.

Odacı (2006) revealed that after the listening comprehension strategy training, experimental group had a significantly higher level of listening proficiency than the control group. However, at the beginning of the study there was no significant difference between two groups.

THE STUDY

This study aims to find out whether learner training may result in better language achievement or not by training foreign language learners on language learning strategies. Research questions are:

1. What sort of language learning strategies do KOUPS' students employ?
2. In the pre-test prior to the study, do the experimental groups significantly differ from control groups in terms of language learning strategies?
3. In the post-test after the study, do the experimental groups significantly differ from control groups in terms of language learning strategies?
4. Is there any statistically significant difference between the pre- and post-test scores of the control groups in terms of language learning strategies?
5. Is there any statistically significant difference between the pre- and post-test scores of the experimental groups in terms of language learning strategies?
6. Does training students on language learning strategies have an effect on foreign language achievement?

The study is conducted at Kocaeli University English Prep School. The students are attended to B (beginner/ elementary) and A (pre-intermediate/ intermediate) level classes according to the results of the placement test at the beginning of the 2013- 2014 academic year. This is an quasi-experimental study in which experimental and control classes equivalent in proficiency level are chosen to take part in. The quantitative data analyzed was gathered via a questionnaire. At the beginning of the fall term, language learning strategies questionnaire was administered as pre-test. Then, the experimental classes were trained on language learning strategies for the defined period of time and observed until the end of the first term on their use of the language learning strategies. The control groups did not receive any training. At the end of the first term, language learning strategies questionnaire was administered again as post- test.

In this study, the population is Kocaeli University 2013- 2014 academic year Foreign Languages School students. There are eight classes randomly chosen, four B (beginner/ elementary) level classes and four A (pre-intermediate/ intermediate) level classes that take part in the study. The level of the classes is identified by the placement test administered at the beginning of 2013- 2014 academic year. The students are assigned to the classes based on their placement test results. In Table 1, you can see the information about participants.

Table 1 Participants

		Control		Experimental	
		Beginner/ Elementary	Pre-intermediate	Beginner/ Elementary	Pre-intermediate
Gender	Male	24	16	16	30
	Female	22	15	19	17
Preparatory Year	Attended	7	6	4	3
	Not attended	39	25	3	44

The randomly chosen classes (B 4-6-15-17; A 10-11-12-13) are at the similar level, and they are the classes of the teacher- researcher (T1) and a teacher's (T2) classes who are the participants in the study. 'B' level classes have 24 hours of General English lessons weekly. Each class has two teachers, one is the teacher- researcher (T1), and the other is another teacher from the institution. The study is only conducted in the teacher- researcher's lessons, for 12 hours a week. 'A' level classes have 20 hours of General English lessons every week. Each group taking part in the study has two teachers, one is the teacher- participant (T2), and the other is another teacher from the institution. The study is only conducted in the teacher- participant's lessons, for 10 hours a week.

Strategy training was based on Oxford's strategy training model (1990) in which seven steps suggesting how to implement strategy training are identified as follows:

- Determine learners' needs and the resources available for training.
- Select the strategies to be taught.
- Consider the benefits of integrated strategy training.
- Consider motivational issues.
- Prepare the materials and activities.
- Conduct explicit strategy training.

- Evaluate and revise the strategy training.

Strategy training started after the pre-tests were conducted to experimental and control groups. The experimental groups attended training. Training included activities based on the content to be covered in the syllabus of the 2013- 2014 fall academic year and the parallel strategies that were identified to be taught. These activities were provided by the researcher in an attempt to train students in some language learning strategies and raise their awareness of cognitive and metacognitive strategies which would enable them to develop autonomy and improve their language skills. The activities in the strategy training process included materials and exercises focused on teaching reading, vocabulary, writing, listening and speaking strategies. These materials were retrieved from different books and sources and some of them were modified for training purposes based on the sample activities provided by Oxford (1990) to teach language learning strategies (See Appendices for sample activities).

The training was conducted in the first two weeks of the academic year (11-15 November, 18-22 November). B classes had 24 hours of English every week, whereas A classes had 20 hours. Each teacher- trainer had 2 classes. Teacher- trainer of B classes had 14 hours with the classes, and teacher- trainer of A classes had 12 hours with the classes every week. Every class had one other teacher for the rest of the hours. The course book covered was Life Elementary (National Geographic) for B levels, and Life Pre- intermediate (National Geographic) for A levels. The training started with Unit 4 of each book. One unit was covered each week, unit 4-5 were covered during the training process. The pacing of the activities was planned based on the syllabus covered and appropriacy of the activities and the content in the units of the course book. During this training process, teacher-trainers did the activities prepared for the study in their classes with the students. The researcher prepared weekly plans to include strategy training into the syllabus, and along with the syllabus to be covered teacher-trainers covered strategy training, too. Then, teacher-trainers helped students to transfer newly-learned strategy knowledge to the materials in their course book by reminding them of which strategy could be used with the material, how it could be used and why it should be used. Students were often informed about the rationale of the strategy training activities to raise their awareness of the strategies. Students were observed until the end of the term on their use of language learning strategies.

For the reading strategies, students were explicitly taught basic strategies. Below is the list of strategies and the activities used for reading skill:

Table 2 Reading Strategies and Activities Covered in the Training

Activity	Strategy
Shakespeare	Activate their background knowledge
	Using the clues to guess the content
Yumurta kabuğu	Using the linguistic clues
	Analyzing information
	Analyzing and reasoning
What are the butterflies?	Using the linguistic clues
	Analyzing information
	Analyzing and reasoning
Otobüs	Overviewing and linking with already known material
	Guessing intelligently
	Using clues to guess the content
	Creating mental images
Makarna	Scanning & Skimming
	Activating their background knowledge
	Paying attention
	Setting an aim for reading

For the listening strategies, students were encouraged to make predictions before and during listening, which made it easier to understand the listening text in general. They were also taught listening for the main idea and listening for the details. In addition, for the gap-filling exercises, students were encouraged to try to understand the text which was incomplete. Then, it was explained to students that it is a good way to find the parts of speech of the words which are missing in the listening text.

With respect to the speaking strategies, students analyzed dialogues for fillers, starters, and intonation. They prepared two-minute and five-minute presentations. In the training process, students were asked daily to choose

a topic, get ready and talk about it to a partner for two minutes. They were often asked to create dialogues for various situations and contexts.   The strategies covered were:
- Choosing a topic of interest/ Practicing
- Employing action
- Preparing to speak
- Using linguistic clues
- Analyzing contrastively (across native& target languages)
- Using compensation strategies to continue the speech
- Preparing to speak by providing necessary vocabulary
- Recognizing fillers and starters in an authentic text

With respect to the vocabulary learning strategies, students first studied basic vocabulary learning tips. Then, they were encouraged to keep vocabulary notebooks in and out of the classroom. With these vocabulary notebooks, it was aimed to make students acquire the habit of taking notes of the new vocabulary and organizing what they learned. At the warm-up part of every lesson, students were encouraged to brainstorm the familiar vocabulary on the topic to be covered to activate their background knowledge. They were also encouraged to study the vocabulary in semantic maps. They did the activities below:
- Make a word list
- Group words to make phrases
- Use semantic maps to group the words

For writing strategies, there were activities focusing on simple and complex sentence structures (sentence stretching 1-3, combine the sentences, transitions), brainstorming (a mind map, my grandmother, outlining, writing first draft, coherence & cohesion), unity (About Jack and The little Red Riding Hood), editing, and peer editing. Students were provided with different writing genres to make them aware of different writing formats and styles.
- Simple sentence structure/ Sentence stretching/ Compund sentences (Transitions)
- Brainstorming/ Outlining
- Peer check/ Practicing
- Coherence, cohesion, unity
- Writing for different purposes/ Practicing
- Summarizing / Practicing

In addition, for the indirect strategies, a needs analysis survey was conducted to help students think of the reasons they are learning English for and set objectives for their language learning process. Also, the students were provided with checklists which included the basic cognitive and metacognitive language learning strategies that they had learned in the strategy training period. The students were asked to complete these checklists every two weeks. The aim of the checklists was to encourage students to apply the strategies they had learned when they were studying English on their own. With the checklists, it was also aimed to remind students of these language learning strategies from time to time in order that they would get used to making use of them regularly. After the training process, students were given "Opportunities to use English" checklist (Oxford, 1990) to evaluate how much they can profit from the opportunities in their surroundings for practice. At the end of every school week, teachers reviewed the strategies covered with the subject matters learned by the students to remind them. The strategies covered were:
- Setting aims for learning
- Evaluating the learning process; the strengths and weaknesses
- Using practice opportunities
- Reviewing well

FINDINGS
To gather data, Strategy Inventory for Language Learning (SILL, Oxford) pre- test was conducted to identify the strategy use of the students. Likert scale of five items was used. SILL (Strategy Inventory for Language Learning) developed by Rebecca Oxford has been a widely used inventory in the related research areas. SILL was piloted with randomly chosen 30 B (beginner/ elementary) and 30 A (pre-intermediate/ intermediate) level Kocaeli University Prep School students to see the potential problems that could occur during the administration process.

What sort of language learning strategies do KOUPS' students employ?

The results described in Table 3 show that the control groups sometimes use the strategies to remember more effectively (part A). They reported that they sometimes use all their mental processes (part B) such as "*starting conversations in English*" or "*writing new words several times*". They sometimes compensate for missing information (part C) by" *making guesses about what the other person can say*" or "*reading in English without looking up every new word*". They reported that they sometimes organize and evaluate their learning (part D) by "*making plans*" or "*finding ways for practice*".

Table 3 The Result of the Strategy Pre-Test of Control Groups

Part	Control Groups Strategy Pre- test	X	SD
Part A	1. I think of relationships between what I already know and new things I learn in English. 2. I use new English words in a sentence so I can remember them. 3. I connect the sound of a new English word and an image or picture of the word to help remember the word. 4. I remember a new English word by making a mental picture of a situation in which the word might be used. 5. I use rhymes to remember new English words. 6. I use flashcards to remember new English words. 7. I physically act out new English words. 8. I review English lessons often. 9. I remember new English words or phrases by remembering their location on the page, on the board, or on a street sign.	3.05	1.17
Part B	10. I say or write new English words several times. 11. I try to talk like native English speakers. 12. I practice the sounds of English. 13. I use the English words I know in different ways. 14. I start conversations in English. 15. I watch English language TV shows spoken in English or go to movies spoken in English. 16. I read for pleasure in English. 17. I write notes, messages, letters, or reports in English. 18. I first skim an English passage (read over the passage quickly) then go back and read carefully. 19. I look for words in my own language that are similar to new words in English. 20. I try to find patterns in English. 21. I find the meaning of an English word by dividing it into parts that I understand. 22. I try not to translate word-for-word. 23. I make summaries of information that I hear or read in English.	2.89	1.17
Part C	24. To understand unfamiliar English words, I make guesses. 25. When I can' t think of a word during a conversation in English, I use gestures. 26. I make up new words if I do not know the right ones in English. 27. I read English without looking up every new word. 28. I try to guess what the other person will say next in English. 29. If I can' t think of an English word, I use a word or phrase that means the same thing.	2.95	1.14
Part D	30. I try to find as many ways as I can to use my English. 31. I notice my English mistakes and use that information to help me do better. 32. I pay attention when someone is speaking English. 33. I try to find out how to be a better learner of English. 34. I plan my schedule so I will have enough time to study English. 35. I look for people I can talk to in English. 36. I look for opportunities to read as much as possible in English. 37. I have clear goals for improving my English skills. 38. I think about my progress in learning English.	3.34	1.06
Part E	39. I try to relax whenever I feel afraid of using English. 40. I encourage myself to speak English even when I am afraid of making a mistake. 4l. I give myself a reward or treat when I do well in English. 42. I notice if I am tense or nervous when I am studying or using English. 43. I write down my feelings in a language learning diary. 44. I talk to someone else about how I feel when I am learning English.	2.73	1.16
Part F	45. If I do not understand something in English, I ask the other person to slow down or say it again. 46. I ask English speakers to correct me when I talk. 47. I practice English with other students. 48. I ask for help from English speakers. 49. I ask questions in English. 50. I try to learn about the culture of English speakers.	3.16	1.10

They sometimes manage their emotions (part E) through "*encouraging*" or "*rewarding themselves*". They reported they sometimes learn with others (part F): they "*ask for help*" or "*practice with other students*". The results suggest that the students in control groups are aware of the language learning strategies that may help them take control over their learning process leading to better language proficiency. The fact that they sometimes use language learning strategies shows that they have weak control over their learning process. They are aware

of the strategies that may provide them necessary help in their language learning process; however, they fail to use them effectively.

Table 4 The Result of the Strategy Pre-Test of Experimental Group

Part	Experimental Groups Strategy Pre- test	X	SD
Part A	1. I think of relationships between what I already know and new things I learn in English. 2. I use new English words in a sentence so I can remember them. 3. I connect the sound of a new English word and an image or picture of the word to help remember the word. 4. I remember a new English word by making a mental picture of a situation in which the word might be used. 5. I use rhymes to remember new English words. 6. I use flashcards to remember new English words. 7. I physically act out new English words. 8. I review English lessons often. 9. I remember new English words or phrases by remembering their location on the page, on the board, or on a street sign.	3.12	1.07
Part B	10. I say or write new English words several times. 11. I try to talk like native English speakers. 12. I practice the sounds of English. 13. I use the English words I know in different ways. 14. I start conversations in English. 15. I watch English language TV shows spoken in English or go to movies spoken in English. 16. I read for pleasure in English. 17. I write notes, messages, letters, or reports in English. 18. I first skim an English passage (read over the passage quickly) then go back and read carefully. 19. I look for words in my own language that are similar to new words in English. 20. I try to find patterns in English. 21. I find the meaning of an English word by dividing it into parts that I understand. 22. I try not to translate word-for-word. 23. I make summaries of information that I hear or read in English.	3.10	1.11
Part C	24. To understand unfamiliar English words, I make guesses. 25. When I can' t think of a word during a conversation in English, I use gestures. 26. I make up new words if I do not know the right ones in English. 27. I read English without looking up every new word. 28. I try to guess what the other person will say next in English. 29. If I can' t think of an English word, I use a word or phrase that means the same thing.	3.03	1.14
Part D	30. I try to find as many ways as I can to use my English. 31. I notice my English mistakes and use that information to help me do better. 32. I pay attention when someone is speaking English. 33. I try to find out how to be a better learner of English. 34. I plan my schedule so I will have enough time to study English. 35. I look for people I can talk to in English. 36. I look for opportunities to read as much as possible in English. 37. I have clear goals for improving my English skills. 38. I think about my progress in learning English.		
Part E	39. I try to relax whenever I feel afraid of using English. 40. I encourage myself to speak English even when I am afraid of making a mistake. 4l. I give myself a reward or treat when I do well in English. 42. I notice if I am tense or nervous when I am studying or using English. 43. I write down my feelings in a language learning diary. 44. I talk to someone else about how I feel when I am learning English.		
Part F	45. If I do not understand something in English, I ask the other person to slow down or say it again. 46. I ask English speakers to correct me when I talk. 47. I practice English with other students. 48. I ask for help from English speakers. 49. I ask questions in English. 50. I try to learn about the culture of English speakers.		

The results described in Table 4 show that the experimental groups sometimes use the strategies to remember more effectively (part A) such as "using rhymes to remember new English words" or "using flashcards to remember new English words". They reported that they sometimes use all their mental processes (part B): they try to find patterns in English or try not to translate word-for-word. They sometimes compensate for missing information (part C) by making guesses to understand unfamiliar English words or making up new words if I do not know the right ones in English. They reported that they sometimes organize and evaluate their learning (part D): they look for opportunities to read as much as possible in English or they have clear goals for improving their English skills. They sometimes manage their emotions (part E). They reported they sometimes learn with others (part F). The results suggest that the students in experimental groups are aware of the language learning strategies that may help them take control over their learning process leading to better language proficiency. The

fact that they sometimes use language learning strategies shows that they have weak control over their learning process. They are aware of the strategies that may provide them necessary help in their language learning process; however, they fail to use them effectively.

In the pre-test prior to the study, do the experimental groups significantly differ from control groups in terms of language learning strategies?

Table 5 Independent T-test results of Control and Experimental Groups Strategy Pre- Test

	N	X	SS	Sd	t	p
Control	82	1.50	24.7	148	-.445	.657
Experimental	68	1.52	24.2	143	-.446	.656

* p < 0.05

As the results in Table 5 show, control and experimental groups do not differ significantly in terms of strategy pre-test.

In the post-test after the study, do the experimental groups significantly differ from control groups in terms of language learning strategies?

Table 6 Independent T-test results of Control and Experimental Groups Strategy Post- Test

	N	X	SS	Sd	t	p
Control	64	1.56	24.5	134	-.187	.852
Experimental	72	1.57	25.8	133	-.188	.851

* p < 0.05

As seen in Table 6 show, control and experimental groups do not differ significantly in terms of strategy post-test.

Is there any statistically significant difference between the pre- and post-test scores of the control groups in terms of language learning strategies?

As shown by the data in Table 7 show, the pre-test mean score of the control group for the strategy questionnaire is 1.5 (SD = 24.7) and the post-test mean score of the control group is 1.2 (SD = 68.6). It was found out that the difference between the mean scores is statistically significant ($t_{(81)}$= 3.4; p<0.05). The control group performed significantly better in the pre-test than in the post-test.

Table 7 Paired Samples T- test Results of the Control Group Pre- and Post- Strategy Questionnaires

	N	X	SD	df	t	p
Pre-test	82	1.5	24.7	81	3.4	.001
Post-test	82	1.2	68.6			

*p < 0.05

Is there any statistically significant difference between the pre- and post-test scores of the experimental groups in terms of language learning strategies?

As the results described in Table 8 show, the pre-test mean score of the experimental group for the strategy questionnaire is 1.2 (SD = 61.6) and the post-test mean score of the experimental group is 1.3 (SD = 57.1). It was found out that the difference between the mean scores is statistically significant ($t_{(81)}$= -2.3; p<0.05). The experimental group performed significantly better in the post test than in the pre-test.

Table 8 Paired Samples T- test Results of the Experimental Group Pre- and Post- Strategy Questionnaires

	N	X	SD	df	t	p
Pre-test	72	1.2	61.6	81	-2.3	.021
Post-test	72	1.3	57.1			

*p < 0.05

Does training students on language learning strategies have an effect on foreign language achievement?

Table 9 The Overall Averages of Control and Experimental Groups

Beginner/ Elementary				Pre-intermediate/ Intermediate			
Control 1	64	Experimental 1	79.6	Control 1	72.7	Experimental 1	76.4
Control 2	67.1	Experimental 2	77.1	Control 2	80.9	Experimental 2	83.5

To see whether training learners on language learning strategies improves foreign language achievement or not, first term averages are compared in Table 9. As seen in the table above, there is a significant difference between the overall averages of the first term grades of beginner/ elementary level control and experimental groups. There is not a significant difference between the overall averages of the first term grades of pre-intermediate/ intermediate level control and experimental groups. The significant difference between the overall averages of the first term grades of beginner/ elementary level control and experimental groups shows that training students on language learning strategies may lead to better foreign language achievement, particularly in lower levels.

CONCLUSION

The data shows a significant difference only between the strategy pre and post test of the experimental groups, especially in beginner level. There is not a significant difference only between the strategy pre and post test of the control groups. Balkır's (2007) study supports the results that it showed learner training and awareness building activities resulted in a significant improvement in learners' perceptions of responsibility The fact that the students tended to use language learning strategies more frequently or more strategies is a sign of learner development in the level of autonomy. As Holec (1985) states students set off from a state of dependence on a teacher to independence; this is a continuum and a long process when all the circumstances of their education context considered.

As Tudor (1996; 34) states, "the knowledge and personal qualities that learner involvement requires cannot be taken for granted and need to be developed over time". As (Logan& Moore, 2004; p. 1) states we cannot assume that learners know how to learn, we should train them for better language learning performance. Provided that strategy training is included in the curriculum and students are taught cognitive and metacognitive language learning strategies regularly and systematically, it is likely to promote autonomous learning. Griffiths (2003) supports this idea by stating that if strategies are taught to students in order that they can solve the problems they come across, they can be encouraged to take responsibility for their own learning.

The significant difference between the overall averages of the first term grades of beginner/ elementary level control and experimental groups shows that training students on language learning strategies may lead to better foreign language achievement, particularly in lower levels. We might conclude that the more strategies the students employ or more frequently the higher level of autonomy they have by shouldering the responsibility of their own learning process. Thus, their language learning achievement increases. The data shows that training language learners on language learning strategies at beginner/ elementary level is effective which means that the students benefitted from the strategy training mostly at the beginning of their language learning process. It is a fact that the students face a huge variety of input and difficulties mostly at the beginning of their language learning process where the target language is generally totally different from their mother tongue. This study shows that strategy training learners help them in this challenging process; thus, we should include strategy training in our curriculum to ease the difficulty level.

Learner training aims to help learners consider the factors that affect their learning and discover the learning strategies that suit them best and which are appropriate to their learning context, so that they may become more effective learners and take on more responsibility for their own learning (Sinclair, 2000: 66). As the literature on the relationship between learner autonomy and language achievement (Ablard& Lipschultz, 1998, Corno& Mandinach, 1983, Zimmerman& Risenberg, 1997, Zhang& Li, 2004, Dafei, 2007) suggests training learners on language learning strategies may result in better language achievement. This study also suggests and supports that training learners in learning English as a second or foreign language process may help improve their English language achievement.

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DRAMA YÖNTEMİNİN MATEMATİK ÖĞRETİMİNDE KULLANILMASINA YÖNELİK TÜRKİYE'DE YAPILAN ARAŞTIRMALAR[1]

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ÖZET

Bu araştırmanın amacı, drama yönteminin matematik öğretiminde kullanılmasına yönelik olarak Türkiye'de yapılan araştırma sonuçlarının genel bir değerlendirmesini yapmak, konuya ilişkin yapılmış ve yapılması muhtemel araştırmalar hakkında bilim kamuoyunu bilgilendirmektir. Bu amaç çerçevesinde internet ve kütüphane ortamında tarama yapılmış, amaca uygun bulunan araştırma sonuçları betimsel analiz yöntemiyle incelenmiştir. Araştırma sonunda drama yönteminin matematik öğretiminin daha somut hale getirilmesinde önemli rol oynadığı, dersin etkili bir şekilde işlenmesinde öğrenciyi zihnen ve bedenen sürece dâhil eden bir yöntem olduğu gibi sonuçlara ulaşılmıştır. Bunun yanında konuya ilişkin yapılan araştırmalarda drama yönteminin uygulanması süreci ve bu süreç içinde karşılaşılan sorunlar hakkında da bilgiler verilmiştir.

Anahtar Kelimeler: Matematik, etkili matematik, öğretim, drama yöntemi

1.GİRİŞ

Drama kelimesi sözcük anlamıyla, yaşamdaki olayları içten geldiği gibi doğaçlama olarak, anında yaratmaktır. Bir karakterin, bir olayın, bir konunun, bir eylemin ya da duygunun canlandırılmasıdır. Canlı ya da cansız varlıkların sözlü olarak ya da sözsüz canlandırılması, bir anlamda da hayal oyunudur (Arıkan, 2007). San (1990), dramayı; 'insanın insanla giriştiği her türlü dolaysız, doğrudan ilişki, etki tepki alışverişi ve en az düzeyde bir etkileşimin olduğu bir dramatik an ya da dramatik durum' olarak tanımlarken; Nutku (1990), dramayı sahnede oynanmak üzere konuşmalar ve hareketle oluşan, karşıt oluşların çatışmasıyla gelişen ve sonuçlanan oyun olarak ifade etmektedir. Drama doğaçlama şeklinde olduğu için seyircilere sergilenmez. Grupta oyuna katılmayan ya da bir görevi olmayan üyeler izleyici değil, gözlemcidirler. Bu özelliği ile tiyatrodan ayrılır (Adıgüzel, 1993).

Dramatik eğitimin sağladığı bazı faydalar vardır (MEB, 2006). Dramatik eğitim iyi bir lider eşliğinde yapılırsa kişiye dramatik bir ortamda var olma imkânı sağlayacaktır. Dolayısıyla bu ortam da kişiye potansiyelini fark etme, kendini ifade etme, yaratıcılık gelişimi, empatik düşünme gibi beceriler kazandırmasının yanında belki de en önemlisi kişiye bulunduğu ortamda mutlu olma imkânı sağlayacaktır (Sağlam, 2004).

Eğitimde dramanın önemi, bir iletişim yöntemi toplum yaşamına uyum sağlamada önemli bir rolü olması ve çocuğun yakın çevresindeki olayları somut şekilde yaşantıya dönüştürebilmesi ve öğrendiği birçok şeyi uygulama fırsatı bulmasına katkıda bulunmasıyla açıklanabilir. Eğitimde dramanın kullanılması Matematik, Fen, Sosyal Bilgiler gibi disiplin alanlarında birçok becerinin eğitimsel amaçlarının çok çabuk kazandırılmasına katkıda bulunacaktır (Koç ve Dikici, 2003).

Günümüzde her eğitim kademesinde drama etkinlikleri yapılabilmektedir ve bu etkinlikler eğitimin sıkıcı etkisini kıracaktır (Okvuran, 1995). Eğitim alanı dışında drama etkinlikleri yapıldığı gibi öğretmen, öğrenci, öğretim görevlisi gibi eğitimin her kademesindeki insan drama eğitimlerine katılmaktadır. Farklı derslerde kullanılan drama yönteminin kullanıldığı derslerden birisi de matematik dersidir.

Günümüzde çocuklar için matematik eğitiminin kalitesi önemli bir konu olarak karşımıza çıkmaktadır. Zamanla değişen yaşam koşulları çocukların eğitim gereksinimlerini de paralelinde değiştirmektedir. Diğer taraftan çocukların meslek seçimleri konusunda matematik eğitimi önemli bir yer teşkil etmektedir. Bu nedenle ailelerin ve eğitimcilerin matematik eğitimine hangi yaş grubunda olursa olsun, olumlu yaşantılar yolu ile ve yaratıcı bir şekilde yer vermeye olanak sağlamaları gerekmektedir. Bunun yanında çocukların matematik kavramlarına karşı olumlu tutum geliştirmeleri, bu kavramları sevmeleri ve öğrenirken heyecan ve ilgi duymaları da eğitim ortamları planlanırken göz ardı edilmemelidir. Bu nedenle matematik eğitiminde oyun ve dramatik ögelerden yararlanarak, hareketli ve öğrenme fırsatlarını değerlendiren ortamlar yaratılmalıdır (Erdoğan, 2008).

Bu araştırmada Türkiye'de matematik öğretimi alanında kullanılan drama yöntemine ilişkin gerçekleştirilen araştırma sonuçlarının değerlendirilmesi, yapılan ve yapılması muhtemel araştırmalar hakkında da bilim kamuoyunun bilgilendirilmesi amaçlanmıştır. Bu çerçevede konuya ilişkin yapılan lisansüstü tezler ve makaleler incelenmiş, elde edilen sonuçlar tez ve makaleler olmak üzere iki kategoride ele alınmıştır.

2. Drama Yönteminin Matematik Öğretiminde Kullanılmasına Yönelik Lisansüstü Tezler

Ceylan (2014), 6. Sınıf matematik dersinde drama yönteminin kullanımının matematik dersine olan tutum üzerindeki etkisini araştırmıştır. Deneysel olarak gerçekleştirilen araştırmada "Matematik Dersine Yönelik Tutum Ölçeği" kullanılmıştır. Araştırmada deney ve kontrol grubunun ön test ve son test puan ortalamaları karşılaştırıldığında sevgi, korku, ilgi alt boyutlarında deney grubu lehine anlamlı bir farklılık gözlenmiştir. Buna göre drama uygulamaları sayesinde öğrencilerin matematik dersine karşı olan korkularının azaldığı, matematiğe yönelik sevgi ve ilgilerinin arttığı gözlemlenmiş, öğrencilerin matematik dersine yönelik olumlu tutum geliştirdikleri sonucuna ulaşılmıştır.

Karapınarlı (2007) 7. sınıf matematik öğretiminde drama yönteminin öğrenci başarısı ve kalıcılığa olan etkisini araştırmıştır. Deneysel olarak gerçekleştirilen çalışmada kontrol ve deney grubunda toplam 44 öğrenci yer almıştır. Araştırmada denk kontrol gruplu ön test- son test deney deseni kullanılmıştır. Araştırmada elde edilen başlıca iki sonuç şöyledir: 1. Yaratıcı drama yönteminin uygulandığı deney grubu ile geleneksel öğretim yönteminin (Anlatım, Soru-Cevap, Gösterip Yaptırma, Problem Çözme) kullanıldığı kontrol grubu öğrencilerinin, öğrenme düzeyleri arasında deney grubu lehine anlamlı bir fark vardır. 2. Yaratıcı drama yönteminin uygulandığı deney grubu ile geleneksel öğretim yönteminin kullanıldığı kontrol grubu öğrencilerinin, kalıcılık düzeyleri arasında deney grubu lehine anlamlı bir fark vardır.

Kaşıkçı (2015) Matematik Tarihi dersinde drama yönteminin kullanımının öğretmen adaylarının bilgi, inanç ve tutumlarına olan etkisini incelemiştir. Çalışma hem nitel hem nicel incelemenin yer aldığı karma yöntem araştırmasıdır. Araştırma ön-test, son-test; deney ve kontrol gruplu deneysel bir çalışmadır. Araştırma 25 deney grubu, 25 kontrol grubu olmak üzere 50 kişi ile gerçekleştirilmiştir. Araştırma sonucuna göre kalıcılık ölçümlerinde deney grubundaki bilgi miktarının daha fazla olduğu sonucuna ulaşılmıştır. Ancak kalıcılık ölçümlerine göre deney grubundaki bilgi kaybının daha yüksek oranda olduğu görülmüştür. Deney grubundaki öğretmen adaylarının drama için olumsuz buldukları temel faktörler zaman ve yorgunluktur. Olumlu buldukları yönler ise eğlenceli dersler ve bilgilerinin kalıcı olduğunu düşünmeleri olmuştur. Öğretmen adayları zaman ve yorgunluk gibi olumsuz yanların, olumlu yanların önüne geçemeyeceğini belirterek tercihlerini dramadan yana kullanmışlardır. Her iki gruptaki öğretmen adaylarının da matematik tarihi derslerini drama yöntemi ve içerdiği tekniklerle yürütmeye yönelik görüşleri olumludur. Kontrol grubundaki öğretmen adayları görüşlerinde matematik tarihi dersinin kendilerini daha aktif kılan yöntem ve tekniklerle ders işlenmesinin faydalı olacağını belirtmişlerdir.

Sözer (2006), ilköğretim 4. sınıf matematik dersinde drama yönteminin öğrencilerin başarılarına, tutumlarına ve öğrenmenin kalıcılığına etkisi araştırmıştır. Sözer bu araştırmada ilköğretim 4. sınıf matematik dersi kesirler ünitesinde uygulanan drama yönteminin öğrencilerin başarılarına, tutumlarına ve öğrenmenin kalıcılığına olan etkilerinin incelenmesini amaçlamıştır. Deneysel olarak gerçekleştirilen araştırmada toplam 75 öğrenci ile çalışma yapılmıştır. Verilerin başarı testi ile toplandığı araştırma sonucunda başarı ve öğrenmenin kalıcılığı bakımından, deney grubu öğrencileri ile kontrol grubu öğrencileri arasında deney grubu lehine anlamlı bir farklılık olduğu; drama yönteminin denek grubunun tutumlarını olumlu yönde etkilediği ortaya çıkmıştır.

Soner (2005), ilköğretim 3. sınıfta drama yönteminin etkililiğini kesirli sayılarda toplama ve çıkarma işlemleri açısından ele almış, araştırmasında drama yönteminin kullanımının bilişsel, duyuşsal erişiye ve kalıcılığa etkisini ortaya koymayı amaçlamıştır. Deneysel olarak gerçekleştirilen araştırmada 58 öğrenci ile çalışılmıştır. Araştırma verilerini toplamada, bilişsel alandaki erişi ve kalıcılığı ölçmek için Kesirli Sayılarda Toplama-   Çıkarma İşlemi Başarı Testi, duyuşsal alandaki davranışları ölçmek için ise Matematik Dersi Tutum Anketi kullanılmıştır. Araştırmada şu sonuçlara ulaşılmıştır: 1. Matematik dersi Kesirli Sayılarda Toplama-Çıkarma işleminde drama yöntemi ile öğretimi yapılan grubun kavrama, uygulama düzeyi erişi puan ortalaması geleneksel öğretimin yapıldığı grubun erişi puan ortalaması deney grubu lehine göre anlamlı bir fark bulunmuştur. 2. Deney grubunun toplam erişi puan ortalaması ile kontrol grubunun toplam erişi puan ortalaması arasında deney grubu lehine manidar bir fark olduğu bulunmuştur. 3. Deney grubunun toplam kalıcılık ortalaması ile kontrol grubunun toplam kalıcılık ortalaması arasında deney grubu lehine manidar bir fark bulunmuştur. 4. Deney grubunun toplam tutum puan ortalaması ile kontrol grubunun toplam tutum puan ortalaması arasında deney grubu lehine anlamlı bir fark bulunmuştur.

Ölekli (2009), 5-6 yaş çocuklarında matematiksel şekil algısı ve sayı kavramının gelişiminde drama yönteminin etkisini incelemiştir. Deneysel olarak gerçekleştirilen araştırmada toplam 60 öğrenci ile çalışılmıştır. Toplam 5 haftalık olarak uygulanan çalışmada verilerini toplamak için Piaget Sayı Korunum Testi ve Geometrik Şekilleri Tanıma Testi kullanılmıştır. Araştırma sonucunda drama temelli eğitim programı sonrasında deney

grubundaki çocukların, geometrik şekil ve sayı kavramları başarısında, kontrol grubundaki çocuklara göre anlamlı bir farklılık olduğu görülmüştür.

Sezer (2008), okul öncesi eğitim alan öğrencilere sayı ve işlem kavramlarını kazandırmada drama yönteminin etkisini incelemiştir. Araştırma deneysel olarak Bolu'da gerçekleştirilmiştir. Araştırmada çocukların sayı ve işlem kavramlarını kazanmalarını desteklemek için Drama Temelli Sayı ve İşlem Kavramları Eğitim Programı hazırlanmıştır. Deney grubuna drama temelli sayı ve işlem kavramları etkinlikleri, kontrol grubuna ise anaokulu programı dahilinde uygulamalar yapılmıştır. Eğitim programı altı hafta boyunca haftalık 3 gün olarak devam etmiştir. Araştırma sonucunda deney grubundaki çocukların sayı ve işlem kavramları başarısında kontrol grubuna göre anlamlı bir farklılık bulunmuştur. Bir başka deyişle drama yönteminin çocukların sayı ve işlem kavramlarını kazanmalarında ve bu kavramları desteklemede önemli bir etkisinin olduğu görülmüştür. Ayrıca araştırma sonuçları cinsiyetin, kardeş sayısının ve anne çalışma durumunun deney grubundaki çocukların sayı ve işlem kavramları başarısında anlamlı bir farka yol açmadığını göstermiştir.

Hatipoğlu (2006), ilköğretim 5. sınıf öğrencilerine matematik dersinde "Hayatımızdaki Sayılar ve Geometrik Şekiller" ünitelerinin öğretilmesinde drama yöntemi kullanmanın matematik başarısına etkisini belirlemek amacıyla gerçekleştirdiği araştırma deneysel olarak gerçekleştirilmiş, örneklem olarak da 50 öğrenci ile çalışılmıştır. Araştırma da ele alınan iki ünite 10 kazanımı kapsadığı için 10 kazanıma ait 10 Başarı Testi hazırlanmış ve uygulanmıştır. Bu araştırmada; 1. Drama yöntemi kullanılan deney grubu ile geleneksel yöntemin kullanıldığı kontrol grubunun, Hayatımızdaki Sayılar ve Geometrik Şekiller ünitelerinden seçilen 10 kazanımla ilgili olarak hazırlanan ölçme araçlarıyla başarı düzeyleri karşılaştırılmış; 10 kazanım için kullanılan 10 tane Matematik Başarı Testinin 8'inde deney grubu ile kontrol grubunun matematik başarıları arasında deney grubu lehine anlamlı bir fark bulunmuş, 2. Hayatımızdaki Sayılar ünitesi içerisinde yer alan 4. kazanım ve Geometrik Şekiller ünitesinde yer alan 7.kazanımı içeren Matematik Başarı Testlerinde deney grubu ve kontrol grubu arasında anlamlı bir fark bulunmadığı sonucuna ulaşılmıştır.

Kayhan (2004) araştırmasında, yaratıcı dramaya göre hazırlanan öğretim etkinliklerinin öğrencilerin matematik başarılarına, öğrenilen bilgilerin kalıcılığına ve matematiğe yönelik tutumlarına etkisi incelemiştir. Deneysel bir çalışma olan araştırmada, "uzunluk ölçüleri" konusu için hazırlanan çoktan seçmeli ölçme aracı kullanılmıştır. Öğrencilerin matematik dersine yönelik tutumlarını belirlemek amacıyla da tutum anketi kullanılmıştır. Araştırma neticesinde elde edilen bulgulara göre; grupların son test basan puanlan arasında, deney ve kontrol gruplarının erişi puanlan arasında, deney ve kontrol gruplarının kalıcılık puanlan arasında deney grubu lehinde anlamlı bir fark bulunmuştur. Deney grubunun son test ve kalıcılık testi puanlan arasında anlamlı bir fark bulunmuştur. Fakat bu fark kalıcılık testi basan puanlan ortalamasının son-test başarı puanlan ortalamasından yüksek olması sebebiyle öğrenilen bilgilerin unutulmadığını ortaya çıkarmıştır. Bulunan sonucun deney grubu lehine olduğu görülmektedir. Deney grubunun ön-tutum ve son-tutum puanlan arasında anlamlı bir fark bulunmuştur. Verilerin değerlendirilmesi sonucunda; yaratıcı drama yöntemi uzunluk ölçüleri konusunun öğretiminde öğrenme, bilgilerin kalıcılığı ve derse yönelik öğrenci tutumlar üzerinde etkili olduğu görülmüştür.

Tanrıseven (2000) yaptığı çalışmada matematik öğretiminde problem çözme stratejisi olarak dramatizasyonun kullanılmasının öğrencinin başarısına ve hatırlama düzeyine etkisini incelemiştir. Araştırmanın deseni öntest sontest kontrol gruplu çalışmadır. Araştırmaya ilköğretim beşinci sınıf öğrencilerinden toplam yetmiş altı çocuk dahil edilmiş, otuz sekiz çocuk deney grubunu, otuz sekiz çocuk kontrol grubunu oluşturmuştur. Kontrol grubundaki öğrenciler için problem çözme süreci içerisinde geleneksel yöntemler kullanılmış, deney grubundaki öğrencilere ise problemler dramatizasyon yoluyla çözdürülmüştür. Öğrencilerin matematik dersinde problem çözme başarısını ölçmek için araştırmacı tarafından hazırlanan test öntest ve sontest olarak uygulanmıştır. Araştırma sonucunda matematik dersinde dramatizasyon yönteminin kullanılmasının çocukların matematik bilgilerini artırdığı, hatırlamayı kolaylaştırdığı sonucuna ulaşılmıştır.

Duatepe (2004) yaptığı çalışmada drama temelli öğretimin, geleneksel öğretim yöntemiyle karşılaştırıldığında yedinci sınıf öğrencilerinin geometri başarılarına, bu başarıların kalıcılığına, van Hiele geometrik düşünme düzeylerine, matematiğe ve geometriye karşı tutumlarına etkisini araştırmayı; öğrencilerin dramanın öğrenmelerine, arkadaşlık ilişkilerine ve kendilerine ilişkin farkındalıklarına, öğretmen ve öğrenci rollerine etkisi hakkındaki görüşlerini almayı ve uygulama sırasında sınıfta bulunan öğretmenin drama temelli öğretimle ilgili görüşlerini almayı amaçlamıştır. Elde edilen niceliksel veriler, yapılan iki çoklu kovaryans analizi ile incelenmiştir. Analiz sonuçlarına göre gruplar arasında açılar ve çokgenler; çember ve daire başarı testleri, bu başarıların kalıcılığı testi, van Hiele geometrik düşünme düzeyleri testi, matematik ve geometri tutum ölçeklerinden alınan puanlara göre deney grubu lehine istatistiksel olarak anlamlı bir fark bulunmuştur. Deney grubu öğrencilerin ve deney grubundaki dersleri gözleyen öğretmenin görüşmelerde ifade ettikleri düşüncelere göre; deney grubu öğrencilerin kontrol grubu öğrencilerine göre daha iyi performans göstermesi drama temelli öğretimin aşağıdaki özellikleriyle ilişkilendirilmiştir: aktif katılımı gerektirmesi, grup çalışması ortamı yaratması, günlük hayat örneklerinin doğaçlanmasını içermesi, iletişim şansı yaratması, anlamlı öğrenmeyi sağlaması, kalıcı öğrenmeye yol açması ve kendine ait farkındalığı sağlaması.

Erdoğan (2006) araştırmasında altı yaş grubu çocuklarına drama yöntemi ile verilen matematik eğitiminin matematik yeteneğine etkisini incelemiştir. Araştırmaya iki ilköğretim okulunun anasınıflarına devam

eden toplam 105 çocuk dâhil edilmiştir. Deneysel olarak gerçekleştirilen araştırma sonucunda; deney grubuna uygulanan drama yöntemine dayalı matematik eğitiminin çocukların matematik yeteneğine anlamlı bir etkisinin olduğu, çocuğun cinsiyetinin, anne-baba öğrenim düzeylerinin matematik puanlarında anlamlı bir farklılık yaratmadığı, ancak anne çalışma durumunun placebo kontrol grubunun öntest ve sontest puanlarında anlamlı bir farklılık yarattığı sonucuna ulaşılmıştır.

Araştırmasının amacını, yaratıcı drama yönteminin matematik dersinde öğrencilerin farklı öğrenme düzeylerine ve öz-yeterlik algılarına etkisini belirlemek olarak ifade eden Gedik (2014), çalışmasını deney grubu 20, kontrol grubu 21 olmak üzere toplam 41 öğrenci ile yürütmüştür. Araştırmada ön-test son-test kontrol gruplu deneysel desen kullanılmıştır. Elde edilen veriler, t-testi analizi ile değerlendirilmiştir. Araştırma sonuçlarına göre yaratıcı drama yöntemi, matematik dersi 6. sınıflar "Prizmalar ve Ölçüler Ünitesi"nde öğrenci başarısını öğretim programında bulunan yöntemlere göre daha çok arttırmıştır. Ayrıca yaratıcı drama yöntemi öğrencilerin matematik dersine yönelik öz-yeterlik algılarını da olumlu yönde etkilemiştir.

DRAMA YÖNTEMİNİN MATEMATİK ÖĞRETİMİNDE KULLANILMASINA YÖNELİK MAKALELER

Araştırmasının amacını yaratıcı drama yönteminin, ilköğretim sekizinci sınıf Dik Prizmaların Özellikleri ve Hacimleri konusunun öğretimine etkisini araştırmak olarak ifade eden Özsoy (2003), dik prizmaların hacimleri konusunun öğretiminde yaratıcı drama yönteminin etkisi incelenmiştir. Araştırma Balıkesir il merkezinde Karesi İlköğretim Okulu'nun sekizinci sınıfına devam eden altmış öğrenci üzerinde yapılmıştır. Çalışmada iki hafta süreyle otuz öğrenciye yüzey ölçüleri ve hacimler ünitesinin dik prizmaların hacimleri konusu drama yöntemi ile verilmiştir. Çalışmada ilköğretim sekizinci sınıf Dik Prizmaların Özellikleri ve Hacimleri Konusunun öğretiminde yaratıcı drama yöntemi uygulanmış ve öğrenci başarısına olumlu yönde etkilediği görülmüştür.

Ekinözü ve Şengül (2007), permütasyon ve olasılık konusunun öğretiminde canlandırma kullanılmasının öğrenci başarısına ve hatırlama düzeyine etkisini inceledikleri araştırma, İstanbul ili, Anadolu yakasındaki bir ilköğretim okulunun 8. sınıfında öğrenim gören toplam 70 öğrenci üzerinde yürütülmüştür. Deneysel olarak gerçekleştirilen çalışmanın sonunda her iki gruba "Permütasyon - Olasılık Testi"son-test ve aynı zamanda çalışmanın bitiminden sekiz hafta sonra hatırlama testi olarak yeniden uygulanmıştır. Araştırma örneklemi sonucun da öğrencilerin "Permütasyon ve Olasılık" konusundaki başarıları yönünden anlamlı bir farklılık bulanamamasına rağmen canlandırma yönteminin öğrencilerin hatırlama düzeyleri üzerinde etkili olduğu sonucuna varılmıştır.

Şengül ve Ekinözü (2016) araştırmalarında ilköğretim 8.sınıf Matematik dersinde "Permütasyon ve Olasılık" konusunun öğretiminde canlandırma yönteminin uygulandığı deney grubu ile geleneksel öğretim yönteminin uygulandığı kontrol grubunun matematik tutumları arasında farklılığın olup olmadığını incelemişlerdir. 8. sınıf öğrencileri üzerinde yapılan araştırmada bir deney ve bir kontrol grubu kullanılmıştır. Uygulama sonucunda kullanılan yöntemlerin öğrencilerin matematik tutumları üzerinde etkisinin anlamlı olup olmadığını belirlemek için yapılan t testleri sonucunda canlandırma yöntemi ve geleneksel öğretim yöntemlerinin uygulandığı sınıflarda öğrencilerin matematik dersine yönelik tutumlarında olumlu değişmeler olduğu görülmüştür. İki grup arasında istatistiksel olarak önemli fark elde edilememesine rağmen canlandırma yönteminin matematiğin algılanan yararları düzeyinde etkili olduğu görülmüştür.

Üredi, Şengül ve Gürdal (2008), araştırmalarında, drama yönteminin ilköğretim 5.sınıf öğrencilerinin matematik derslerindeki problem çözme sürecinde öğrencinin başarı ve hatırlama düzeylerine etkisi var mıdır?" sorusunun cevabını araştırmışlardır. İlköğretim 5. sınıfta öğrenim gören toplam 76 öğrenci üzerinde yürütülen çalışma başlangıcında her iki gruba 10 tane rutin olmayan sorudan oluşan ön test uygulanmıştır. Bu test, aynı zamanda son test ve hatırlama testi olarak yeniden kullanılmıştır. Araştırma sonucu canlandırma yönteminin kullanıldığı deney grubunun düz anlatımın kullanıldığı kontrol grubuna göre problem çözme ve hatırlamada daha yüksek başarıya sahip olduğunu göstermiştir.

Biber, İspir ve Ay (2015), yaratıcı drama yöntemi kullanılarak işlenen Matematik Tarihi Dersinin öğretmen adaylarının öğrenmelerine, duygu ve düşüncelerine etkisini ve öğretmen adaylarının bu yaklaşımla ilgili görüşlerini araştırılmayı amaçlamışlardır. Çalışma grubunu toplam 22 öğretmen adayının oluşturduğu çalışmada nitel ve nicel araştırma yöntemlerinin her ikisi de kullanılmıştır. Araştırmanın sonuçlarına göre; öğretmen adayları yeni karşılaştıkları yaratıcı drama yöntemini matematik ve tarihini öğretmekte etkili bulmuşlar, bu yöntemi derse ilgi ve motivasyon sağlaması, öğretilenlerin kalıcılığı, dersi sıkıcılıktan kurtarması gibi nedenlerle kendi meslek yaşantılarında da kullanmak istediklerini belirtmişlerdir.

Aytaç ve Köçce (2014) sınıf öğretmenlerinin matematik derslerinde drama yöntemini kullanma durumlarını incelemişlerdir. Çalışma betimsel yöntem kapsamında özel durum çalışması kullanılarak yürütülmüştür. Araştırma sonucunda, sınıf öğretmenlerinin matematik derslerinde çok sık olmasa da yaratıcı dramayı kullanmaya çalıştıkları, yaratıcı dramanın kullanılmasının öğrencilerin öğrenmesine sağlayacağı katkıların farkında oldukları fakat öğretmenden, öğrenciden, müfredattan ve sınıfların fiziki ortamlarından

kaynaklanan nedenlerden dolayı yaratıcı drama yöntemini kullanma konusunda sıkıntılar yaşadıkları ortaya çıkmıştır.

Duatepe ve Akkuş (2006), araştırmasında yeni matematik programlarının önerdiği matematik öğretimi sürecini, öğrenciyi etkin kılan, matematiksel düşüncelerini sınıf içinde paylaşmasına olanak tanıyan, matematiğin anlayarak ve ilişkilendirilerek öğrenilmesini sağlayan bir öğretim süreci olarak ifade etmektedir. Ona göre bu süreci sınıflarda işlerlik kazanması için kullanılabilecek öğretim yöntemlerinden biri de yaratıcı dramadır. Akkuş çalışmasında ilköğretim altıncı sınıf düzeyinde kümeler alt öğrenme alanında hazırlanan yaratıcı drama temelli bir matematik ders planı sunmuştur. Araştırmada bu plan çerçevesinde yaratıcı dramanın aşamalarının matematiksel kavramların öğretiminde nasıl bir rol oynayacağı tartışılmıştır.

Yenilmez ve Uygan (2010), yaratıcı drama yönteminin ilköğretim 7. sınıf öğrencilerinin geometriye yönelik öz-yeterlik inanç düzeylerine etkisini belirlemek amacıyla yaptıkları araştırmada yarı deneysel kontrol grupsuz ön test-son test modelinden yararlanmışlardır. Eskişehir'deki bir ilköğretim okulunun 7. sınıfındaki 28 öğrenci araştırmanın çalışma grubunu oluşturmaktadır. Araştırmanın sonuçlarına göre yaratıcı drama yönteminin öğrencilerin geometriye yönelik öz-yeterlik inançları üzerinde anlamlı etkisinin olduğu görülmüştür.

SONUÇLAR

Drama yönteminin Matematik öğretiminde kullanılmasına yönelik olarak Türkiye'de gerçekleştirilen araştırmalar hakkında bilgi vermek, bu çerçevede yapılmış ve yapılabilecek yeni araştırmalar için fikir vermek bu araştırmanın temel amacını oluşturmaktadır. Bu amaç çerçevesinde Yükseköğretim Kurulu tez tarama sayfasından, kütüphane ve internet ortamında "drama", "matematik öğretimi" ve "matematik öğretiminde drama yöntemi" gibi anahtar kelimelerle tarama yapılmış, amaca uygun bulunan makale ve tezler incelenmiştir.

Yapılan araştırmalar incelendiğinde bu çalışmaların deneysel yöntemle gerçekleştirildiği, eğitim kademesi bakımından da ilk ve ortaokul kademesinde daha fazla araştırmanın yapıldığı görülmektedir. Araştırmaların sonuçları incelendiğinde drama yönteminin matematik öğretiminde çok sayıda yararının ortaya konulduğu görülmektedir. Dersi sıkıcılıktan çıkarması, somut hale getirmesi, öz-yeterlilik inançları üzerinde olumlu etkide bulunması ve hatırlamayı kolaylaştırması bu yararlardan bazıları olarak dikkat çekmektedir. Yine drama yönteminin matematik öğretiminde kullanılması sürecinde yaşanan sonuçlarda araştırmalarda ele alınan bir diğer konuyu oluşturmaktadır.

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DÜZENLİ TENİS OYNAMAKLA BİRLİKTE FARKLI FİZİKSEL AKTİVİTELERE KATILAN VE KATILMAYAN BİREYLERİN FİZİKSEL AKTİVİTE VE SERBEST ZAMAN TATMİN DÜZEYLERİNİN KARŞILAŞTIRILMASI

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ÖZET

Çalışmanın amacı boş zamanlarında rekreatif amaçlı düzenli tenis oynayan bireyler (DT) ve rekreatif amaçlı tenis oynamakla birlikte farklı fiziksel aktivitelere katılan bireylerin (FADT) Serbest Zaman Tatmini (SZT) ile Fiziksel Aktivite (FA) düzeylerini karşılaştırmaktır.

Çalışmaya 28 kadın (yaş, 48.53±9.20 yıl; boy, 160.64±7.55 cm; ağırlık, 65.25±9.91kg), 47 erkek (yaş, 46.24±9.25 yıl; boy, 175.06±6.58cm; ağırlık, 78.89±8.35kg), toplam 75 rekreatif tenis oynayan birey gönüllü olarak katılmıştır. Katılımcıların ortalama 9.13±5.14 yıl tenis oynadığı belirlenmiştir. Çalışmada tüm katılımcılara Serbest Zaman Tatmin Ölçeği (SZTÖ) ve Fiziksel Aktivite Anketi (FAA) Kısa Formu uygulanmıştır.

Çalışma sonunda, FAA puanlarına göre (MET-dak/hafta) FADT grubun Yürüme (n=34, 1128±1005) ve Şiddetli Fiziksel Aktivite (ŞFA) parametrelerinde (n=31; 4954.84±4536.59) DT gruba göre daha yüksek puan aldığı (Yürüme: n=25;603.90±558.83;ŞFA: n=18; 1655.55±1165.39) belirlenmiştir (p<0.05).Orta Düzeyi Fiziksel Aktivite (ODFA) parametresinde FADT grup ile (n=34;1507.06±1439.75), DT grup (n=31;920.00±393.96) arasında α=0.05 anlam düzeyine çok yakın fark olduğu saptanmıştır (p=0.06).

SZTÖ eğitim alt boyutunda(FADT: n=39; 38.00±6.17; DTgrup: n=36; 34.61±5.91) FADT grubun lehine anlamlı fark olduğu belirlenmiştir (p<0.05). Diğer alt boyutlarda (psikolojik; FADT: 35.44±3.53; DT: 34.53±4.46, sosyal; FADT: 32.53±5.28; DT: 31.17±4.55, rahatlama; DT: 18.59±1.52; FART: 18.61±1.84; fizyolojik; DT: 24.76±3.53;FADT: 24.92±2.99, estetik; DT: 17.05±2.84;FADT:16.72±2.61, toplam; DT:166,38±17.76;FADT: 160.56±16.39) anlamlı farka rastlanmamıştır.

Anahtar Kelimeler: Fiziksel Aktivite, Egzersiz, Rekreasyon, Tenis.

ABSTRACT

The purpose of this study was to comparison the leisure satisfaction and the physical activity level in both regular recreational tennis players (RT) and practicing different physical activities with regularly recreational tennis (FART).

A total of 75 recreational tennis players who 28 women (age, 48.53±9.20years; height, 160.64±7.55cm; weight, 65.25±9.91kg), 47 men (age, 46.24±9.25years;height, 175.06±6.58cm; weight, 78.89±8.35kg), (age, 47.10±9.24years; height, 169.68±9.85cm; weight, 73.80±11.11kg) participated voluntarily in this study. The participants have indicated that they had been playing tennis for 9.13±5.14 years. Leisure satisfaction level was determined by Leisure Satisfaction Scale (LSS). Physical activity level was determined International Physical Activity questionnaire (IPAQ) short form was applied to all the participants.

As a result of the study, according to IPAQ Points (MET-min/week), it was determined that, FART group receive higher points in the parameters of Walking (n=34, 1128±1005) and Vigorous Physical Activity (VPA) (n=31; 4954.84±4536.59), than RT group (Walking: n=25; 603.90±558.83;VPA: n=18; 1655.55±1165.39) (p<0.05).

Furthermore, in the education sub dimension of the LSS (FART: n=39; 38.00±6.17; RT: n=36; 34.61±5.91), it was determined that there was a significant difference in favor of the FART group (p<0.05).

Keywords: Physical Activity, Exercise, Recreation, Tennis.

GİRİŞ

Yaşam tatmini kişinin kendi duygularını negatif duygular olmadan pozitif duygularla değerlendirmesi için gerekli olan bilişsel süreçler olarak açıklanmaktadır. Yaşam tatmini sosyal aktivite, mutluluk, affetmek, yaşam standartları, işsizlik, iş ortamı, gelir düzeyi, stres, çalışma koşulları, psikolojik yıpranma, iş tatmini, serbest zaman aktivitelerine katılım ve serbest zaman tatmini ile ilişkilidir (Ercan, 2004).
Serbest zaman; "bireyin hayatını idame ettirebilmek için yapmak zorunda olduğu işlerinden geriye kalan zaman dilimidir". Serbest zaman etkinlikleri ise "insanların çalışma saatleri, yeme ve uyuma gibi biyolojik ihtiyaçlarını karşılamak amacıyla kendilerine ayırdıkları zaman dilimleri dışında kalan zamanlarında özgür iradeleriyle seçtikleri ve belirli kurallara bağlı olmayan etkinliklerdir" (Yerlisu ve Ağyar, 2012). Bu etkinliklere katılım sonucu kişinin ortaya koyduğu, elde ettiği ve ulaştığı pozitif doyum veya duygulara serbest zaman tatmini (SZT) denir. Serbest zaman aktivitelerine katılım SZT ile ilişkilidir. Bu nedenle belli bir aktivite bir bireyde pozitif memnuniyete neden olurken başka bir bireyde aynı etkiyi yaratmayabilir. Bu nedenle serbest zaman tatmini bireyin zevkine, becerisine, serbest zamanının bulunmasına ve çeşitli kaynaklara (finansal araçlar ve sosyal etkileşim) bağlıdır. SZT düzeyine bireyin cinsiyeti, yaşı, gelir düzeyi ve ev çevresi gibi diğer etkenler etki edebilir (Muzindutsi ve Masango, 2015). Yaşamın belli dönemlerinde yapılan serbest zaman aktivitelerinin türü yaşam tatmini üzerinde olumlu ya da olumsuz etkili olabilir. Örneğin, adölesanlarda yapılan bir çalışmada serbest zaman aktivitesi olarak online oyunları fazla miktarda oynayanların daha az oynayanlara göre yaşamlarından daha az tatmin oldukları belirlenmiştir (Wang, Chen, Lin ve Wang, 2008).

Serbest zaman etkinlikleri önemli ölçüde spor aktivitelerini içerir (tenis, yürüyüş, yüzme, bisiklet, futbol, dans, fitness vb.) (Ercan, 2004). Sporun çeşitlilik, değişkenlik ve hareket özelliklerinden dolayı serbest zaman aktiviteleri arasında yaygın olarak tercih edilme nedeni olabilir(Arabacı ve Çankaya, 2007). Fiziksel Aktivite (FA) kişinin fiziksel, bilişsel ve sosyal gelişimini pozitif etkileyen eğlenceli ve öğretici rekreatif aktivitelerdir (Ercan, 2004), (Afyon ve Karapınar, 2014).Literatürde FA'lerin hastalık oranını ve iskemik kalp hastalıklarından ölüm riskini azaltan en büyük faktör olduğu bildirilmektedir. Aynı zamanda FA ve psikolojik olarak iyi olmayı etkileyen faktörler (mental stres, yaşam tatminsizliği vb.) arasındadır (Schnohr ve diğ., 2004). Düzenli FA'nin sağlık üzerine etkileri egzersizin süresi ve şiddeti ile ilişkilidir (Genç ve diğ., 2011). Önceki çalışmalarda serbest zamanlarında haftada en az 3 kez fiziksel aktivite uygulayan bireylerin düşük ölüm oranına sahip oldukları belirtilmektedir (Moore ve diğ., 2012).

Çalışmada serbest zamanlarında düzenli olarak tenis oynayan bireylerle tenis sporu ile birlikte farklı fiziksel aktivitelere katılan bireylerin FA ve SZT düzeyleri karşılaştırılmıştır. Çalışma tenis odaklı FA düzeyi ve çeşitliliği fazla olan bireylerde az olan bireylere göre serbest zaman tatmin düzeyinin daha fazla olacağı düşünülerek planlanmıştır. Çalışmanın sonuçlarının toplumumuzda serbest zamanlarında fiziksel aktivite yapan bireylerin SZT düzeylerini artırmak için yapılması gerekenler hakkında fayda sağlayacağı düşünülmektedir.

Çalışmada FA düzeyini belirlemek için kullanılan Uluslararası Fiziksel Aktivite Anketi (FAA) kolay uygulanabilen ve maliyet getirmeyen geçerli ve güvenilir yöntemlerden biridir (Topsaç ve Bişğin, 2014). Serbest zaman tatmin düzeyini belirlemek için Beard ve Ragheb (1980) tarafından geliştirilen SZT ölçeği uzun formunun Türkçeye uyarlanmış şekli kullanılmıştır (Karlı ve diğ.,2008).

MATERYAL VE METHOD

Katılımcılar
Araştırmaya Antalya ilinde toplam 75 rekreatif amaçlı tenis oynayan birey gönüllü olarak katılmıştır. Bu bireylerin 39'u (13 kadın 26 erkek) rekreatif olarak tenis ile birlikte farklı fiziksel aktivitelere katılıyorken 36'sı (15 kadın 21 erkek) katılmıyordu.

Veri Toplama Yöntemi
Veriler tüm katılımcılara yaş, cinsiyet, tenis oynama yıllarını içeren sorulardan oluşan kişisel bilgi formu, SZT ölçeği ve UAFA anketi uygulanarak elde edilmiştir. Katılımcılar anketleri doldurmadan önce çalışma hakkında detaylı bir şekilde bilgilendirilmiştir.

Serbest Zaman Tatmin Ölçeği (SZTÖ)
SZTÖ ilk olarak Beard ve Ragheb (1980) tarafından geliştirilmiştir. Orijinal form 51 soru ve 6 alt boyut içerir. Çalışmada 39 soru ve 6 alt boyutu içerecek şekilde Türkçeye uyarlanmış ve geçerlilik güvenirlilik çalışması yapılmış şekli kullanılmıştır. Bu 6 alt boyut psikolojik, eğitimsel, sosyal, rahatlama, fizyolojik ve estetik boyutu olarak belirlenmiştir. Bu sorular ölçekte 1 ile 5 arasında puanları içeren Likert tipi ölçektir (1=Benim için hemen hemen hiç geçerli değil ve 5=Benim için hemen her zaman geçerli). Karlı ve arkadaşları tarafından yapılan

çalışmada Cronbach Alpha güvenirlilik katsayısı α=0,92, bizim çalışmamızda da 0,92 olarak hesaplanmıştır (Karlı ve diğ.,2008).

Uluslararası Fiziksel Aktivite Anketi (FAA)

Boş zamanlarda yapılan fiziksel aktiviteyi değerlendirmek için Uluslararası Fiziksel Aktivite Anketi (FAA) kısa formu kullanılmıştır. FAA kısa formu bireyin fiziksel aktivite seviyesini belirlemek için 7 soru içerir. 18-69 yaş arası yetişkinlerde uygulanması tavsiye edilmektedir. Anket son 7 günde en az 10 dk yapılan FA ile ilgili soruları içermektedir. FA düzeyini belirlemek için MET yöntemi kullanılmaktadır. 1 MET=3,5 ml/kg/dk. 'dır. İstirahat halinde iken her birey kg başına bir dakikada 3,5 ml oksijen tüketmektedir. FAA'de, Yürüme, orta ve şiddetli FA düzeyleri değerlendirilir. [Yürüme 3,3 MET, Orta FA(OFA) 4MET; Şiddetli FA (ŞFA) 8MET].Her Bir kişinin haftada kaç gün ve ne kadar süre ile Yürüme, OFA, ŞFA yaptığı tesbit edilerek bu üç farklı fiziksel aktiviteden harcanan toplan MET-dak/hafta miktarı hesaplanmaktadır. FAA'nin geçerliliği Brezilyada bir kaç çalışmada belirlenmiştir. Azevedo ve ark. (2007) tarafından yapılan bir çalışmada FAA'nin fiziksel aktiviteyi ölçmek için güvenilir ve kolay uygulanabilir bir araç olduğu belirtilmektedir

BULGULAR

Katılımcıların 28'i kadın (yaş, 48.53±9.20 yıl; boy, 160.64±7.55 cm; ağırlık, 65.25±9.91 kg), 47'si erkek bireylerden (yaş, 46.24±9.25 yıl; boy, 175.06±6.58 cm; ağırlık, 78.89±8.35 kg) oluşmaktadır. Katılımcıların ortalama 9.13±5.14 yıl tenis oynadığı belirlenmiştir

Tablo1: Tüm Katılımcıların Fiziksel Aktivite Düzeyleri.

n=75	Yürüme (AO±SS)	ODFA (AO±SS)	ŞFA (AO±SS)
FADT(MET-dak/hafta) (n=39)	1128±1005	1507.06±1439.75	4954.84±4536.59
p=	0.02*	0.06	0.00*
DT(MET-dak/hafta) (n=36)	603.90±558.83	920.00±393.96	1655.55±1165.39

Çalışma sonunda, FAA puanlarına göre (MET-dak/hafta) FADT Yürüme (n=34, 1128±1005) ve ŞFA parametrelerinde (n=31; 4954.84±4536.59) DT göre daha yüksek puan aldığı (Yürüme: n=25; 603.90±558.83; ŞFA: n=18; 1655.55±1165.39) belirlenmiştir (p<0.05).

ODFA parametresinde FADT (n=34; 1507.06±1439.75) ile DT (n=31; 920.00±393.96) arasında ise α=0.05 anlam düzeyine çok yakın fark olduğu saptanmıştır (p=0.06).

FADT grubunun haftada harcadığı toplam MET miktarının(6235,96± 6068,84) DT grubuna göre (2039.3750±1949.56) anlamlı derecede fazla olduğu bulunmuştur (p=0.00).

Tablo 2: Katılımcıların Serbest Zaman Tatmin Düzeyleri.

SZTD n=75	FADT (AO±SS) n=39	p	DT (AO±SS) n=36
Psikolojik	34.53±4.46	0.33	35.44±3.53
Eğitim	38.00±6.17	0.01*	34.61±5.91
Sosyal	31.17±4.55	0.23	32.53±5.28
Rahatlama	18.59±1.52	0.96	18.61±1.84
Fizyolojik	24.76±3.53	0.85	24.92±2.99
Estetik	17.05±2.84	0.60	16.72±2.61
Toplam	166.38±17.76	0.14	160.56±16.39

SZT ölçeği eğitim alt boyutunda(FADT: n=39; 38.00±6.17; DT: n=36; 34.61±5.91) FADT lehine anlamlı fark olduğu belirlenmiştir (p<0.05).

Tüm katılımcıların SZTD puanları ile FA puanları arasında anlamlı bir ilişki bulunmamıştır (p<0.05).

Tablo 3: Tüm Katılımcıların Cinsiyetlere Göre Serbest Zaman Tatmin Düzeyleri.

SZTD n=75	Kadın (AO±SS) n=47	p	Erkek (AO±SS) n=28
Psikolojik	36.64±2.93	0.00*	34.02±4.25
Eğitim	39.03±4.54	0.00*	34.79±6.61
Sosyal	33.50±4.69	0.03*	30.91±4.90
Rahatlama	18.82±1.85	0.34	18.47±1.85
Fizyolojik	25.75±2.25	0.04*	24.30±3.65
Estetik	17.53±2.62	0.11	16.51±2.73
Toplam	171.28±13.21	0.00*	159.00±17.85

Tüm katılımcıların cinsiyetlere göre SZTD arasında Psikolojik, Eğitim, Sosyal, Fizyolojik alt boyutlarında ve toplam boyutta anlamlı derecede farklı olduğu belirlenmiştir ($p<0.05$).

Tablo 4: FADT ve DT Gruplarının Cinsiyetlere Göre Serbest Zaman Tatmin Düzeyleri.

Alt Boyutlar	FADT n=39			DT n=36		
	Kadın (AO±SS) n=13	p	Erkek (AO±SS) n=26	Kadın (AO±SS) n=15	p	Erkek (AO±SS) n=21
Psikolojik	37.00±3.16	0.04*	34.65±3.51	36.33±2.79	0.02*	33.24±5.00
Eğitim	41.69±2.78	0.00*	36.15±6.59	36.73±4.57	0.05	33.09±6.39
Sosyal	35.46±3.84	0.00*	31.08±5.35	31.80±4.81	0.49	30.71±4.41
Rahatlama	18.38±1.50	0.56	18.69±1.54	19.20±1.01	0.07	18.19±2.18
Fizyolojik	26.31±1.49	0.01*	24.00±4.00	25.27±2.71	0.55	24.67±3.21
Estetik	17.77±2.98	0.29	16.69±2.75	17.33±2.35	0.23	16.28±2.76
Toplam	176.61±1.66	0.00*	161.27±18.23	166.66±13.07	0.05	156.19±17.40

FADT yapan kadınların Psikolojik, Eğitim, Sosyal, Fizyolojik ve Toplam Puanlarda erkeklerden anlamlı derecede farklı olduğu belirlenmiştir ($p<0.05$).
DT yapan kadınların ise Psikolojik alt boyutunda erkeklere göre anlamlı derecede farklı olduğu belirlenmiştir ($p<0.05$).

TARTIŞMA

Çalışma düzenli olarak tenis oynayan bireyler ile tenis oynamanın yanında diğer FA'ler ile uğraşan bireylerin SZT düzeyleri ve FA düzeylerini incelemek amacıyla yapılmıştır. Çalışmada serbest zaman FA çeşitliliğinin FA düzeyini artırdığı belirlenmiştir. Önceki çalışmalarda düzenli yapılan fiziksel aktivite şiddetinin bazı psikolojik parametreler üzerine etkisi incelenmiştir. Düzenli olarak yapılan haftalık egzersiz sayısı fazla olanların az olanlara göre daha az stres seviyesine sahip olduklarını belirten araştırmalar da bulunmaktadır (Schnohr ve diğ., 2004). Dünya Sağlık Örgütü tarafından 18-64 yaşları arasındaki yetişkin bireylerde haftada 150 dk orta şiddette yapılan FA ile haftada 75 dk yapılan FA'nin kombine edilerek yapılmasının depresyon riskini azalttığı bildirilmektedir (Kuwahara ve diğ., 2015). Ancak literatürde FA çeşitliliğinin SZT düzeyine etkisi ile ilgili bir çalışmaya rastlanmamıştır. Bu anlamda bu çalışmadan elde edilen sonuçların faydalı olacağı düşünülmektedir.

Tüm katılımcıların SZT düzeyleri incelendiğinde düzenli olarak birden fazla farklı FA yapan bireylerin yapmayanlara göre yalnızca eğitim boyutunda puanları daha yüksek bulunmuştur. Bu sonuçlara göre serbest zamanlarında yaptıkları FA çeşitliliğinin bireylerin eğitim ile ilgili tatmin düzeylerini olumlu etkilediği söylenebilir.

Tüm katılımcıların SZT düzeyi puanlarına cinsiyete göre bakıldığında; psikolojik, eğitim, sosyal, fizyolojik alt boyutlarında ve toplam puanda kadınların puanları erkeklerden fazla bulunmuştur. Ancak rahatlama ve estetik

boyutlarında anlamlı fark bulunmamıştır. Bu bulgulara dayanarak 28'i kadın (yaş, 48.53±9.20 yıl) 47'si erkek (yaş, 46.24±9.25 yıl) bireyin katıldığı bu çalışmada serbest zamanlarında fiziksel aktivite yapan kadınların SZT düzeyleri erkeklere göre daha fazla bulunmuştur. Birden fazla fiziksel aktivite yapan kadınların SZT puanlarının psikolojik, eğitim, sosyal, fizyolojik alt boyutlarında ve toplam puanda erkeklerden daha fazla olduğu belirlenmiştir.

Literatürde serbest zaman aktivitelerinin neler olduğuna bakılmaksızın çeşitli yaş gruplarında yapılan çalışmalarda cinsiyetin serbest zaman aktivitesi üzerine etkileri incelenmiştir. Çocuklar ve ergenler üzerinde yapılan bir araştırmada boş zaman aktivitelerine katılımda cinsiyete göre farklılık olmadığı belirtilmiştir (Muzindutsi ve Masango 2015). Gençler üzerinde Türkiye'de 804 üniversite öğrencisi üzerinde yapılan bir çalışmada ise hem serbest zaman tatmin düzeyinde hem de alt boyutlarında cinsiyetler arasında fark olmadığı belirten çalışmalar yer almaktadır (Ardahan, Lapa, 2010). 65 yaş üstü bireylerde yapılan bir çalışmada ise kadın ve erkeklerin SZT düzeyi arasında anlamlı fark bulunmamıştır (Broughton ve Beggs, 2007). Ancak daha eski bir çalışmada erkeklerin serbest zaman tatmin düzeylerinin kadınlardan daha baskın olduğu ancak kadınların sosyal etkileşim için daha fazla boş zamana ihtiyaç duyduğu belirtmektedir (Kabanof, 1982). Bu çalışmada ise serbest zamanlarında tek bir fiziksel aktiviteye katılan ve farklı fiziksel aktivitelerle (tenis odaklı) katılan bireylerin serbest zaman tatmin düzeylerinde cinsiyete göre farklılıkları incelenmiş ve kadınların erkeklere göre SZT puanlarının daha fazla olduğu belirlenmiştir. Ayrıca birden fazla fiziksel aktivite ile uğraşan kadınların erkeklere göre daha fazla SZT düzeyine sahip oldukları belirlenmiştir. SZT ölçeği puanları ile FA anketinden elde edilen puanlar arasında ise herhangi bir anlamlı ilişkiye rastlanmamıştır.

Sonuç olarak; FA çeşitliliğinin FA miktarını artıran bir faktör olduğu söylenebilir. Serbest zamanlarında birden fazla FA ile uğraşan bireylerin yeni beceriler öğrenme, deneme, toplumu ve kendini daha iyi tanıma vb. duygulardaki (eğitim boyutu) tatmin düzeylerinin daha yüksek olduğu belirlenmiştir. Serbest zaman aktivitelerine katılan kadınların erkeklerden daha fazla SZT düzeyine sahip oldukları ve birden fazla FA katılan kadınların erkeklere göre daha fazla SZT düzeyine sahip olduğu bulunmuştur. Bu sonuçlara göre serbest zamanlarında fiziksel aktivite ile uğraşan bireylerde cinsiyetin SZT üzerine etkili olduğu ancak yapılan fiziksel aktivitenin çeşitliliğinin, şiddet ve sıklığının SZT düzeyi ile ilişkili olmadığı belirlenmiştir.

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E-TEACHING STRATEGIES: MASSIVE VERSUS CUSTOMIZED METHODOLOGIES

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ABSTRACT
When designing any educational process, we must analyze it and try to optimize it taking into account all the variables involved in this process: curriculum design, didactic transposition, the learning environment, evaluation methodologies, etc. In the particular case of e-learning pedagogical processes, there is one particular scenario which is not present (at least in equal dimensions) in classroom teaching processes. This is the possibility of including, within one particular course, an enormous number of participants which would be impossible even to imagine in a classroom teaching process. This is where the concept of "mass education" appears, and with it, the concept of Massive Open Online Courses (MOOCs). These methodologies of "mass education" may seem very attractive because of the volume of students who can be trained, but are very sensitive to environmental design, which can determine the success or failure of the process. On the other hand, we can see the results of personalized methodologies, in which the main instructor or a coordinator or assistant interacts directly with each student and performs feedback on each of the work, inquiries or suggestions from them.
Keywords: Educational process, e-learning, mass education

INTRODUCTION

In the particular case of e-learning pedagogical processes, there is one particular scenario which is not present (at least in equal dimensions) in classroom teaching processes. This is the possibility of including, within one particular course, an enormous number of participants which would be impossible even to imagine in a classroom teaching process. This is where the concept of "mass education" appears, and with it, the concept of Massive Open Online Courses (MOOCs). These methodologies of "mass education" may seem very attractive because of the volume of students who can be trained, but are very sensitive to environmental design, which can determine the success or failure of the process. On the other hand, we can see the results of personalized methodologies, in which the main instructor or a coordinator or assistant interacts directly with each student and performs feedback on each of the work, inquiries or suggestions from them.

The educational processes designed for distance learning or e-Education programs, rely basically on three major components: curricular design, teaching strategies and e-Education learning environments.

The curricular design

What exactly is the core knowledge we wish to transmit? What should a student know and what would be convenient for them to know? How do we choose the priority issues? We have to choose the appropriate content and structure it accordingly to be able to effectively communicate it and thus achieve a successful learning process.

The curriculum is an attempt to communicate the principles and features of an educational purpose in a way that it remains open to critical discussion and can be effectively implemented. (Stenhouse, 1987)

The central problem of any curriculum project is that of content and, in a more general sense, knowledge. The didactic transposition is the adaptive transformation process (whether it involves distortion, substitution or creation of knowledge) by which scholarly knowledge constitutes itself in the knowledge or object to be taught and, in turn, knowledge or object actually taught. (Poggi, 1990)

Without an effective curricular design it will not be possible to achieve a positive impact on any student. Having selected the main content we must now focus on the teaching strategies.

Teaching strategies

Having selected the content, one must also choose appropriate teaching strategies to achieve the desired goal. In general, these teaching strategies can be classified as:

- The teaching of organized forms of knowledge through direct intervention strategies: exposition, interrogation, etc.
- Strategies focused on indirect forms of teacher intervention: case studies, problem-based learning, inquiry, etc.
- The skills training through simulation and controlled practice.

Early theories of teaching strategy start from behaviorism, which begins in the late nineteenth century in Russia, when Pavlov raises Reflexology, arguing that behavior is a chain of reflections and learning is achieved by contiguity, association and stimulus - response. There are conditioned reflexes (learned or acquired) and unconditioned (not acquired or innate). At the same time, in U.S., John Watson and B. Skinner talk about a learning strategy where the teacher is active, selects the contents, doses the material in a relevant sequence. They claim that if there is behavioral change, there is no learning. This is based on the sequence information - application - feedback. Skinner also proposes the use of the learning machine. (Tenutto, 2004) While these are some of the earliest theories of learning, they are still widely used as pedagogical methodologies today. In fact, in certain circumstances, they remain as methodologies which are successfully applied to the process of teaching.

In the early twentieth century the Gestalt theory evolves in Germany. This theory relies mainly on perception, where "The whole is more than the sum of its parts," and learning occurs by what is known as "Insight." The most important contribution of this theory is that learning cannot be conceived as a phenomenon which is isolated of the environment and all the other factors that influence the actors in this process.

Constructivism emerged in the mid-twentieth century (50's and 60's) and its main exponents were Piaget, Vigotsky and Bruner. This theory states that the student is active, adapting, works to resolve conflicts, overcomes the limitations of knowledge, is interactive, conscious and an active part of the learning process.

As for Piaget, learning arises by an equilibrium process that comes from cognitive conflict. Intellectual functioning is based on two main attributes: the organization (the multiple interrelationships between cognitive actions) and adaptation, which in turn covers two sub properties closely related: assimilation (structuring or cognitive restructuring of an object in accordance with the nature of intellectual organization which is already part of one's own knowledge) and accommodation (the process of adapting to the varied demands that are imposed on the subject). He also emphasizes that social interaction can facilitate or impede learning, but is not determinative. (Flavell, 1979)

Vigotzky introduces the concept of Proximal Development Zone, defined as the distance between the actual developmental level as determined by the ability to independently solve a problem, and the level of potential development as determined through problem resolution under the guidance of another person. (Vigotzky, 1998)

Bruner argues that the student explores, with advances and retreats. There is no concept of mistake because mistakes are part of the process and they serve to advance the process. The characteristic of the teacher is to generate uncertainty, intrigue and desire for further understanding. The object of education is that students think for themselves. (Bruner, 2001)

Finally there is Cognitivism, a theory which speaks of meaningful learning and emerges in the 60's. Its main exponents were Ausubel and Novak. According to Ausubel, for meaningful learning to occur, it is necessary that the material presented to the student is not arbitrary, meaning that it possesses meaning. A material has meaning if the elements are arranged and not merely juxtaposed, that is, if it has a meaningful structure. It is also necessary that the student's cognitive structure contains inclusionary ideas, meaning that their previous knowledge can be related new material. (Pozo, 1987) Previous organizers serve to accommodate the new knowledge in one's cognitive structure. In the event that there were no relevant concepts in it, the previous organizers will serve to reinforce new information and lead to the development of an inclusive concept that may operate to facilitate subsequent learning on relevant issues. (Novak, 1990)

Under this theory, the student is active and aware of the learning process and relates the content with prior knowledge. The teacher, in turn, generates previous organizers, presents the content, organizes and structures materials, asks for examples, and shows connections to prior knowledge. This is an ongoing process, which clearly explains why knowledge acquired which is based on previous organizers will be much more durable and useful than simple memory learning.

Finally, having developed these strategies, feedback is crucial to achieve the educational process to create a system of continuous improvement in its implementation. For this you must have an appropriate system of assessment of learning.

Evaluation is a process of obtaining information and then making judgments and ultimately decisions. (Castillo Arredondo.and Cabrerizo Diago, 2006) According to Camilioni, evaluation is to assess value judgments about something: objects, behaviors or plans. These trials have a purpose; it is evaluated to make decisions regarding the progress of a process. (Camilloni, 2000) Meanwhile Allal states that "formative assessment, as it is characterized above, allows a double feedback. On the one hand, the student indicates its status under the various stages that must be passed for a particular learning and on the other, tells the teacher how the process of teaching and learning takes place, and the main achievements and difficulties of learning."(Allal, 1997)

Regarding the usefulness of the evaluation, it helps students to learn about their progress in relation to the objectives, know their weaknesses, find their difficulties in order to overcome them and compare their performance with that of their peers. "From the point of view of the student, the evaluation is fused with learning. While it validates, it reorients. From the point of view of the teacher it acts as a regulatory evaluation of the teaching process." (Camilloni, 2000)

For teachers, evaluation helps to know the initial state of knowledge of students, the progress made by each of them, their difficulties and finally being able to review the proposed objectives. (Camilloni, 2000) The teacher, after the interpretation of the evaluation data, can decide on the revision of an item or the repetition of the same teaching if necessary, the recommendation of literature or information to enhance some aspect of the learning process. (Allal, 1997)

e-Education learning environments

Finally, an aspect that is also important is the channel that will be used to implement this learning process, since we now have efficient and economical Information and Communication Technologies, which are increasingly accessible. This will enable us to deliver knowledge in a more effective way to increasing numbers of people. But we must remember that these are the only channels and that the main importance is in the developed content.

By combining these three components, we will be able to build soundly based educational proposals that meet the growing requirements of training, continuing education and professionalization of prospective students.

STUDENT FEEDBACK ON TECHNOLOGY IN E-EDUCATION LEARNING ENVIRONMENTS

As in any successful educational processes, feedback from the participants plays an important role to improve different aspects such as curricular design, methodology, evaluation, etc. As well as taking note of spontaneous feedback from online students we have conducted a number of surveys among these participants, so as to understand their particular needs as far as learning environments and the use of information technology in their homes and or work-places. Some relevant issues that arose from a recent survey conducted in 2015 (CENTED, 2015), include:

- One of the most frequent complaints from online students is the availability of tutors /coordinators to be able to answer inquiries and assist students in general problems.

- Another issue occurring in some e-learning platforms is that some students find it difficult to locate the learning material. When there are many different files (video, text, presentations, etc.) located in different places, it is relatively frequent that they "skip" some of them.

- Automated inscription to courses (as opposed to direct e-mail communication) has proven to be a problematic issue for some potential participants.

- Although e-mail communication has also presented some problems, as a number of other prospective students have mentioned the problems of "spam-block" in some educational institutions (meaning that legitimate inquiries are treated as spam).

CONCLUSION

Whereas information technology has provided us with a fabulous means of providing education, we cannot ignore the point that this is merely the channel used for delivering the process and not an ultimate goal in itself.

Technology is of huge importance, but the main focus must be placed on curricular design and teaching strategies.

In the particular case of e-learning pedagogical processes, there is one particular scenario which is not present (at least in equal dimensions) in classroom teaching processes. This is the possibility of including, within one particular course, an enormous number of participants which would be impossible even to imagine in a classroom teaching process. Whereas these methodologies of "mass education" may seem very attractive because of the volume of students who can be trained, but are very sensitive to environmental design, which can determine the success or failure of the process.

On the other hand, we can see the results of personalized methodologies, in which the main instructor or a coordinator or assistant interacts directly with each student and performs feedback on each of the work, inquiries or suggestions from them. Although this requires much more effort, the results still seem far superior.

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EBEVEYNLERİN, FENE VE OKUL ÖNCESİ DÖNEMDE FEN ETKİNLİKLERİNE YÖNELİK GÖRÜŞLERİNİ BELİRLEME ÖLÇEĞİ GELİŞTİRİLMESİ

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ÖZET

Araştırmanın amacı, ebeveynlerin fene ve okul öncesi dönemde fen etkinliklerine yönelik görüşlerini belirlemek için bir geçerli ve güvenilir bir ölçek geliştirmektir. Araştırmanın örneklemini 2014-2015 eğitim-öğretim yılında Giresun İl merkezinde Milli Eğitim Bakanlığına bağlı bir bağımsız anaokuluna ve üç ilkokul bünyesindeki anasınıflarına devam eden 100 çocuğun ebeveynleri (n=100) oluşturmuştur. Ebeveynlerin Fene ve Okul Öncesinde Fen Etkinliklerine Yönelik Görüşleri Ölçeği (EFOFGÖ); 50 maddeden oluşan beşli likert tipinde bir ölçektir. Ölçek "kesinlikle katılmıyorum, katılmıyorum, kararsızım, katılıyorum ve kesinlikle katılıyorum" olmak üzere beş seçenek içermektedir. Ölçeğin kapsam geçerliği için uzman görüşlerine başvurulmuştur. Ölçeğin psikometrik niteliklerini ortaya koymak üzere araştırmadan elde edilen verilere Doğrulayıcı Faktör Analizi (DFA) ve madde analizi yapılmıştır. DFA ve madde analizi sonuçlarına göre 58 madde ölçekten çıkartılmıştır ve ölçeğin son hali 50 maddeden oluşmaktadır. DFA ile ölçeğin 5 faktörden oluştuğu ve DFA uyum indekslerinin kabul edilebilir olduğu belirlenmiştir. Madde analizi sonuçları da ölçek maddelerinin ve faktörlerinin ölçek yapısının geçerli olduğuna işaret etmektedir. Ölçeğin bütünü için güvenirlik katsayısı .935 olarak belirlenmiştir. Ölçek faktörlerinin güvenirlik katsayıları ise .734 ile .913 arasında değişmektedir. Buna göre, araştırmada geliştirilen ölçeğin psikometrik niteliklerinden yola çıkarak ölçeğin güvenilir olduğu sonucuna ulaşılmıştır.

Anahtar Kelimeler: Okul öncesi eğitim, fen eğitimi, ebeveyn katılımı, doğrulayıcı faktör analizi, madde analizi, ölçek geliştirme.

DEVELOPING OF THE SCALE FOR DETERMINING OF THE PARENTS' VIEWS ABOUT SCIENCE AND PRESCHOOL SCIENCE ACTIVITIES

ABSTRACT

The purpose of this study was to develop validity and reliability a scale for determining parents' views about science and preschool science activities. The sample of this study consisted of parents (N=100) of 100 children studying at the kindergartens of 3 primary schools and 1 private preschool located in Giresun at 2014-2015 school year. The Parents' Views about Science and Preschool Science Activities Scale (PaWSPeSAS); is a quintet Likert type scale composed of 50 items and five sub-factors. The PaWSPeSAS includes five-point "strongly disagree, somewhat disagree, neither agree nor disagree, somewhat agree and strongly agree". Experts' views were consulted for the content validity of scale. In order to determine psychometric properties of scale, item analysis, and Confirmatory Factor Analysis (CFA) were carried out with data collected from the research. In accordance with results related to CFA and item analysis, 58 items were excluded from scale, and the scale took its final form with 50 items. Results of the CFA and item analysis were revealed that within the scope of five-factor structure, construct validity was high for target characteristics to be measured. Cronbach alpha reliability coefficient of the scale was calculated as .935. Also Cronbach alpha reliability coefficient of factors of the scale varied between .734 and .913. In this context, it could be acceptable that scale was reliability.

Key words: Pre-school education, science education, parent involvement, confirmatory factor analysis, item analysis, scale developing.

EBEVEYNLERİN OKUL ÖNCESİ DÖNEMDE FENE YÖNELİK GÖRÜŞLERİ VE FEN ETKİNLİKLERİNE KATILIMI

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ÖZET

Araştırmanın amacı; ebeveynlerin okul öncesi dönemde fene yönelik görüşlerini ve fen etkinliklerine katılım durumlarını ortaya koymaktır. Araştırma nicel ve nitel verilerin bir arada kullanıldığı karma yönteme göre yürütülmüştür. Araştırmanın çalışma grubunu 2015-2016 eğitim öğretim yılında Ankara İli Etimesgut İlçesi'nde Milli Eğitim Bakanlığı'na bağlı bağımsız bir anaokuluna devam eden 60-72 aylık 39 çocuğun ebeveynleri oluşturmaktadır. Araştırmanın nicel verileri Şahin, Uludağ, Gedikli & Karakaya (2016) tarafından geliştirilen, Ebeveynlerin Fene ve Okul Öncesinde Fen Eğitimine Yönelik Görüşleri Ölçeği (EFOFGÖ) aracılığıyla; nitel veriler ise araştırmacılar tarafından oluşturulan gözlem formu ve yapılandırılmış görüşme formu aracılığıyla elde edilmiştir. Araştırmanın verileri 2016 yılının Mart ayında toplanmıştır. EFOFGÖ'den elde edilen veriler SPSS 15.00 paket programında betimsel istatistikle analizi edilmiştir. EFOFGÖ'den düşük, orta ve yüksek düzeyde ortalama puan alan üç ebeveyn belirlenerek çocuklarla birlikte bir fen etkinliği yapmak üzere farklı günlerde sınıfa davet edilmiştir. Bu ebeveynlerle etkinlik öncesinde yapılandırılmış görüşmeler yapılmıştır. Ebeveynlerin sınıf ortamında etkinlik yapma sürecine ilişkin veriler ise araştırmacılar ve okul öncesi öğretmeni tarafından doldurulan gözlem formu ile elde edilmiştir. Gözlem formundan elde edilen veriler betimsel olarak çözümlenmiştir ve ebeveynlerin etkinlik süresince gözlem formunda yer alan davranışları gerçekleştirip gerçekleştirememe durumları belirlenmiştir. Yapılandırılmış görüşmelerden elde edilen veriler kodlanarak içerik analizi ile çözümlenmiştir. Verilerin geçerliği için kodlara ilişkin ebeveyn ifadelerinden alıntılar sunulmuştur. Araştırma sonucunda EFOFGÖ'den orta ve yüksek düzeyde ortalama puan alan ebeveynlerin fene ve okul öncesi dönemdeki fen etkinliklerine yönelik pozitif bir eğilime sahip oldukları düşük düzeyde ortalama puan alan ebeveynin ise fene ilgi duymadığı ve çocuğu ile fen etkinlikleri yapmadığı tespit edilmiştir. Ancak gözlem formundan elde edilen bulgulara göre EFOFGÖ'den her üç düzeyde ortalama puan alan ebeveynlerin fen etkinliklerini genel olarak başarıyla tamamladıkları dikkat çekmektedir. Bu araştırmanın sonuçlarının okul öncesi dönemde fen etkinliklerine ebeveynlerin katılımlarını teşvik edici çalışmalara ışık tutacağına inanılmaktadır.
Anahtar Kelimeler: Okul öncesi, fen eğitimi, ebeveyn katılımı.

PARENTS' VIEWS ABOUT SCIENCE AND PARENTS' INVOLVEMENT TO SCIENCE ACTIVITIES IN THE PRESCHOOL YEARS

ABSTRACT

The aim of this study was to determine parents' views about science and parents' involvement to science activities in the preschool years. The research was carried out by mixed method. In this study both quantitative and qualitative data were used together. The study group was consisted of parents of 39 children (60-72 months) at an independent preschool is located in Etimesgut, Ankara at 2015-2016 school year. Quantitative data of this study were collected with determining of the Parents' Views about Science and Preschool Science Activities Scale (PaWSPeSAS) was developed by Şahin, Uludağ, Gedikli and Karakaya (2016). Qualitative data were collected with observing form and structured interview forms. The "structured interview form" and "observing form" were created by the researchers. Data were collected in March, 2016. Obtained data from PaWSPeSAS were analyzed with descriptive statistical on the SPSS 15.00 packet program. After than parents have low, mid and highest points from PaWSPeSAS were determined. These parents were invited to class for doing science activities with children together. Face to face interviews were done with these parents before science activities. During the science activities in the class, observation forms were filled in by the preschool teacher and researchers. Obtained data from observation forms were analyzed descriptively and parents' performs are related

with behaviors on observation form were determined. Obtained data from structured interview were coded and analyzed contently. Quotations from parents' statements related with codes were presented for validity of data.
As a result of research, it was determined that parents who have middle and high average score of PaWSPeSAS have a positive trend to science and preschool science activities, parent has low average score of PaWSPeSAS wasn't interested in science and didn't do science activities together with her child. But, according to obtained data from observation form, it is remarkable that all parents have average scores of PaWSPeSAS in three different levels have successfully completed generally science activities. It is believed that results of this study will set light to researches encouraging parents' participation in the preschool science activities.
Key words: Preschool, science education, parents' involvement

EDUCATION BARRIERS FOR CZECH ADULTS

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ABSTRACT

Since the 1980s, barriers in adult education have proved problematic for researchers. Despite the existence of international comparative surveys and local studies, nation-wide surveys taking into account a broad range of socioeconomic factors that could significantly differentiate participation in adult education are rare. This paper presents the results of a nationwide study on barriers in adult education in 2015. Data from a representative survey of the Czech population (N = 1,038) demonstrates that, in the Czech Republic, situational barriers are predominant. Furthermore, it recognizes that the perception of these barriers is not affected just by previous experiences with further education but also by gender, age, socioeconomic and educational inequalities in Czech society.

INTRODUCTION

Adult education is generally viewed as a means to achieve economic growth, social inclusion and improved quality of life. Although adult education is dealt with by many scholars (see, e.g., Cerani, 2008; Esping-Andersen, 1996; Jenkins et al., 2003; Pont, 2004), and is the subject of many international and national political strategies and documents (European Commission, 2010, 2014a, 2014b; OECD, 2005, 2009, 2014, 2015; SCU, 2007; IPCU, 2008; PDV, 2010) it still faces a wide range of implementation obstacles. For this reason, a research field has evolved that is particularly focused on the systematic examination of barriers to adult education.

In the current literature, there is a sizeable consensus regarding the manner in which educational barriers are defined (see, e.g., AES, 2013; Desjardins & Rubenson, 2013; Rubenson, 2007, 2010, 2011; Rubenson and Desjardins, 2009; Rabušic, Rabušicová & Šeďová, 2008). Following a crucial and ground-breaking study by Patricia K. Cross (1981) , most scholars have generally distinguished between three main types of barriers: (1) *situational barriers*, which describe the current socioeconomic and family obstacles that prevent individuals from participating in further education (e.g., lack of funds, excessive employment workload, family and other commitments); (2) *institutional barriers*, which are obstacles created by the educational institutions themselves (e.g., insufficient number of educational events, low quality of courses offered or poor awareness of them); (3) *personal barriers*, which are mostly obstacles associated with each individual's convictions about their own abilities and the significance of education. In other words, they are the dispositions (Bourdieu, 1998) that affect the actor's cognition and, through it, the understanding of the education of adults. Each of these three types of barriers individually restricts adults from participating in further education, regardless of whether it is participation in formal or informal education.[1]

Concerning such barriers, the literature and political strategies implicitly assume that the removal of them will lead to the increased motivation of adults to educate themselves and, as a result, to participate more in education (Ahl, 2006). However, as will be illustrated, these assumptions do not hold up in the face of empirical data. Many of the barriers are associated with the socioeconomic structure of modern society, and their removal is a problematic and complex process.

International research aimed at mapping educational barriers can be, on the most general level, divided into three main approaches:

(1) *International quantitative comparative investigations of participants in education and their barriers*, which are aimed at the frequency of occurrence of the individual types of barriers in various countries and their comparison. This means mostly outputs from the International Adult Education Survey (IALS, 2000), Lifelong Learning Citizens' Views (CEDEFOP, 2003), eduLIFE (Blossfeld et al., 2014), Adult Learners in Formal Education (ALiFE) and Adult Education Survey (AES, 2013), which have been repeatedly cited (see, e.g.,

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[1] Formal education here means the education of adults, which takes place in the official/formal educational system and which is usually completed by obtaining a diploma or other certificate. Informal education means all adult education organized outside the official/formal educational system – e.g., courses and trainings organized within an employment organization or leisure-time education and which can be completed by a certain certificate. Typically, it is also shorter and requires a certain form of financial participation of the learner or of the learner's employer (see also European Commission 2000, 8; Kilpi-Jakonen et al., 2015, 532).

Rubenson, 2011; Desjardins and Rubenson, 2013; Saar et al., 2014; Kilpi-Jakonen et al., 2015). Their most inspirational adaptation is a study by Kjell Rubenson and Robert Desjardins, (2009), which formulates the so-called bounded-agency model of adult education. According to this study, personal barriers are conditioned not only by individual and social dispositions of the actors, but also by situational barriers in the form of the structure of the welfare state that exists in a particular country. Forthe authors, this explains why in some countries, particularly in Scandinavia, the participation in education is significantly higher even though local residents perceive barriers to the same extent as in other geographical areas. The Scandinavian model of the social democratic welfare state (Esping-Andersen, 1999) creates more structural opportunities to participate in further education and also reduces the level of social inequality, making it easier for the actors to overcome dispositional barriers.

(2) *Regional quantitative surveys of participants in the education of adults and their barriers*, which focus on examining barriers to participation in further education in a certain institution, e.g., educational organization (Coady, 2013), company (Rita-E-Fitza et al., 2015) or public administration department (Harris et al., 2015), or in a specific place – city or region (Galjak & Nikolic, 2012, Maiden et al., 2010; Schmelkes, 2011; Steel & Fahy, 2011), or in a certain population, e.g., rural population, or in persons with special educational needs, the elderly or other groups of participants in adult education (Elman et al., 2014; Felton-Busch et al., 2009; Gandecka, 2014; Porras-Hernández and Salinas-Amescua, 2012; Yamashita et al., 2015).

(3) *Qualitative research surveys of selected social groups or institutions*, among which barriers in the education of adults are examined using an interpretative epistemic mode (Reed, 2011) and which focus on individual experiences and the importance of education for adults (see, e.g., Del Preto, 2013; Flynn et al., 2011; Mcgregor & Ryan, 2011). These studies often focus on small groups of non-participants and uncover the subjective rationality of their non-participation (Paldanius, 2007).

Looking at the strengths and weaknesses of these three approaches, while the international comparative surveys allow a description of differences in the participation of adults and the main types of barriers across individual countries – which, after all, is their main asset – they usually disregard cultural and social specifics of the regions and do not examine the impact of key social variables (education, socio-economic activity and class position) on the occurrence of barriers. This is the reason why Rubenson and Desjardins (2009), in an attempt to create a theory explaining the effect of obstacles on participation in the education of adults, had to resort to the level of the social system of Scandinavian countries. Only when taking into account the distinctive features of the local social-political institutions is it possible to adequately interpret the results of the international survey.

Regional quantitative surveys do attribute some importance to the social and cultural factors, but it is only rarely possible to generalize their results at least to the national level. In other words, it is only rarely possible to generalize them to a higher level than the level of the examined group of participants/non-participants in the education of adults, or the region/institution. Although qualitative research surveys are able to uncover unique meanings attributed to the educational barriers by actors from different social worlds and arenas (Strauss, 1984; Clarke, 2005; Kalenda, 2015d) and how they themselves formulate these barriers in their everyday language, they do not relate them to socioeconomic factors. Therefore, they do not allow an understanding of how barriers to adult education are in certain countries socially and culturally determined by key factors, such as age, education or socioeconomic activity.

This study strays from these three paved paths, choosing instead to forge a new path that can minimalize the disadvantages of the first and second research approaches while creating adequate conditions for the subsequent implementation of the third research strategy – an interpretative epistemic approach.[2]

On these grounds, this paper presents quantitative research on current barriers in adult education in the Czech Republic. This research includes a representative survey and also analyses the key sociodemographic factors that affect the perception of barriers in individual groups of the Czech population. The goals are (1) to describe the current structure of barriers in the further education of adults and, subsequently, (2) to determine how these results are sociodemographically differentiated. Therefore, the research intent is both descriptive and explanatory.

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[2] A similar research strategy has been used by other scholars (e.g., MacLeod & Lambe, 2007; White, 2012), who use data from the regular survey of NIACE (National Institute of Adult Continuing Education), as well as by a team of Czech researchers, who dealt with the education of adults in 2006 (Rabušic & Rabušicová, 2006; Rabušicová & Rabušic, 2008).

Because international quantitative surveys will complement the studies with sociodemographic specifics (not strongly emphasized in them), while the advantages of regional research will be "transferred" to the national level, this study will thus also utilize the advantages of the first and second research strategies. On the basis of a quantitative determination of the key barriers in relation to the main social groups, this paper will outline a program of qualitative research that will serve as a "thick description" (Geertz, 1973) or "thick explanation" (Fosket, 2015) of adult education barriers. Such an approach will allow for an interpretation of meanings in the environment and language of the actors, which alone can give a definitive answer regarding the reason for non-participation of adults in further education. In other words, this study also creates pre-requisites for the implementation of the third research strategy.

METHODS
The results presented in this study are based on a quantitative research survey focused on the education of adults, which allowed the obtaining of data from a representative sample of adults from the Czech Republic. Data collection was conducted during the spring of 2015 by the research agency, FOCUS. With the help of trained interviewers, respondents – adults over age 18 – were questioned in areas chosen by a quota. They were asked about basic sociodemographic data, about their attained education and educational barriers. This way, data from a representative sample of a total of 1,038 respondents was collected.

The research techniques used included structured interviews lasting 15 to 20 minutes, during which questions were asked not only about the participation in formal and informal education within the past 12 months, but also about barriers in further education. A part of the questionnaire on barriers contained the same questions as the previous representative research on the education of adults in the Czech Republic, carried out in 2005 by the team of Milada Rabušicová and Ladislav Rabušic (2006; see also Rabušicová & Rabušic, 2008). Overall, there were eleven scaling questions that covered all three types of barriers to further education – situational, institutional and personal.The results do not distinguish between barriers to formal and informal education. The obtained data was then statistically analysed by the program SPSS. In this respect, both first degree classification and second degree classification – the analysis of statistical significance using the Chi-square test and Spearman coefficient – were conducted.

RESULTS
From the viewpoint of educational barriers by type (see Table 1), the main barriers to the education of adults in the Czech Republic are *situational barriers*. More than a half of adult Czechs declare that at the moment they do not have enough funds to participate in educational courses and trainings, or that they are too busy to further educate themselves.

Table 1: Barriers to further education in the Czech Rep. – summary (source: own calculation)

		Total	Did not participate in further education*	Participated in further education**
Situational barriers	I have insufficient funds.	55	57	42
	I am too busy with work.	55	56	55
	I am too busy with hobbies.	46	50	34
	I have insufficient time because of family obligations.	34	36	27
	I cannot participate due to health reasons.	20	25	6
Institutional barriers	There is not enough information about appropriate educational courses.	45	48	40
	There are not enough suitable courses.	40	49	37
	The quality of courses is relatively low.	32	36	29
Personal barriers	Participation in educational courses or trainings is meaningless to me.	49	66	16
	I fear that I would not succeed.	36	44	18
	I think that I do not have sufficient education for further education.	31	39	16

Note: * Did not participate in further education in the past 12 months (without distinction between formal and informal education). ** Participated in further education in the past 12 months (without distinction between formal and informal education). Data in percent

Many Czechs therefore consider further education to be too expensive or do not want to invest their money in it. Placing this knowledge in the appropriate social context, Tomáš Katrňák and Petr Fučík (2010) have in the case

of the Czech Republic fairly recently shown that the investment in "cultural capital" (Bourdieu, 1986, 1998) through education does not necessarily lead to social mobility, but only maintains the current social position between generations (see also Keller & Tvrdý, 2008). Furthermore, it is typical for the Czech employment structure that 91 % of employees have a permanent contract (OECD, 2015, 18-19), and most of employees declare that they are satisfied with their jobs (Večerník, 2006a). So from the viewpoint of maintaining their position in a job, employees are not forced by either external or internal factors to intensively develop their cultural capital.

A significant decrease in work commitments has been observed in the Czech Republic after 2000. Much fewer Czechs are willing to spend more time at work than necessary and have their work tasks interfere with their personal lives (Večerník, 2004, 2006a), and nowadays only 7 % of employees work notable overtime (OECD, 2015, 27). Since education in the Czech Republic is closely associated with work and working activities (AES, 2013; Kalenda, 2015a, 2015c; Rabušicová & Rabušic, 2008), Czechs are generally not motivated to spend time learning, be it at work or at home, and this despite research showing a strong correlation between attained education and unemployment and between attained education and income (Mareš, 1999; Katrňák & Mareš, 2007; Večerník, 1998, 2009; Matějů & Anýžová, 2015). University graduates are the least endangered by unemployment, and their wages are 80 % higher than those of secondary education graduates, and 110 % higher than those of primary education graduates (OECD 2015, 34).

Another common barrier to further education is in the importance of educational courses and trainings for individuals, who in almost half the cases report that further education is meaningless for them. With reference to Glaesser and Cooper (2014), further education is not perceived in the local society as a rational tool for obtaining economic, social or symbolic goods.

When examining the issue of educational barriers from the other side, the least important obstacles to further education are health reasons, reported by only one-fifth of respondents. Then there is the issue of educational course quality, which is considered by approximately one-third of adults to be so low that it is not motivating for them to participate in educational courses. The third least important obstacle is insecurity about one's own attained level of education.

The key factor that significantly influences the incidence rate of barriers is previous participation in further education, whether formal or informal. Individuals who in the past 12 months participated in some form of further education show a much lower incidence rate of barriers to further education than those who did not participate in any educational courses or training. This relationship significantly differentiates the perception of all types of barriers with the exception of excessive workload, which does not play a major role. On the contrary, it mostly affects the importance of educational activities of individuals (Spearman co. 0.64). Two-thirds of the respondents who did not participate in further education unequivocally declared that they do not see any sense in further education. A positive experience with further education is therefore a precondition for its meaningfulness. In this regard, our results agree with the previous surveys in the Czech Republic and abroad (see, e.g., Rabušicová, Rabušic & Šeďová, 2008; Rubenson, 2007, 2011; White, 2012). However, this result may be due to the fact that it is a so-called "middle item" in a longer causal chain, because participation in further education is pre-conditioned by many other factors (see the following).

BARRIERS AND GENDER
Although there are no major differences between the participation of men and women in informal education in the Czech Republic (see Rabušic & Rabušicová, 2006; Rabušicová & Rabušic, 2008; Kalenda, 2015a, 2015b), there are significant differences in educational barriers (see Table 2).[3] Women, much more often than men, report that they do not have enough funds for further education and also more often declare that they cannot participate in educational courses and events due to family obligations.

Thus, the two main types of discrimination against women in the Czech Republic are related. As demonstrated by Jiří Večerník (2006b) and Matějů and Anýžová (2015, 57), women in the Czech Republic earn only about 70 to 80 % of men's wages. At the same time, it is the women who are predominantly in charge of running the family (Kuchařová et al., 2006). In comparison with most Western European countries, there is still a relatively small percentage of women in the Czech Republic, 14.3 % of women of working age, who would clearly prefer career to family (Weidnerová & Matějů, 2015, 647).

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[3] The past five years in the Czech Republic has witnessed a growth in the participation difference between men and women in tertiary education. Women enter bachelor's or master's university programs much more often (Simonová, 2012; Matějů, Anýžová & Simonová, 2013; Weidnerová & Matějů, 2015), a trend that is now traceable in other Western countries (Di Prete & Buchmann, 2013).

Men much more often indicate the reason for non-participation in further education being that they are too busy at work and that they have other leisure-time activities, due to which they lack the time for further education. This corresponds to the OECD survey results (OECD 2015, 26), which shows a significantly higher share of men (11 %, compared to 3 % of women) working overtime. Men are also mildly more critical of the quality of courses and also a little more sceptical concerning the meaningfulness of further education.

Table 2: Barriers to further education of adults by gender (source: own calculation)

Gender		Women	Women Average†	Men	Men Average†
Situational barriers	I have insufficient funds.	61.1*	2.3	49.5	2.6
	I am too busy with work.	51.6	2.6	59.1*	2.4
	I am too busy with hobbies.	41.2	2.8	51.5*	2.5
	I have insufficient time because of family obligations.	41.5*	2.7	27.2	3.1
	I cannot participate due to health reasons.	21.4	3.2	19.6	3.2
Institutional barriers	There is not enough information about appropriate educational courses.	44.7	2.8	46.7	2.8
	There are not enough suitable courses.	37.4	3.0	43.3	2.9
	The quality of courses is relatively low.	28.9	3.1	35.3	3.0
Personal barriers	Participation in educational courses or trainings is meaningless to me.	46.2	2.6	51.9	2.4
	I fear that I would not succeed.	39.1	2.8	34.7	2.9
	I think that I do not have sufficient education for further education.	30.7	2.9	30.5	3.0

Note: †Average score for the answer, where 1 = completely agree, 4 = completely disagree; * Chi-square is statistically significant at $p < 0.05$; ** Chi-square is statistically significant at $p < 0.01$;
Data: 2015, percentages indicate the level of agreement with the statement.

BARRIERS AND AGE
Age is commonly regarded by a number of researchers (see, e.g., Estes, Biggs & Phillipson, 2003; Gilleard & Higgs, 2005; Vincent, 2003) as the key factor influencing human activity. The case of barriers to further education of adults is no different, as age affects it in at least three major ways (see Table 3).

Table 3: Barriers to further education of adults by age (source: own calculation)

Age group		18-24	25-34	35-44	45-54	55-64	65+
Situational barriers	I have insufficient funds.	61.9*	54.0	51.3	58.6	52.9	57.0
	I am too busy with work.	44.1*	64.0*	73.3**	67.9*	56.3	23.3**
	I am too busy with hobbies.	41.5	42.5	55.5*	50.6	48.9	37.3*
	I have insufficient time because of family obligations.	6.8**	36.5	53.4**	45.1*	35.6	21.2*
	I cannot participate due to health reasons.	1.7**	13.0	11.5	17.3	28.2	44.6**
Institutional barriers	There is not enough information about appropriate educational courses	34.9	45.5	46.1	48.2	52.3	44.6
	There are not enough suitable courses.	34.8	39.5	42.4	42.6	44.8	36.3
	The quality of courses is relatively low.	30.5	37.5	35.1	32.7	32.8	22.8*
Personal barriers	Participation in educational courses or trainings is meaningless to me.	29.7**	37.0	36.7	44.4	62.0*	77.2**
	I fear that I would not succeed.	26.3	28.0	29.8	39.5	42.0	53.4*
	I think that I do not have sufficient education for further education.	17.8*	26.5	30.9	34.0	33.3	37.3

Note: * Chi-square is statistically significant at $p < 0.05$; ** Chi-square is statistically significant at $p < 0.01$. Data: 2015, percentages indicate the level of agreement with the statement

Firstly, respondents in their early adulthood (age 18 to 24) report much more often that they have insufficient funds for further education. This is because many people of this age group are currently studying at universities (about 50 % of them), which makes them largely dependent on financial support from their parents. This phenomenon is relatively new in the Czech Republic, where a significant expansion of tertiary education occurred after 2000, since when the number of university students has almost doubled (see, e.g., Koucký, 2009; Prudký, Pabián & Šíma, 2010).

Secondly, the occurrence of a larger number of situational barriers is typical for middle-aged respondents (age 35 to 54), compared to other age groups. Middle-aged respondents most often declare that the main obstacle to their participation in further education is excessive workload. Almost seven out of ten adults in this age group face this problem. This group is typically labelled the "sandwich generation," because they often have to take care of both their children and their parents (Šindelář, 2014). Because of this, respondents from this age group show a significantly higher occurrence of the answer, "I do not have time for further education because of family obligations."

Thirdly, the two elderly groups (ages 55 to 64, and 65 and above) show a higher occurrence of personal barriers, compared to the other age groups. These are manifested in two ways. Elderly people often emphasize that participation in educational courses is meaningless for them, and also half of them fear that they would not be able to succeed. The reason for the fact that more than two-thirds of the elderly state that further education is meaningless for them is probably that further education in the Czech Republic is closely associated with work and work activity and is not seen as a tool of general development of cognitive skills and social inclusion (Špatenková & Smékalová, 2015). Concerns about the difficulty of further education and the fear of possible failure stems partly from health barriers, as there is a statistically-significant correlation between health barriers and fear of failure in further education (Spearman co. 0.72).

Table 4: Barriers to further education of adults by economic activity (source: own calculation)

	Type of economic activity	Self-employed	Employee	Unemploy-ed	Pensioner	In household
Situational barriers	I have insufficient funds.	37.9*	52.2	84.0**	61.7	58.1
	I am too busy with work.	79.0**	69.1*	30.0**	27.1**	53.5
	I am too busy with hobbies.	55.8	48.0	52.0	38.7*	34.8*
	I have insufficient time because of family obligations.	36.8	37.7	24.0	27.5	90.7**
	I cannot participate due to health reasons.	9.5*	12.2	22.0	44.6**	18.6
Institutional barriers	There is not enough information about appropriate educational courses.	48.4	44.5	58.0*	48.7	39.5
	There are not enough suitable courses.	44.2	40.4	48.0	40.9	25.6*
	The quality of courses is relatively low.	33.7	33.2	52.0**	25.7	25.6
Personal barriers	Participation in educational courses or trainings is meaningless to me.	33.7*	41.2	48.0	75.1**	39.5
	I fear that I would not succeed.	25.3	32.6	58.0*	50.2*	32.6
	I think that I do not have sufficient education for further	22.1	31.7	40.0*	36.8	16.3*

education.

Note: * Chi-square is statistically significant at p < 0.05; ** Chi-square is statistically significant at p < 0.01.
Data: 2015, percentages indicate the level of agreement with the statement.

BARRIERS AND ECONOMIC ACTIVITY

Adult education is often considered one of the main tools of employment policy (European Commission, 2014b; OECD 2009, 2014, 2015; SCU, 2007; IPCU, 2008, PDV, 2010). Unlike in other post-communist countries, e.g., Hungary and Poland, in the Czech Republic arose (relatively soon after 1989) a system of social policy focused on employment services and retraining (Potůček, 2001; Vanhuysee, 2006), a significant aspect of which was further education focused on improving the position in the labour market. Despite the existence of this developed and free system, the presented data (see Table 4) documents that the unemployed declare various barriers in relation to further education.

First and foremost it is the lack of funds. Although retraining in the Czech Republic is free, the unemployed probably believe that they do not have enough funds to cover courses and trainings beyond those provided by the social system. Furthermore, almost 60 % of them state that they do not have enough information on educational courses. From an overall perspective, the unemployed are, as a social group, the least informed about further education programs. Half of them, which is the most of all groups, also state that the quality of educational courses is low. From this can be deduced that the current free system of retraining is considered by the unemployed to be poorly advertised and not very good. On the other hand, the employed declare that the biggest problem for them is their workload. Nearly 80 % of self-employed persons and more than two-thirds of employees consider the large number of pending tasks to be the main barrier to their further education.

In relation to socio-economic activity, two additional specific groups require attention – persons in household and pensioners. While persons in households dominantly face the situational barrier associated with caring for children (91 %), for pensioners a higher incidence of lack of funds and personal barriers are typical, which is understandable, as pensions in the Czech Republic amount to only about 55 % of the nominal wage (CSO, 2013; Vanhuysee, 2006).

Table 5: Barriers to further education of adults by attained education (source: own calculation)

	Attained education	Primary	Secondary without school-leaving exam	Secondary with school-leaving exam	University
Situational barriers	I have insufficient funds.	68.1	67.3	45.1	37.0*
	I am too busy with work.	38.7*	57.8	61.3	52.5
	I am too busy with hobbies.	44.8	47.8	49.0	36.3
	I have insufficient time because of family obligations.	30.7	40.8	34.0	24.7*
	I cannot participate due to health reasons.	32.5*	24.6	16.4	6.9*
Institut. barriers	There is not enough information about appropriate educational courses.	51.5	49.5	44.6	32.2*
	There are not enough suitable courses.	41.7	43.5	40.7	29.4*
	The quality of courses is relatively low.	25.8	34.3	32.6	31.5
Personal barriers	Participation in educational courses or trainings is meaningless to me.	66.3**	54.3	41.2	34.9*
	I fear that I would not succeed.	57.7**	48.4	27.3	8.9**
	I think that I do not have sufficient education for further education.	46.7*	41.6	20.0*	7.5**

Note: * Chi-square is statistically significant at p < 0.05; ** Chi-square is statistically significant at p < 0.01.
Data: 2015, percentages indicate the level of agreement with the statement

BARRIERS AND ATTAINED EDUCATION

As for the links between attained education and educational barriers, the situation in the Czech Republic is clearly the same as in other countries. The higher the respondent's education, the lower occurrence of barriers to

further education (see, e.g., White, 2012). These differences are most strikingly visible in the case of personal barriers, where two-thirds of people with primary education report that further education for them is meaningless, while in the case of university-educated individuals, it is only one-third. These differences are further magnified in the opinion on ability to succeed in further education. While only every eleventh university graduate believes that they might fail in further educational pursuits, for persons with primary or secondary education it is half of them. This explains the significantly-higher share of university graduates in informal education of any type in the Czech Republic (Kalenda, 2015a, 2015b, 2015c).

Those with low levels of education face not only personal barriers but also some situational and institutional barriers. The most significant of them seem to be (1) insufficient funds stemming from poorly paid jobs (OECD, 2015; Večerník, 1998, 2009), and (2) a lack of information about suitable educational courses, reported by every second person from this social group.

Barriers to further education concerns a "prolonging of the effect" of educational inequalities (impact of the socioeconomic status of the family), which in the Czech Republic have been identified only in lower levels of the formal educational system – in the case of educational aspirations of children in primary (Simonová, 2003; Straková & Simonová, 2015) and secondary schools (Matějů & Simonová, 2013, Matějů & Smith, 2015) or a differentiation on the level of secondary education (Katrňák, Simonová & Fónadová, 2013). The analysed data shows that further adult education is not necessarily the best medicine for treatment of educational inequalities, i.e., a "second chance" for adults, as MacLeod and Lambe note (2007), because the attained level of education from the formal educational system significantly affects the cognitive perception (Cerulo, 2002) of barriers and consequently the probability of seeking further education.

CONCLUSIONS

Two main conclusions can be drawn regarding barriers to further education of adults in the Czech Republic. Firstly, they are dominated by situational obstacles in the form of insufficient funds and excessive workloads. These obstacles were identified as the main reasons for the non-participation of adults also in previous surveys both in the Czech Republic and abroad (see, e.g., Rabušic, Rabušicová & Šeďová, 2008; Rubenson, 2010, 2011; Rubenson & Desjardins 2009). On this basis, there has not been any major change in the perception of barriers in the Czech Republic since 2005, when they were last studied. The perception of the main barriers remains the same, despite the development of a relatively intensive regulatory state policy (Jessop 1995) in the field of adult education (Kalenda, 2015b), which resulted in a new "political economy of skill formation" (Vanhuysse, 2008) or individual "mode of skill production" (Iversen, 2005). Barriers to the education of adults in the Czech Republic are thus relatively stable, which is comparable with Western European countries.

Secondly, barriers to further education are strongly conditioned by sociodemographic attributes. The present study demonstrates for the first time how gender, age, socioeconomic activity and attained education influence the perception of barriers in the Czech Republic. In this regard, the perception of individual obstacles is determined not only by gender inequalities and the social status of individuals, but also by educational inequalities stemming from their previous formal education. In the international context, these findings are not something extraordinary that would differentiate the Czech Republic from the rest of Europe, because foreign research shows the existence of similar inequalities in Western European countries (Mcleod & Lambe, 2007; White, 2012; Kilpi-Jakonen et al., 2015). The uniqueness of the Czech Republic in comparison with Western European countriescan be found in the high level of influence of the socioeconomic status of the family on the level of attained formal education (Matějů & Anýžová, 2015), which in turn affects even the perceived barriers of further education and the chance to participate in it.

To better understand these two crucial phenomena, future research should deal with the following: (1) a deeper analysis of the relationship between socioeconomic status and educational barriers, both through the realistic epistemic mode and the interpretative mode (Reed, 2011), because this study has identified some social groups (the unemployed, people with a primary education, middle-aged women, and people over age 55), which have a statistically significantly-higher incidence of some types of barriers that need to be interpretatively understood through qualitative methodological approaches; (2) a detailed analysis of the state regulatory policy practices in the area of adult education and their interpretation by those involved. Their importance lies in the fact that they create a social and cultural environment in which the education of adults takes place, and which affects the perception of barriers. By combining these two research strategies, the key factors that affect obstacles of further education and participation in it can be clarified.

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EDUCATION CHANNELS IN VIDEO SHARING WEBSITES: CASE OF YOUTUBE TURKEY

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ABSTRACT
Using videos that provide rich facilities to learners as learning material is very common. Audio and visual facilities provide an effective learning medium. Videos can be watched by a high number of people through various tools (IPTV, computers and mobile devices) from video sharing sites through the opportunities offered by information technologies.
YouTube is the most common video sharing site. Educators who use video a tool for learning are known to benefit from YouTube as a pedagogical source as well
This study aims to analyze the characteristics of education channels and videos in these channels in YouTubeTR.

INTRODUCTION

Evaluating learning in the framework of personal opportunities and preferences, learning mediums that are offered to learners become significant.   Videos are effective learning tools in the age of digital learning. Audio-visual learning material have been used successfully for a long time in face to face, distance and online learning mediums. Videos are delivered to learners either as TV broadcasts, or as videotapes, CDs or DVDs by duplicating these broadcasts. This process continued with interactive CDs and DVDs.

Videos that were initially one-way learning materials have turned into stronger materials with the facilities provided by the Internet. The Internet took the place of broadcasting and distribution. Both were used as distance learning support materials successfully either by Open University or Anadolu University for years.
Videos are used at, Massive Open Online Course (MOOC), which is in the system since 2000.   This method was firstly used by Massachusetts Institute of Technology (MIT), as a learning medium for the students who wanted to take lessons. Videos, problems, questionnaires and visual aids are used at MOOC lessons. Moreover, communication between lecturers and students is provided as well. Videos served in this medium are usually the recordings of face to face classes.

Facilities provided by technology have eased, cheapened and popularized video recording, editing, watching, sharing, and duplicating videos.   It is possible to categorize the videos into two groups such as traditional videos and interactive videos considering their developmental procedures. Traditional videos are the ones designed for TV broadcasting.   Films that are used in the class as a part of education technology can be considered in this category as well. As for interactive videos, they have made difference in terms of benefitting from videos. These videos have made difference in terms of broadcasting place and individual watches. Some interaction areas have been created for the audience and some PDF, PPT or DOC files have been attached to these videos if needed.   These characteristics of videos have affected learning process positively.

The main reasons for videos' being watched this much can be listed as:
- They have an effective narrative language due to various video production facilities such as graphics, animations and music.
- Some complex subjects can be presented in a simple way.
- They can concretize some abstract subjects.
- The audience can react the subject more rapidly.
- Seeing and hearing provides an effective learning medium.
- They can provide opportunity for creating personal learning environments.
- Videos can be rewatched and in episodes.

Videos can be watched online through the facilities provided by video sharing websites and media companies (from IPTV, computers and mobile devices) everywhere and every time. Especially, the facilities provided by video sharing sites have had an important impact in the increase of the ratings.

Vimeo, Dailymotion, Netflix, Yahoo Screen and YouTube are among the most famous video sharing sites. The one with the highest ratings among these sites is YouTube according to eBizMBA. The results of a study aimed to find out what for YouTube was watched revealed that it was used as a tool for entertainment, joining to discussion groups, search for information on something and finding friends (Özel:2015).

Discussion groups and searching for information are important for learning. Searching for information is a sign of motivation and being volunteer for learning, whereas discussion groups provide a learning environment that enables sharing the information. Moreover, YouTube is known to be a pedagogical source for teaching up-to-date knowledge presented all around the world to the students (Duffy, 2009:120).

In addition to processing raw information and making it attractive with some examples, the rapid increase in the production and sharing of videos makes it an important medium for learning.   Videos that were shared through education channels in YouTubeTR were examined within the light of professional experiences of the researcher and literature in the field in this study.

AIM
The aim of the study was to analyze education channels and existing education/learning videos in terms of source, duration, use of visual materials, sub titles and second language support deriving from basic characteristics of learning videos.

METHOD
Videos can be collected, recorded and analyzed just as printed materials (Yıldırım and Şimşek, 2000, p.141). Education channels in YouTubeTR video sharing site were scanned, and samples were chosen from this population for the study. Selected videos were analyzed through content analysis method.

SCOPE AND SAMPLE
The education channels in YouTubeTR video sharing site were reached by some key words. These keywords were "education videos", "education channels" and "online education channels". Moreover, these contexts were scanned by filtering the word "channel".   Reaching the highest number of education channels was through "online education channel" by filtering. In this framework, the scope of the study was identified to be limited with the first one hundred sites which were reached through abovementioned scanning. After the identification of the web pages, they were all recorded in case they would be altered. Web pages of all the channels in the list were analyzed.   Whether the channel was up-to-date or not, number of its subscribers, rating records, education subjects, source that was shared, source country, and the number of videos in the channel were all reached as a result of these analyses.   A general video watching was commuted at this phase. The channels domain of which were not education were excluded although they were in the list. (For example, news, game and entertainment channels; automated education channels created by Google or YouTube, and propaganda channels of Hillary Clinton and Pope).   After this segregation, a new alignment was made in accordance with the number of videos. One more alignment was made among the channels that had more than 100 videos, and the sample of the study consisted of 28 education channels as a result of all these procedures.

One more overall watching was proceeded as well. Having been informed on the types of videos in each channel, at least three videos from each channel were decided to be watched considering the variety of videos in each channel.

VIDEO SHARING SITES
Video facilitate both individuals and institutions with watching sharing and creating videos. In this situation The Internet users (individual or institution) can be both producers and consumers. Videos' being watchable, downloadable, and sharable is main characteristics of sharing web sites. Videos can either be produced and shared by individual users or they can be produced by professional institutions and shared by others.

Videos can easily be reached from sharing sites, and they can easily be shared. Video sharing sites make it possible to share videos for educative aims as well as various subjects including music, sports, documentary and movies. Some sharing sites (such as YouTube and Dailymotion) have channels specifically designed for education.

Videos broadcasted through YouTube have been viewed by more than one billion people every month, and 300 videos have been uploaded in every one minute (Hürriyet:2015).

Videos are shown in the categories of Trend videos, The bests of YouTube, Music, Sports, Games, Live and News in the main page of Youtube. In order to reach the searched videos, searches can either be made under these titles or by using filtering methods for each category.

Facilities provided by YouTube to its viewers: It recommends some other videos on the same subject on the right of the page while watching a video. Suggestion and sharing of a video is provided through like button.

There is a comment section below the video that is watched which serves as a platform of meeting and discussing between the ones who share the video and the ones who watch it. There are discussions related to the video itself and the subject in the video here. From this framework it can be said that it is possible to create a suitable basis for an "interactive learning medium". Thanks to comment opportunity, there is a medium for communication between the uploader and viewers of a video. There is an automated translation and subtitle facility as well. Existence of local language for learners is an important opportunity. There is an optional subtitle facility as well. Learners can easily choose subtitle of the spoken language in the video or they can choose another language among many from options button on the video. Youtube automatically translates spoken language into English and shows its subtitles as well. Facilitating multiple languages contributes to the information share. This is one of the aims of this medium. MIT and Khan Academy are known to conduct joint studies with local countries. Videos that are broadcasted in this medium are translated into local languages and are put into service of viewers as subtitles or scripts.

Facilities provided by YouTube for the ones who upload videos: There is an opportunity of simple editing. 2 or 3D videos can be uploaded, cut or combined, and music can be added. In accordance with the number of subscribers, likes and views, videos can take advertisements, and by this way, the uploader can earn money from videos.

VIDEOS AS LEARNING MATERIALS

Videos that appear in education/learning platform are expected to be prepared according to some rules. There are some preparations that should be completed beforehand for enhancing learning. Of course these videos are not artistic products. However, they require a designing process. Education/learning videos require instructional design for effective learning rather than artistic designs. Design process starts with identification of the subject and target audience. The decision of which visual materials can provide effective learning is the first step of the study. The decision of whether to use an expert or not, server usage, graphical materials, presentation types, and the type of video including its duration and production type are decided in this process. Having identified target audience is necessary for these studies to be effective.

Learning videos are the ones that aim to make cognitive or behavioral changes on people who watch them. These are the videos which are
- Directly instructive,
- Informative,
- Stimulating (Güçhan,1988, p.11) **.**

The topic is told step by step in directly instructive videos. For example, step by step narration of how to turn a blue eye into a brown one through Photoshop which is an image processing program is possible with a directly instructive video.   From the same example, the videos in which the changes that appear after turning blue eye into brown, in other words, the changes that appear after using the program are explained are the stimulating videos. Thinking on the same program, if it provides a general enlightenment on the person who watches it when it is supported with dramatic and documentary components, then it is called to be an informative video.

There are various production options in order the videos to be effective regarding displaying types. These are;
Videos that are attained from shoots: They are the videos that include talking head shoots, classroom lecture shoots, seminar shoots, reportage and chat shoots, live videos, and shoots taken from e-seminars.
Computer/Tablet Applications: These are animations, pictures in pictures, videos that give the impression of writing with chalk accompanied with narration (Khan Style), videos that are created through white board, videos that are created from screencasts, dubbed PowerPoint slides, and videos that are created from shoots taken from webcam.
Mixed Applications: Videos that are created by using green screen in addition to abovementioned applications are in this group (Hansch et.al., 2015).

As for the production, directly instructive videos are the easiest ones to produce. The narrator expert has the most significant role here. If he or she is crackerjack in his field and a good narrator, the result will be successful. Production process of informative and stimulating videos last longer. Various production types can be used as well in the production of these videos.

Duration in Videos: Identification of the duration is important in learning videos considering the planning of the video in terms of creating a compact narration with required repetitions. The videos in sharing websites are known not to have a lower or upper limit of duration. As these videos are watched by viewers on a voluntary-based, they can arrange the duration of their watching. These videos can be paused, fast forwarded and

rewound, or they can be downloaded and watched offline. This is certainly an important convenience provided by technology. However, the optimum duration of a video in order not to distract viewer has been identified as 17 minutes.   Videos that last for 17-18 minutes with speeches of interesting people are recommended, and best examples for these videos are created in TedTalks. Drinking a cup of tea or coffee while listening to such a speech can be entertaining and even relaxing.   However, this duration is considered hesitative as the attention is stated to be distracted after first ten minutes. Education videos are suggested to last six minutes (Guo, P. 2013). Various production types are recommended for short videos (Gaughan, 2014). The length of the duration provides a limitation that would bring a discipline to both narrator and viewers since it would enable a complete display of the subject in a limited time.   A study conducted to find out the length of the time the users spent in the webpage of Turkey Sciences Academy which offers open course materials revealed that more than half or the visitors spent less than 10 seconds in the site (Al and Madran, 2013). This reality is recommended to be taken into consideration while identifying the duration of the videos.

Use of Graphic Materials: Using two or three dimensional animation-graphics in videos helps visualizing the unseeable subjects and makes them comprehensible.   Using graphics makes narration easier and concretizes abstract ideas. Being able to relay information through graphics is an advantage in terms of instruction (York, 1987). Moreover, effective learning is provided by using cartoon animations with their entertaining functions. There are animation videos in YouTubeTR. These videos usually target children.   Utilization of graphic materials depend on preferences of the producers of the video as well.

FINDINGS

YOUTUBETR EDUCATION CHANNELS
6 of the 28 channels in the sample were Turkish. Only one of the foreign channels (Khan Academy) had Turkish language support. There wasn't enough written or video information or explanation about the foreign education channels in their webpages
It was understood from the analyzed education channels that video uploads were up-to-date, and videos uploaded were kept vivid rather than uploading and forgetting. Although basic science disciplines do not require content updates, they might be made attractive with products including various narrations of different experts. Particularly, appearance of various applications almost every day makes video sharers remain up-to-date inevitably. The important thing at this point is video sharers' being eager to this.

Considering that YouTube provided same facilities for all channels (such as page layout, video display list/table, automated translation and so on), the channels were observed not to benefit from these facilities in the same way.

Table1: Video, subscriber and view numbers of education channels

NAME OF CHANNEL	NUMBER OF VIDEOS	NUMBER OF SUBSCRIBERS	NUMBER OF VIEWS
UC BERKELEY	9911	279.659	40.332.311
KHAN ACADEMY	5776	2.636.789	843.359.661
POKERSTARS	5522	216.297	75.626.582
THE NEWBOSTON	4.333	1245955	273.353.465
MIT OPENCOURSEWARE	3715	931.469	86.480.194
HARVARD	2436	308.683	43.348.681
YALECOURSES	1.452	22.967	44.863.077
TED-ED	1193	2.783.822	329.707.463
FREEKİCKERZ	979	4.303.818	1.056.906.062
CHEMİCAL GUYS	867	166.071	31.299.870
BBCLEARNİNGENGLİSH	842	373.801	32.190.859
MAPHOTOSHOP	740	1.622	164.831
DUBSPOT	667	267.807	34.274.907
THE VİRTUAL LİNG. CAMPUS	509	26.583	2.695.700
TAİ LOPEZ	423	565.925	140.343.799
IM ANDREW MARTİN CHESS	405	7.785	1.590.362
BLOGİLATES	3 99	3.130.630	344.709.353
SÖZLER KÖŞKÜ	385	381.759	40.355.991
AFGAN RASULOV	360	116.685	7.477.072

F2 FRRESTYLERLERS	302	3.934.565	549.860.468
SKETCHUP	225	159.946	14.104.124
UZAKTAN EĞİTİM	216	1.752	320.564
10. SINIF	184	1.546	4.032
SOLFEJ 24 ONLİNE BAĞLAMA	157	12.662	4.471.745
DRUG EDUCATİON AGENCY	146	21.692	1.498.293
UNİVERSİTY OF OTAGO	131	YOK	1.343.828
CHUCHU TV NURSERY RHYMES	114	4.667.959	4.992.817.488
E-MOTİVASYON.NET	100	11.216	3.842.153

Numeric data presented in Table 1 show the number of videos in the channel, number of views of these videos and number of the subscribers of the channels. These data gave information about the rating and continuity of the channel.

Subscriber number of only one channel (University of Otago) couldn't be identified during the analysis. There wasn't any relationship between the number of videos and suscribers, and between the number of videos and views. A channel with few videos (such as Chuchu Tv Nursery Rhymes) had a high number of subscribers and views whereas the channel with the highest number of videos had lower view numbers. The fact that Chuchu Tv Nursery Rhymes had a high number of subscribers and views can be explained with its being an animation channel that tried to inform children and had them develop behaviors, and with its videos' being watched by a high number of people many times.
Existence of channels (such as UC Berkeley, Khan Academy, University Of Otago, MIT OPENCOURSEWARE, BBCLEARNİNGENGLİSH and YALECOURSES) that have their own self-learning webpages in YouTubeTR implies the usage of this area in terms of visibility.

Source countries of education channels and who the videos in these channels were shared by are shown in Table 2 and Table 3.

Table 2: Source countries of education channels

SOURCE COUNTRIES	NUMBERS	%
UNIDENTIFIED	8	29
USA	7	25
TURKEY	6	21
OTHERS	4	14
GERMANY	3	11
TOTAL	28	100

* Others; Mana Island, India, New Zealand and England.

Source countries of education channels in YoutubeTR are shown in Table 2. It has been known that identifying USA as source country is important and it makes it convenient in terms of economic yields, Although this information exists in related webpages, it was seen that some countries apart from USA were shown as source countries. Another important issue at this point was some pages whose source country was not identified were encountered.   One of these pages was BBC English learning channel and the other was MIT. This might be explained with high amount of self-confidence and with the consideration of utmost importance of their webpages.

The Internet is a medium in which globalization finds itself the most comfortably; in which there are no borders nor nations.   Almost one third of source countries were not indicated.   Were there enough explanations in the web pages of channels, maybe absence of source country would provide channels to be perceived more transparent, unprejudiced and democratic. However, this comment remains utopic since the explanations in the pages were trifling.

Table 3: Sources of Education Channels

SOURCES	NUMBERS	%
PEOPLE	15	54
UNIVERSITIES/ENDOWMENTS	11	39
PRIVATE INSTITUTIONS	2	7
TOTAL	28	100

It can be seen in Table 3 that majority (54%) of the analyzed channels were created by private people.   As institutions, associations or universities can already find various mediums in the Internet, these facilities people which have are important regarding learning environments. This opportunity provided by YouTube is valuable for the ones who create or share educative videos. Aims of the analyzed education channels were also examined considering their contents. Findings related to this are shown in Table 4.

Table 4: Content topics of education channels

CONTENT	NUMBERS	%
LESSON AND COURSES	8	29
SOFTWARE/PROGRAM	4	14
FOOTBALL	2	7
ENGLISH	2	7
MUSIC	2	7
PERSONAL DEVELOPMENT	2	7
OTHERS*	8	29
TOTAL	28	100

* Others included personal development, car care, general world knowledge, religious talks, drug education, poker, Sports-health, chess and child education.

Deriving from these findings it can be said that contents of education channels were shaped in accordance with the demands of viewers. YouTube education channel included a high amount of videos that can be called "lesson and course" in the process of learning. As it can be seen in Table 4, 29% of the videos were related to lessons that were organized in the framework of a curriculum (such as preparation for exams, lessons for undergraduate and graduate students and some certificate programs). One of the reason for the high rate of computer software or programs in the second rank can be high demand of people due to constant update or innovation of computer programs, and easiness of producing such videos.

Video types of education channels are shown in Table 5.

Table 5: Video types in education channels

VIDEO TYPES	NUMBERS	%
DIRECTLY INSTRUCTIVE	14	50
STIMULATING	12	43
INFORMATIVE	2	7
TOTAL	28	100

As it can be seen in Table 5, the rates of directly instructive and stimulating videos were close to each other. Narrator or the expert person had the most important role in directly instructive videos. If the expert person is a good narrator and have a grasp of his area, the result will be successful.   The best examples for this types can be the lectures of universities and private teaching courses. A video of teaching how to use a computer program which is used in architecture or videos that recommend sports for a healthy life can be examples for stimulating video types. Production of directly instructive videos is easier compare to other video types. This might be the reason for them to be at a rate of 50%.

Production types of videos in education channels is shown in Table 6.

Table 6: Production types of videos

VIDEO TYPES	NUMBERS	%
MIXED	22	79
SCREENCAST	2	7
OUTDOOR SHOOTING	1	3.5
GREEN SCREEN	1	3.5
IN CLASS SHOOTING	1	3.5
ANIMATION	1	3.5
TOTAL	28	100

As it can be seen in Table 6, all types are used in 79% of videos considering their production types. For example, the videos in the education channel of Khan Academy included dubbing accompanied with pictures, reportages and tablet applications either separately or combined with other types.   As for the applications of the

universities, they included either recordings of the lessons or video shootings that were called "talking heads". It is easy to produce such type of videos. The expert of the field tells the subject or performs an application related to the subject. This can be shot by a camera, then it can be corrected by a simple editing program, and finally it can be shared. It can be seen in Table 6 that there were 4 channels sharing videos created with only one production type.

Comment mediums and like icons used in video sharing sites are crucial in terms of providing a communication environment related to that video. Like icon shares just ideas related to liking or disliking a video. As for comments, they might provide an effective learning environment through exchange of ideas, asking questions and discussions.

Table 7: Comment mediums in education channels

COMMENT	NUMBERS	%
OPEN TO COMMENTS	25	89
CLOSE TO COMMENTS	3	11
TOTAL	**28**	**100**

As it can be seen in Table 7, 89% of channels were open to comments. Yale courses channel and the channels that were teaching personal development and how to play "bağlama" (traditional Turkish folk music instrument) did not let comments. There wasn't any relationship among the channels that did not let comments. Getting feedback for the videos that are shared is important both in terms of communication and learning. It contributes to learning.   Missing points related to the video, mistakes or discussions related to satisfaction might create an environment for learning.

Table 8: Second language support of videos in education channels

SECOND LANGUAGE SUPPORT IN VIDEOS	NUMBERS	%
NO	26	92
SECOND LANGUAGE	1	4
MORE THAN TWO LANGUAGES	1	4
TOTAL	**28**	**100**

The findings of whether a second language was used in the videos are shown in Table 8. Almost none of them (92%) included another language option. Videos are presented with the language of source country. Language support is significant in order language not to hinder learning. At least automated translation facility of YouTube is suggested to be benefitted while sharing videos.

USE OF SUPPORT MATERIALS FOR LEARNING IN VIDEOS
The facilities videos had in addition to the facilities provided by sharing websites were analyzed in this section of the study. The use of graphic materials, durations in videos, subtitle usage to support learning, whether there was information about experts or not were analyzed in this part.   All of the experts were introduced in the videos. It was not possible to reach a conclusion regarding the duration of the videos. There wasn't any duration rule in the videos. Their durations lasted from 30 seconds to five hours.

Clicking on "i" (more information) button located at top right corner of the videos, viewers are directed to other videos with the same topic in their own systems. Namely, clicking "i" at the top right corner, videos with same topic in the channel can be watched. Examining the channels, some videos were found to have this characteristic. However, the number of such videos were low, and the reason for this was thought to be the limited facilities of producing various videos focusing on the same subject.

Subtitles in graphic components facilitate learning. They are used either for translating spoken language in the video or highlighting important points. Findings related to use of subtitles in the analyzed videos are shown in Table 9.

Table 9: Use of subtitles in the videos in education channels

USING SUBTITLES IN VIDEOS	NUMBERS	%
NO	22	79
SUBTITLE IN SAME LANGUAGE	4	14
SUBTITLE IN A DIFFERENT LANGUAGE	2	7
TOTAL	**28**	**100**

Presentations are supported with either the same language or another in the videos. What's important is their being supported in a different language. By this way, people who speak another language might benefit from

such a video. As it can be seen in Table 9, the rate of videos supporting this was just 7%.

Table 10: Use of graphics in videos

USE OF GRAPHICS	NUMBERS	%
NO	24	86
YES	4	14
TOTAL	**28**	**100**

Findings related to the amount of use of graphic materials in videos are shown in Table10. As it can be seen in the table, visual aids that support narration particularly including graphic materials were not used in most of the videos (86%).   Since the system was based on drawings and scripts in videos in which digital screens were used (such as Khan Academy, screencast, and whiteboard), no more graphic design was needed. However, "Chu Chu TV Nursery Rhymes", "Sözler Köşkü", "Sketchup" and "Online Bağlama" channels were found to have supportive/descriptive low side bands and simple drawings that would enhance comprehension of the topic.

CONCLUSION

Videos are significant learning materials. Proper use of such a material is thought to meet learning needs of many people. For this reason, considering the videos as learning channels, video production and share of people only who know the subject, who are curious and keen on it, and who have facilities to create such videos will not be enough. Learning is a process, and this process should be designed correctly.   Technological innovations will surely affect the production type based on the subject.   However, generating content and presentation type depends on knowledge and talents of the ones who produce the video.   Thus, particularly the institutions are recommended to take support from the experts in the field which would help them reach their learning goals.
In addition to the examination of approaches to the topics, pragmatism and evaluation of success, researches conducted by using this medium are recommended regarding the videos in sharing websites.

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EDUCATION OF ALZHEIMER'S PATIENT'S FAMILY

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ABSTRACT

Dementia is a mental illness characterized by impaired memory and cognitive abilities due to degenerative changes in the brain tissue. The disease occurs predominantly in the elderly, and most affects cognitive function, behavior, emotions, and the whole human personality. Incidence of these diseases is increasing with prolongation age throughout the world. The most well-known and also the most serious form of dementia is Alzheimer's disease which World Health Organization ranks among the ten major deadly diseases. Current health care trends for this patient group is not only support and maintain the quality of their lives for as long as possible, but to allow them (if possible) stay in home care. So that the family could effectively help his relative, must have sufficient knowledge and internal commitment to create and maintain such homeostasis of family environment, which will lead to the longest possible self-support in daily activities. If family makes a decision to take care for their relative with Alzheimer's disease in home environment, then rigorous education is needed. An important participant in its implementation is nursing. Content of this conference paper is oriented for justness of present issue, brief characterization of Alzheimer's disease, family importance in care for a relative with Alzheimer's disease and the education of the family that decides to take care for their relative with this disease. Education plan content is focused on Alzheimer's disease and its main symptoms in every stage, changed everyday activities of patient with Alzheimer's disease, activation elements for supporting cognitive processes, wandering prevention, home environment adjustment and elements of psychological approach and communication.

Keywords: Alzheimer's disease, Education of family, Nursing

INTRODUCTION

Demographic indicators of a contemporary society point to the fact that human lifespan is constantly extending. Taking care of sick and helpless elderly people is considered to be a well-appreciated social activity. The current tendency of elderly care is to preserve the quality of people's life in their homes for as long time as possible.

Alzheimer's disease

According to Alzheimer's Disease International, there are more than 36 million people with dementia. This number doubles every 20 years. Thus, we can expect its increase to 66 million in 2030, and up to 115 million in 2050. Alzheimer's disease is the most prevalent form of dementia in the old age – it comprises up to 75% of this dementia type (Janosik – Davies, 1996). It has a progressive character and in many cases, it is the final stage of life. Clinical symptoms appear inconspicuously and have a chronic and progressive character. Their variability depends on the development stage of disease. The first stage (known as the forgetful stage) is characterized by symptoms such as attention-deficit, memory disorder and disorientation. To the early symptoms also belongs the failure of intellect which results to the loss of real judgement, helplessness and failure to do simple daily tasks. In the second stage (known as the stage of disorientation), other symptoms arise – e. g. intense forgetfulness, depressive states and paranoid symptoms (touchiness, delusions, suspiciousness, etc.). Among the other significant changes are sleep disorders (the patient doesn't sleep at night and wander around the rooms) and peculiarities in behaviour and actions – inhibition or agitation, slow speech, incomplete answers, stress, anxiety, restlessness, loss of initiative, inability to enjoy the activities that were favourite earlier, indecision, apathy, boredom, disinterest, mutism, inefficient repetition of work, use of vulgarisms, rejecting help, hiding things, obsessive compulsive disorder, etc. The last stage (known as the stage of dementia) is characterized by the developed memory loss, severe speech disorder, loss of feelings, overall physical discomfort, urinary incontinence, bowel movements, difficulty in walking and swallowing. The risk

of complications increases (malnutrition, dehydration, injuries from falls, infectious diseases, sores). In the final stage, the patient is dependent on a 24-hour daycare (Slezáková, 2014; Prince et. al, 2011; Jirák 2008, Alzheimer's Europe, 2015).

Family taking care of a relative with Alzheimer's disease and educational activity
WHO in the World report on ageing and health (2015) warns about serious personal and economic impacts of dementia. The global cost of care for patients with dementia was estimated at 604 billion US $ in 2010 which represents 1.0% of the global gross domestic product. In 2030, the cost of care for this type of patients is estimated at 1.2 trillion US $ or more which would negatively influence the social and economical development all around the world. One of the possible solutions is to support the care for patients with Alzheimer's disease in their homes. According to the Global Alzheimer's Disease Charter (2008), one of the principles that can solve the problem with care for patients with Alzheimer's disease on a global scale, is to admit the crucial role of families and caregivers. However, it is necessary to provide a general support – such as financial subsidy, stress relieving techniques and psychological help. WHO (2012) in its document called "Dementia: a public health priority" highlights the support of information and education campaigns (raising the awareness and reducing the stigma of dementia) which represent a significant challenge for health professionals. In education as a controlled and documented activity, nursing plays an irreplaceable role. Another necessary thing is the education of family which should be focused on handling the care for patient with this disease. Education is heading towards acquiring new knowledge, changing opinions and beliefs (Farkašová, Závodná, 2009).

EDUCATION OF A FAMILY WHICH TAKES CARE OF A RELATIVE WITH ALZHEIMER'S DISEASE
The aim of nurse's educational plan is to teach the family to take care of its relative with Alzheimer's disease in home. Thanks to the effective education of the family, it is possible to achieve its integration into the comprehensive treatment process, adaptation to altered health status and to minimize stress. (Repková, 2014) Education can be effective when the educational plan is well-prepared and contains following parts:
a) conditions – implementation of education:
* institutionalized or home environment – as requested by the family,
* duration and number of educational units (meetings) – as requested by the family,
* selection of methods – monological (explanation), dialogical (conversation), the printed word (bulletin, leaflet, reference books),
* form – individual or dyadic – as requested by the family,
* principles of education – purposefulness, order, individual approach, vigour, combined theory and practice,
* stages of education – motivational, cognitive, performance-related, examining,
* adaptation of communication in relation to learners' intellect.

b) educational diagnoses (EDg):
* EDg1 – deficit of knowledge about Alzheimer's disease and its basic symptoms,
* EDg2 – deficit of knowledge about adaptation of the home environment,
* EDg3 – deficit of knowledge about patient's cognitive stimulation,
* EDg4 – deficit of knowledge about the care for patient (daily activities),
* EDg5 – deficit of knowledge about the attitude and communication with patient.
c) educational goals for a nurse:
* EG1 – educate about Alzheimer's disease and its basic symptoms in particular stages,
* EG2 – educate about the adaptation of home environment,
* EG3 – educate about patient's cognitive stimulation,
* EG4 – educate about the care for patient (daily activities),
* EG5 – educate about the appropriate attitude and communication with patient.
d)   educational goals for a family:
* EG1 – to learn about the Alzheimer's disease and its basic symptoms in particular stages,
* EG2 – to know how to change the home environment,
* EG3 – to be familiar with the processes of patient's cognitive stimulation,
* EG4 – to learn about the care for patient (daily activities),

- EG5 – to know what attitude and communication with patient is appropriate.

e) educational units (EU):
- EU1 – Alzheimer's disease and its basic symptoms in particular stages,
- EU2 – adaptation of the home environment,
- EU3 – cognitive stimulation of patient,
- EU4 – care for patient (daily activities),
- EU5 – attitude and communication with patient.

f) teaching aids:
- educational material – basic information about Alzheimer's disease, map depicting the modification of home environment, identification bracelet, workbooks on the cognitive stimulation of the patient with Alzheimer's disease, principles of attitude and communication.

g) educational content according to individual educational units.

Educational content to educational unit (EU1) – Alzheimer's disease and its basic symptoms in particular stages:
- Alzheimer's disease is a degenerative disease which causes a gradual worsening of patient's overall health,
- stages of Alzheimer's disease:
  1. the forgetful stage – forgetting (damaged memory) names, years, places where things are stored, (taking notes), absent-mindedness, difficulty to concentrate, loss of initiative, anxiety, transient hallucinations may occur, patients are able to take care of themselves,
  2. the stage of disorientation – severe forgetfulness, temporal and spatial disorientation, presence is mistaken for the past, deterioration of speech, roaming and wandering start to occur, difficult orientation in a familiar area, loss of judgement and ability to understand, unstable gait, progressive inability to communicate, write and read, neglecting of hygiene standards, patients need help when taking care of themselves,
  3. the stage of dementia – advanced memory loss, severe speech disorder, patients don't recognize their relatives, things or environment, loss of feelings, they are not able to communicate, overall worsening of the physical health, difficulty in eating or walking, incontinence, patient is bedridden and requires a complex care for 24 hours a day.

Educational content to educational unit (EU2) – adaptation of the home environment:
Alzheimer's society UK (2016) published following recommendations of how to modify the home environment:
- to ensure adequate indoor lighting and night lightning of important areas (hall areas, toilet, bathroom),
- secure the staircase with a banister,
- remove or secure the unstable furniture, freely placed objects and doorsills,
- remove or secure carpets, movable matting and stretched cables,
- lock all detergents and disinfectants,
- remove sharp knives and items that can pose a danger to patient,
- install an insulation cover with a safety switch on the gas stove and gas heating (Alzheimer's society, 2016).

Besides the aforementioned recommendations, we can also add other ones to the educational content:
- place guards on sharp edges of the furniture,
- secure the staircase with a safety gate,
- secure small carpets (in the bathroom, toilet, next to the bed) with anti-skid pads,
- install handgrips in the bath and toilet,
- distinguish the toilet from the floor by colour,
- mark the most important rooms (the toilet, bathroom, patient's room) with a distinct capital letters or symbols,
- cover the wall sockets with a safety guards,
- mark out switches and the first and last stair with bold colours (e. g. with a coloured plastic foil),
- distinguish walls from the floor by colour,
- lock all valuable things in a safety place (Janosik – Davies, 1996, Alzheimer's Europe, 2015),
- install safety lock on the front door and windows,
- lock the front door, keep the keys out of reach,

- remove the keys from all doors,
- don't forget to switch off the electrical appliances,
- install removable switches or safeguards on the stove,
- store the knives and other sharp objects, matches, lighters and medications in a safe place,
- do not leave objects placed freely (such as keys, phone, etc.),
- minimize the changes in home environment (such as moving the furniture), store the objects of daily use always in the same place,
- do not turn on the TV or radio loud,
- cover the mirror when patient gets upset,
- give patient an identification bracelet or shoes with a built-in GPS.

Educational content to educational unit (EU3) – cognitive stimulation of patient:
- memory training focused on the concentration of attention (e. g. searching for given letters, the same couples or signs, details, simple crosswords and wordsearches, finishing a picture, assigning symbols, categorization, crossing out numbers),
- memory training focused on math exercises (fast simple counting, numeric sequence, solving simple math word problems) (Centrum Memory, 2016),
- memory training focused on verbal tasks (reading comprehension, repeating of short information from TV news, repeating of simple and short text, completing of sentence/text/story, learning a quote from a book),
- put personal and family photos or memorabilia in a visible place,
- summarize activities and events of the day every evening,
- use computer programs on a cognitive stimulation.

Educational content to educational unit (EU4) – patient's tasks (daily activities):
- hygienic care: regular showering, regular care about the skin, mucous membrane, hairs and nails (massages, skin lubrication, control the hydration of skin and mucous membranes),
- care about food intake: regular supply of energy-balanced diet (five times a day), food rich in easily digestible proteins (legumes, milk, dairy products, white meat, fish), do not serve hot meals, regulate patient's behaviour in case he/she rejects food or overeats, offer liquids regularly (control the fluid balance), provide patient with a straw or glass with a waterproof lid when drinking, ensure cultural environment when eating, use plastic dishes or plates with a wide bottom and put anti-slip mats under them, chop the food, patient can eat with hands if he/she is not able to eat with a cutlery, food should be mixed when patient has a swallowing disorder, serve the whole course at once, communicate only when helping with eating,
- care about bowel movement: its regularity, easily removable clothes (e. g. with a rubber fastening or Velcro), portable toilet as needed, regular guiding (every 2-3 hours) to the toilet, limit the fluid intake before sleep,
- care about clothing: choose clothes which can be easily taken on and off, prepare clothes on a particular day only, store parts of clothes according to the order of dressing, prefer shoes which can be easily put on (without laces) and have an anti-slid sole, motivate to improvement in case of neglected appearance,
- taking care of patient's activities, rest and sleep: patient should do the shopping, walk, visit relatives and friends, church and cafés, listen to music, watch videos of family events, look through family photo albums and memorabilia, watch old movies, take care of flowers and simple houseworks (e. g. wiping the dust, hand-washing small clothes, folding the laundry, sweeping, setting the table, polishing the furniture, folding the napkins), help in the garden (e. g. watering, planting the plants, removing weeds), do the handicraft (painting, threading the beads), play simple parlour games, take care of a pet, take notes in a diary, do the rehabilitation and breathing exercises, have a regular sleep rhythm, avoid sleeping during day (to prevent sleepwalking),
- administration of medication: administer medication regularly according to doctor's prescription (medicine bottle), store medication in a safe place.

Support patient's self-reliance in all daily activities (do not do things instead of patients if they can do it themselves). Acquired operations can be forgotten easily and they are very hard or even impossible to learn again. It is also necessary to maintain learned stereotypes and temporal regularity in daily activities, rest and sleep.

Educational content to educational unit (EU5) – attitude and communication with patient:
- to be near patient,
- patience, tact, respect, empathy,
- assistance and help as sources of assurance,

- avoid shouting and anger,
- express joy resulting from collectively realized activities,
- when patient gets lost, accompany him/her calmly to the right place (Alzheimer's Europe, 2015),
- tactfully divert attention from illogical activities and propose another one,
- do not give patient tasks which he/she cannot get done,
- do not urge patient when doing simple activities and tasks,
- in case of hallucinations, do not let patient watch TV and hang down disturbing paintings,
- control fulfilment of simple tasks,
- support and use activities which has already been acquired by patient (do not teach him/her new things),
- do not comment on unusual or stereotypical activities,
- do not blame him/her for mistakes, wrongly performed tasks and clumsiness,
- speak slower, use simple and short sentences,
- repeat information when it was misunderstood the first time (Alzheimer's Europe, 2015),
- do not persuade or oppose,
- encourage, praise,
- direct questions to current events and not the past,
- use non-verbal elements of speech actively – touch, caress, embrace, smile.

CONCLUSION

Education ends with a final verification of knowledge and writing down the results of education into the nursing documentation. Alzheimer's disease cannot be cured, however, the effective education of a family which takes care of its relative can significantly help to improve his or hers quality of life, contribute to a more effective daytime organization of the family, help to manage conflicts without any negative intention and minimize stress.

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EDUCATION RIGHTS OF MINORITIES IN NORTH CYPRUS

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ABSTRACT

This paper aims to discuss the policies of Turkish Cypriot administration towards the education rights of minorities since 1974 when Cyprus was divided into two following the Turkish military operation. In this context, after discussing the national and international obligations of the Turkish Cypriot administrations, implementations regarding the education rights of minorities will be examined. Then, measures for an effective education strategy for minorities in North Cyprus will be discussed by taking into consideration the new developments in the world.

Keywords: Right to education, minorities, North Cyprus.

INTRODUCTION: MINORITY GROUPS IN NORTH CYPRUS

Taking into consideration the standards in international law, mainly the Greek Cypriots, Maronites, Roma people, Alevis and Kurds comprise the minority groups in North Cyprus (Dayıoğlu, 2014). But, even if *de facto*, Turkish Cypriot authorities consider only the Greek Cypriots and the Maronites as minority. The Roma people, Alevis and Kurds are not considered as minority, neither officially nor *de facto*. This is a result of the *Millet System*, which formed the basis of the social structure of the Ottoman Empire. In the *Millet System,* only non-Muslims were accepted as minorities. Although the *Millet System*, which came into effect in 1454, was abolished with the Imperial *Edict of Gülhane* in 1839, the system remained in effect under the Republic of Turkey through the Lausanne Peace Treaty of 1923. As of August 2016, the practice of treating non-Muslims as minority is still prevalent not only in Turkey but also in North Cyprus though the Turkish Cypriot community, which, compared to Turkey, is much more secular. Due to the negative connotations of the concept of minority term in general, it should be said that these groups also do not see themselves as minorities, either. But, contrary to the attitude of the government officials and the views of these groups, based on international law, these groups are considered as minorities in this study.

Following these explanations, now it is time to look at the international documents regarding the education rights of the minorities that bind North Cyprus along with the domestic legislation. This will reveal the obligations of the Turkish Republic of Northern Cyprus (TRNC).

I) INTERNATIONAL DOCUMENTS REGARDING EDUCATION RIGHTS OF THE MINORITIES THAT BIND NORTH CYPRUS

Although TRNC is not recognised by any country other than Turkey as of August 2016, the following international documents are binding because they have been ratified by TRNC. Therefore, it is important to examine these documents in order to reveal the obligations of TRNC towards its minorities.

A) International Convention on the Elimination of All Forms of Racial Discrimination

International Convention on the Elimination of all Forms of Racial Discrimination came into force on 4 January 1969. With article 5(e/v) of the Convention, states parties undertake to prohibit and to eliminate racial discrimination in all its forms and to guarantee the right of everyone, without distinction as to race, colour, or national or ethnic origin, to equality before the law, in the enjoyment of the right to education and training.

This Convention is legally binding in North Cyprus as it was ratified by the TRNC Parliament on 19 July 2004 with the law no. 26/2004.

B) International Covenant on Civil and Political Rights

The International Covenant on Civil and Political Rights, which came into effect on 23 March 1976, is the most important step in the transition from prevention of discrimination to protection of minorities, during the period after World War II. Article 27 of the Covenant ensures this.

Article 27 is the first important step towards providing protection for all ethnic, religious and linguistic minorities in the signatory states that recognises the identity rights of the minorities in international law. This important article includes the following statement: "In those States in which ethnic, religious or linguistic minorities exist, persons belonging to such minorities shall not be denied the right, in community with the other members of their group, to enjoy their own culture, to profess and practice their own religion, or to use their own language".

So, with the regulation of article 27, the signatory states agreed that along with the other members of the community, individuals belonging to minority groups have a right to speak their mother language, express their religion and enjoy their cultural values freely under any given situation. It is clear that this article comprises the education rights of all persons belonging to minority groups.

Article 27 brings two different responsibilities to the signatory states: 1) They will act in a passive manner in that they will not intervene in the rights of minorities in their use of their mother tongue, expression of their religion and in the enjoyment of their ethnic cultural values; 2) As a way of active and positive responsibility, they will take the necessary precautions to help in the fulfilment of these rights in order to provide the minorities with a realistic level of equality with the other members of the society (Thornberry, 1994, Capotorti, 1979).

Another important point that needs to be stated about article 27 is that not only the citizens but also the non citizens are under the protection of this article.

International Covenant on Civil and Political Rights legally binds North Cyprus as it was ratified by the TRNC Parliament on 19 July 2004 with law no. 26/2004.

C) Convention on the Rights of the Child

Another covenant regarding the education rights of minorities within the United Nations (UN) is the Convention on the Rights of the Child, which came into effect on 2 September 1990. The Convention, which sets out the rights of children under the age of 18, also includes provisions regarding education rights. According to article 28 of the Convention:

1. States Parties recognize the right of the child to education, and with a view to achieving this right progressively and on the basis of equal opportunity, they shall, in particular:
(a) Make primary education compulsory and available free to all;
(b) Encourage the development of different forms of secondary education, including general and vocational education, make them available and accessible to every child, and take appropriate measures such as the introduction of free education and offering financial assistance in case of need;
(c) Make higher education accessible to all on the basis of capacity by every appropriate means…

Apart from article 28, articles 17, 29 and 30 are also important as these articles set out the regulations for the rights of minority children. While articles 17 and 29 state that the linguistic and cultural rights of children belonging to a minority must be respected, article 30 sets out the following important regulation: *"In those States in which ethnic, religious or linguistic minorities or persons of indigenous origin exist, a child belonging to such a minority or who is indigenous shall not be denied the right, in community with other members of his or her group, to enjoy his or her own culture, to profess and practise his or her own religion, or to use his or her own language."* Consequently, article 30 repeats the rights granted by article 27 of the International Covenant on Civil and Political Rights in terms of rights of children belonging to minorities. Therefore, this article also comprises the education rights of children belonging to minority groups.

On 12 March 1996, the TRNC Parliament ratified the Convention on the Rights of Child, making it an integral part of its domestic law.

One very important issue that has to be pointed out is that the TRNC Parliament ratified all provisions of the conventions in question, which legally bind the TRNC. Consequently, the TRNC state is under the obligation to abide by all the obligations set out by the conventions. However, it has to be pointed out that as it is not internationally recognized, TRNC is not subject to the control systems brought about by the conventions. Nevertheless, in accordance with the provision set out in clause 5 under article 90 of the TRNC Constitution, *"International treaties which have been duly put into operation shall have the force of law. Recourse cannot be had to the Supreme Court sitting as the Constitutional Court in respect of such treaties on the grounds of unconstitutionality"*, it is possible to apply to domestic judicial bodies in the case of the violation of the conventions.

D) European Convention on Human Rights

With the European Convention on Human Rights (ECHR) which came into force on 3 September 1953, the protection of human rights passed from domestic to international level and the individual has been entitled in international law. However, there is no regulation about minority rights in the Convention. Only article 14 of the Convention and article 1 of the Protocol No 12 to the ECHR include protection based on the prevention of discrimination and the establishment of equality. As a result, in terms of the prevention of discrimination and provision of equality, persons belonging to minorities gained the opportunity to benefit from the rights and freedoms set out in the ECHR, and gained the right to apply to the European Court of Human Rights (ECtHR) when signatory states violate the ECHR.

As it is accepted by the TRNC Supreme Court of Appeals that law number 39/62, which ensures transposition of ECHR and the Protocol No. 1 to the ECHR into the domestic law of the Republic of Cyprus (RoC), is also in effect in North Cyprus, the provisions of ECHR and Protocol No. 1 to the Convention are also valid in TRNC (Yargıtay/Ceza, 2001). Nevertheless, in its decisions regarding the Loizidou v. Turkey (No. 15318/89), Cyprus v. Turkey (No. 25781/94) and Djavit An v. Turkey (No. 20652/92) cases, because the ECtHR regards TRNC, which is not internationally recognized, as a "local administration subordinate to Turkey", it holds Turkey responsible for any violation of rights in North Cyprus. In all three cases, the ECtHR stated that Turkey exercises "effective control" in Northern Cyprus, and as a result, it is responsible for the violations of human rights. Another reason why Turkey is held responsible for the human rights violations in Northern Cyprus is that TRNC is not recognized, thus, it is disregarded by the ECtHR. Under these circumstances, as TRNC could not be held responsible for the violations in Northern Cyprus, this would lead to an area where the ECHR is not in effect. In order to prevent the emergence of such a vacuum, Turkey was held responsible for the violations.

II) Domestic Legislation in North Cyprus with Regard to Minorities

In North Cyprus, there are no effective statutes on the rights of the minorities and none of the minority groups have any legal status or recognition by law. This issue can be clearly seen in the TRNC Constitution of 1985. This document does not provide any directly applicable regulations with regard to the rights of the minorities. There are only regulations about human rights and prevention of discrimination. But after accepting the international conventions and integrating them into the Turkish Cypriot legal system, it has not only placed a passive duty upon the TRNC administration for not interfering with the activities of the minorities towards protecting their ethnic identities but it has also introduced a positive duty to provide every possible support towards the success of these activities.

Even though there were shortcomings in the legislations, the agreement about the Greek Cypriots residing in North Cyprus, which was signed during the third part of the communal negotiations in Vienna between Turkish Cypriot leader Rauf R. Denktaş and the Greek Cypriot leader Glafkos Clerides, between 31 July and 2 August 1975, plays an important role in relation to our topic. "The Third Vienna Agreement" which is still valid and therefore binding for the Turkish Cypriot authorities is as follows: 1) As of 2 August 1975, the Greek Cypriots will be free to decide whether they want to leave the north or not. Therefore, the Turkish Cypriot authorities cannot enforce them to migrate to the south of the island; 2) In relation to the article stated above, a portion of the Greek Cypriots residing in the south will be transferred to the north under the principle of family re-unification; 3) At the time the agreement is signed, the Greek Cypriots who reside in the north but who have an intention of settling in the south will not be prevented from doing so; 4) The Greek Cypriots residing in the north will have the freedom of movement within the northern parts of the island; 5) United Nations Peacekeeping Force in Cyprus (UNFICYP) will be able to freely travel to the Greek Cypriot towns and villages that are in the north; 6) All the support will be provided to Greek Cypriots to receive care from their own doctors, to carry out their education procedures and to fulfil their religious beliefs (The Third Vienna Agreement, 1975). As it is explained below, points 1, 2, 4 and 6 of the said agreement are related with the education rights of the Greek Cypriots' children.

II) Implementations Regarding Education Rights of the Minorities in North Cyprus
A) Greek Cypriots

The *de facto* minority status of the Greek Cypriots in the north started after Turkey's military intervention in 1974, which was made due to the Greek Juntas coup d' état on 15 July 1974. After the military operation of Turkey, the *de facto* division of Cyprus took place and the control of 36.4% of the island passed over to the control of Turkey. In the process, Turkish Cypriots living in the south and the Greek Cypriots living in the north had to immigrate to opposite directions.

According to the official Greek Cypriot statistics, the Greek Cypriots who migrated from the north to the south were 142,000 (approximately 30 % of the Greek Cypriot community at that time). On the other hand, 20,000 Greek Cypriots continued to reside in North Cyprus especially in the Karpas region (Ministry of Foreign Affairs of the Republic of Cyprus, 2016). But as the Greek Cypriots were unwilling to cut off their ties with their communities and as the Turkish Cypriot and Turkish authorities were limiting the rights of these people to force them to migrate in order to fulfil their policy in creating a Turkish/Turkish Cypriot nation-state in the north, this number has slowly diminished over the years. In the summer of 1975 the Greek Cypriot population living in the north (especially in the Karpas region) decreased to 10,000 and 1.075 in November 1981 (U. N. Document S/14778 in Oberling, 1982). This number continued to decrease after 23 April 2003 when the Turkish Cypriot authorities lifted up the restriction to the movement between north and the south. For example, the number of Greek Cypriots residing in North Cyprus decreased to 423 in 2003 (United Nations Security Council, 2003) and further to 345 in 2015 (United Nations Security Council, 2015).

As for the education rights of the Greek Cypriots, due to the importance of the issue, as it was mentioned above, an arrangement was made about education in the Third Vienna Agreement and it was stated that all sorts of support would be given to the Greek Cypriots residing in the north including to carry out their education procedures to benefit from education facilities. Careful analysis of this arrangement reveals the following statements about the education rights of the Greek Cypriots: 1) Along with other topics, the granting of the right to education is a vital part for creating normal living conditions for the Greek Cypriots residing in the north; 2) As the type of this education was not stated in the Agreement and as it was stated in plural form, it can be seen that the underlying meaning was to include not only primary schools but also secondary and high schools; 3) In the Agreement, it was expressed that the unification of the families were of paramount importance and under this principle, any and all regulations which would have a negative or limiting effect on these rights (including right of education) would be prohibited.

In accordance with the Third Vienna Agreement, a primary school for Greek Cypriots was opened in the Karpas region. But there were no secondary or high schools for the Greek Cypriot students to continue their education. As the Greek Cypriots were deprived of secondary school facilities, either they couldn't attend to school or they had to continue their education in South Cyprus. Beyond that, when they completed their education in the south, the girls over eighteen and the boys over sixteen were not allowed to return to the north (United Nations Security Council, 1995). The implementation was same for the Maronites. Although with the decision of the Council of Ministers of TRNC dated 10 June 1998, a partial improvement was achieved and the age limit for returning to the north were removed for female Greek Cypriots and Maronites, the same situation was not applicable for male Greeks (United Nations Security Council, 1998).

The most important advancement on this topic was realized in 1994 when the RoC sued Turkey in the ECtHR for its violations of human rights in Cyprus since 1974. The Court's judgement was declared on 10 May 2001 and it was stated that along with many other human rights violations, Turkey was responsible for the violation of 7 different human rights articles of the ECHR in relation to the Greek Cypriots living in the Karpas region (European Court of Human Rights, 2001). One of these was article 2 of Protocol 1 to the ECHR which regulates the right to education. The Court held that although the Greek children received their primary education in a Greek Cypriot school in North Cyprus, the absence of secondary education in the Greek language was a violation of the ECHR (para. 277, 278 and 280).

After the Court drew attention to the living conditions of the Greek Cypriots in the north and stated that article 8, which regulates the right to respect for private and family life, home and correspondence, was also violated, it also noticed that this issue was closely related to the right to education. According to the Court, besides others, one of the main reasons for the violation of article 8 was the difficult choice the parents and schoolchildren were faced regarding secondary education (para. 300). The Court stated that as no appropriate secondary school facilities were available to them in the north, the Greek Cypriot students were forced to study in the south and therefore, they were separated from their families and the families who did not want to separate from their children had to abandon their homes to stay with their children in the south during their education and what is more, the families who went to the south were not allowed to return to their homes. The Court also observed that certain restrictions applied to the visits of those students to their parents in the north (para. 292).

The reactions of the international organisations and especially the judgement of the ECtHR forced the Turkish and Turkish Cypriot authorities to change their policies towards the Greek Cypriots. They took two major steps. First, the Turkish Cypriot side allowed the movement of persons between north and the south on 23 April 2003. Thus, the obstacles, which prevented the Greek students to return to the north were lifted. Second and more important, Rizokarpaso Greek Secondary School and the high school section was opened in September 2004 and

September 2005, respectively. Therefore, the procedure which had been criticised by the international society for years which had violated not only the Third Vienna Agreement but also the ECHR and forced the Greek Cypriots to leave their lands in Karpas to migrate to the south had come to an end.

Another problematic issue on education was about school books. The arguments on this topic date back to the time before the opening of the Rizokarpaso Greek Secondary School. According to this issue, some of the books or some sections of the books which were taught at the Rizokarpaso Greek Primary Scholl were subjected to excess censorship due to the belief that they introduced hatred towards Turks and created disparage against Turkish Cypriots. Along with many criticisms from the international community, this excess censorship was interpreted by the decision of the ECtHR as a violation of freedom of expression under article 10 of the ECHR (para. 252 and 254).

After this decision, the issue was considered by the Committee of Ministers' Deputies and it was stated that this procedure had to be ended and the future inspections and limitations should be made under the criteria of the ECHR. As a result, TRNC Government took a series of decisions to end this procedure in 2005: 1) The Ministry of Foreign Affairs which will work in cooperation with the Ministry of Education, will inspect the books and decide on the inappropriate convenient content; 2) These contents will be delivered to Greek Cypriot authorities through the UN, and they will be advised to correct these issues; 3) Afterwards, the books will be brought to the north by the UN authorities and they will be distributed to the students. Although some problems occurred from time to time, this procedure has been in use starting with the 2005-2006 school year.

Apart from school books, problems have also risen regarding the teachers of the Greek Cypriot schools in Rizokarpaso. However, these problems have been mostly overcome over time. As the problems with teachers and the textbooks were dealt with, the Rizkarpaso Greek Secondary School had its first graduates in June 2006. 11 students graduated from the secondary part of the school while 4 students graduated from the high school part (Akançay, 2006). In the following years, the school continued to have graduates.

Finally, it is necessary to mention the number of teachers and students in the semester of 2015-2016. In nursery and primary school 19 students, in the secondary and high school 18 students are receiving education. While the number of teachers working in the nursery and primary school is 6, this figure is 20 in the secondary and high schools.

B) Maronites
Another important Christian minority group in North Cyprus are the Maronites. The Maronites have their origins from Lebanon. They were historically attached to the Catholic Church. They had migrated to Cyprus under four different migratory waves between the eighth and thirteenth centuries, which were mainly caused by religious issues. Their mother tongue is an Arabic dialect, which is known as the Cypriot Maronite Arabic. The Cypriot Maronite Arabic has been affected substantially by the Greek language and the young population mostly speaks Greek since they are living with the Greek Cypriot community. The Cypriot Maronite Arabic is not used as a written or religious language.

Although their population had increased to an important level during the Lusignan Kingdom rule (1192-1489) in Cyprus which had French and Catholic origin, this population decreased over time due to other migrations and assimilations within the Greek Orthodox Community. In 1960, when Cyprus gained its independence from Britain, the population of the Maronites was 2,752 (Kyle, 1997) and prior to 1974 it was 4,830 (Erdengiz, 2003). Approximately one third of them were living in the North. However just after 1974, the population of the Maronites in the north reduced to 530 (Erdengiz, 2003) and it continuously decreased ever since. In 2015, the population of Maronites in North Cyprus (most of whom are residing in Kormakitis village which is the biggest village of Maronites) was 116 in 2015 (United Nations Security Council, 2015).

Without doubt, the decrease in their population and the problems they faced have affected the education of the Maronites. After Turkey's military intervention on the island, most of the Maronite population migrated to the south. The remaining population mostly consisted of the elderly. As a result, the village of Kormakitis which is almost completely populated by Maronites came to be known as "the childless village of North Cyprus". While the authorities saw the restoration of the dilapidated school building of the village pointless due to the absence of school-age children, the villagers claimed that the families with children did not want to return to Kormakitis due to the lack of a school. The few students who remained in the past tried to continue their education with the support of a single teacher. For example, in the 1998-1999 school year, there was only one student, one teacher/headmaster and two nuns in the school of Kormakitis. Due to the absence of students, the school closed in 1999 (Frangeskou and Hadjilyra, n.d., İncirli, 1998).

Despite these negative developments, the decisions of the Council of Ministers of TRNC on 23 May 2005 which was related to the procedures for the establishment of primary, secondary and high schools for the Greek Cypriots and Maronites has strengthened the expectations of the establishment of Maronite schools. However, as of August 2016, these expectations were not fulfilled and, no schools have been established for Maronites.

C) Roma People
Even though they constitute an ethnic and linguistic minority group, these characteristics of the Roma people, who are of Indian origin, were not accepted by the Turkish Cypriot authorities. It is stated that the Roma first came to Cyprus at the beginning of the Middle Age, that the second migration wave came in 1571, when the Ottomans conquered the island, and that a small number of Roma arrived in the 19th century (Kenrick and Taylor, 1986). As the Muslim Roma were offered better economic and social conditions compared to their non-Muslim counterparts, just like most of the Roma in places conquered by the Ottomans, a significant proportion of the Roma in Cyprus became Muslims after the conquest. Furthermore, they began speaking Turkish besides their own language. Even though the Roma who became Muslims led a more comfortable life during the Ottoman Empire era when compared to other parts of Europe, they still remained among the lower classes, were disadvantaged and subjected to discrimination.

At the time of the independence of Cyprus in 1960, their population was reported to be 502 (Statistical Service of the Republic: Census of Population in Council of Europe, 2006) and according to their faith, they were accepted as members of either the Turkish Cypriot or Greek Cypriot community. However, one important point that must be mentioned is that even though they are accepted as a part of the Turkish community, among Turkish Cypriots, people of Roma origin are referred to as "Gypsy" "Ole" or *Gurbet*. Even though Roma people defend the Turkish Cypriot supra-identity against outsiders, most of the Muslim Roma define themselves as *Gurbet/Gurbeties*, roughly translated as "Foreigners", and speak their spoken language, called *Gurbetçe/Gurbetcha* besides Turkish.

After 1974, nearly all the Muslim Roma migrated with the Turkish Cypriots to the north. But, like in the rest of the world, they were deemed to be responsible for illegal activities in North Cyprus and as a result, they have been subjected to discrimination in many aspects of their life including education. Apart from the limitations on the education that was provided for them, there is no opportunity to learn their mother tongue and culture in schools. Whereas, in many European countries, members of Roma have the chance to learn their mother tongue and culture thanks to the efforts and funding of the EU. So, for the Roma people where their population is estimated between 1.000-1.500 in the whole island as of August 2016, there is a need for a new education system which will enable them to participate more in social life and enjoy their culture and language.

D) Alevis
Within the total population of North Cyprus which is 294.396 according to the census held in December 2011, the population of the Alevis is estimated to be around 10,000 (U. S. Department of State, 2011). The Alevis are believed to have started to arrive in Cyprus at the beginning of the Ottoman conquest of the island in 1570. A significant Alevi population settled in Cyprus also after 1974. As for their ethnicity, most of the Alevis are Turkish origin. The remainder are Arabs and Zaza people.

Just as in Turkey, Alevis are a religious minority in North Cyprus not only because of their unique religious belief but, more importantly, with the influence of Turkey, compared to the other faiths, the state has favored the Hanafi-Sunni faith after 1974.[1] This situation became much more apparent with the decisions taken and practices put into effect after the right wing National Unity Party (*Ulusal Birlik Partisi-UBP*) came to power following the April 2009 elections. The result of this policy has also been seen in the field of education.

One of the main problems of the Alevis in the field of education is the making of the "Religious Culture and Morality" courses compulsory as of the 2009-2010 school year. Religion courses had been compulsory at primary and secondary schools until 2005. After 2005, with the coming to power of the centre-left Republican Turkish Party (*Cumhuriyetçi Türk Partisi-CTP*), they were declared as elective courses at secondary schools in the TRNC, leaving the decision to the administration's discretion. Taking this decision into consideration, many schools started to exclude this course from their curriculum starting with the 2005-2006 school year. After UBP came to power in 2009, the course was made compulsory from fourth to eighth grade but this drew a reaction from the majority of the Turkish Cypriots and the Alevis. The most important reason for this reaction was the content of the religious culture and morality course, which was mostly devoted in accordance with the Hanafi-

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[1] However, due to its secular nature, the Turkish Cypriot community did not accept this understanding.

Sunni doctrine rather than offering general knowledge on religion and morality. This situation meant the violation of the freedom of religion and conscience and the right to education of the sections of society not belonging to Hanafi-Sunni faith, notably the Alevis. Therefore, in December 2015, Cyprus Pir Sultan Abdal Cultural Society announced that it had collected 1,500 signatures to have the course, which it regards as a tool to make non-Sunni people a member of Sunni faith by force, given as an elective (Kıbrıs, 2015). In fact, in the *Hasan and Eylem Zengin v. Turkey* case (No. 1448/04), which concluded on 9 October 2007, ECtHR decided that making the religious culture and morality course (which was mainly based on the teachings of the Sunni Islam doctrine) compulsory in Turkey was a violation of the freedom to religion and conscience. On 16 September 2014, a similar decision was given by the ECtHR in the *Mansur Yalçın and Others v. Turkey* case (No. 21163/11).

It should be also said that while various opportunities were provided for the Hanafi-Sunni understanding of Islam, the Alevis and other faiths were denied similar opportunities. For example, Qur'an courses, which have been granted permission since the summer of 2009, are run at state schools and all student needs, including transportation, are met from the state budget. Another example can be given from the Hala Sultan Divinity College which was opened in September 2012. While all needs of the students are met by a Turkish state-sponsored foundation, similar opportunities are not offered to students attending state schools.

E) Kurds
Another group that can be examined within the scope of minority rights are the Kurds. Apart from the Turkish population that settled on the island after 1974, people with Kurdish ethnicity have also migrated from Turkeyto Cyprus. Especially the economic difficulties and the repression imposed on them by the military junta which took over the administration on 12 September 1980 in Turkey accelerated this migration. The progressive strengthening of the PKK (Partiya Karkerên Kurdistan-Kurdistan Workers Party) terrorist organisation after the military coup, has increased the repression of the Kurds both in Turkey and Cyprus who promote their ethnic identity. This resulted in the violation of various rights of these people.

As for the education rights of the Kurds in Cyprus, according to the legislation, the Kurdish people have the right to demand education in their mother tongue. Although section 1 of article 18 of the National Education Law dated 23 May 1986 regulates that education should be in the Turkish language, there is no restrictive provision in the Constitution. Also, as mentioned above, the TRNC Parliament ratified the Convention on the Rights of the Child with all provisions and making it an integral part of its domestic law. As section 5 of article 90 of the TRNC Constitution states that "*International treaties which have been duly put into operation shall have the force of law*", it should admit that National Education Law had tacitly repealed by the Convention on the Rights of Child. Thus, if the Kurdish families demand Kurdish language courses, there is no restrictive legal arrangement in TRNC legislation.

CONCLUSION
The groups that can be considered as minorities in North Cyprus are facing various problems on education. Even though in the 2000s, some positive developments were made towards the improvement of the education rights of these people, the insufficiencies of the regulations and conservative attitudes of the administrators are preventing further improvements. For this reason, until reaching a final settlement in Cyprus, all the regulations regarding education need to be revised in the light of international documents on human and minority rights. Of course, this would not suffice. The important thing is to make sure that these laws are applied and they do not just remain on paper.

More importantly, a multiculturalist structure which respects "differences" in the community and ensures that different cultures can live together in peace has to be established. To this end, redesigning the curriculum at schools has to be prioritized. Moreover, ways must be sought to ensure that communities and individuals with a different culture come together more often so that they can understand and get to know each other better. At this point a lot depends on non-governmental organizations. It should be cognized that minority rights are not a threat to the unity of the state. By granting their rights, especially education rights to minorities, they will become voluntary citizens, not compulsory ones. Without doubt, these developments will strengthen the structure and unity of the society.

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EDUCATIONAL AND SCIENTIFIC CONFERENCES: AN ADDITIONAL ACTIVITY FOR UNDERGRADUATE STUDENTS OF PHARMACY

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ABSTRACT

The Faculty of Pharmacy of the University of Castilla-La Mancha (UCLM) holds from the academic year 2010-11 a set of seminars under the general title *Educational and Scientific Conferences* to let know to our under-graduate students the possibilities and professional development of their future career as graduates in Pharmacy.

A poll dealing with the satisfaction and expectations achieving among the partakers in the latest edition of these conferences has been carried out. Our analysis of the answers shows that the assessment of the activity is high in all the four considered issues: organization, topics, students' motivation to sign in and the utility and benefits that these conferences offer to our graduates. Furthermore, we take advantage of these conferences as a tool to update the profile of our graduates in successive years.

From these results, we consider worth keeping the same activity in successive academic years, always updating the content according to the demands of the students and the evolution of the Pharmacy graduates professional needs, taking into account the new law regulations.

INTRODUCTION

Among the activities that have been declared suitable to complement the curriculum of our Pharmacy students at the University of Castilla-La Mancha, allowing them to get extra credits, participation in short seminars is included (UCLM1). This is why our Faculty has been scheduling for the last six years a set of seminars under the general denomination *Educational and Scientific Conferences*. Those seminars have been carried out along every whole academic year, adding a final activity consisting of a one-day workshop that includes several extra seminars (UCLM2). Single seminars during the academic year as well as those celebrated within the workshop gather different contributions from both pharmaceutical professionals and members from our own academic staff or from other colleges, who are invited to give their lectures dealing with different issues of general interest for the Pharmacy Degree students.

Our aim in this brief communication is to present a short analysis of the students' opinion after the celebration of the 2015-16 edition of those conferences, based upon a poll consisting of 11 questions to assess the partakers satisfaction and what extent they have achieved their expectations.

THE STUDY

A suitable way to evaluate whether those conferences really offer positive elements of interest to our students is to pose questions about the following issues 1) general organization, 2) dealing with appropriate subjects, 3) motivation for signing in, and 4) perception about the subsequent utility and benefits when they become graduates. Taking this into account, we have prepared a set of questions categorized as shown below, which has been submitted for consideration to a sample of 35 students.

1. Organization
   Q01. Previous advertising and ease registration.
   Q02. Suitable duration of the whole activities (single conferences + Workshop).
   Q03. Facilities and available resources.
2. Subject of conferences (see list below)
   Q04. Issue utility.
   Q05. Interest of topics.
       List of 2015-16 conferences
       Professional Pharmaceutical profile in Argentina
       Introduction to Research Work for undergraduate Students
       Distribution of medicines in Pharmacies
       Custom system of drug dosage
3. Students' motivation for signing in
   Q06. Previous interest by this kind of activity.
   Q07. Getting an extra credit.
   Q08. Recommended by mates.
   Q09. Recommended by professors.
4. Perception about the subsequent utility after graduating
   Q10. Knowledge of demanded profiles to new graduates.
   Q11. Checking whether the academic training is useful and adequate.

The scope of the student's answers is quantified by means of a three-step scale rating that includes the items Low, Medium, High depending upon the degree of agreement with the question heading. The numerical equivalences assigned for the three items are respectively 1, 2 and 3.

The poll was conducted to coincide with the Workshop session to assure a number of participant as high as possible.

FINDINGS

1. About Organization

A starting and essential requirement for the activity success is a careful planning when announcing the sessions, then choosing a suitable schedule taking into account the partaker´s time availability, and finally making easy for them every bureaucracy they would have to accomplish. Those items have correspondence with the first set of questions under the general title Organization (figure 1). The rating average, regarding the numerical equivalence said above, was 2.28 over 3, it is to say, 76% of the maximum.

Figure 1. Percentages of the students answers about the items dealing with Organization aspects of the conferences.

2. Subject

The adequacy of the subjects, according with its utility and interest for the students, has been tested by means of this set of questions (figure 2). The rating average in this case, using the numerical equivalence previously described, has been 2.25 over 3 (75% of the maximum).

Figure 2. Percentages of the students answers about the items dealing with Subject of conferences (utility & interest).

3.   Student's motivation

The questions deal in this case with the reason why the students decide to sign in. Using the same numerical equivalence, the average was 1.81 over 3 (60% of the maximum, see figure 3). Note that in this case are the previous interest of the students themselves and the chance of getting extra credits the main elements that justify the result. On the basis of the answers, we can say that recommendations of others have in fact less importance from the students' point of view.

Figure 3. Percentages of the students answers about the items
dealing with Student's Motivation.

4.   Perception about utility after graduation

The average was 2.23 over 3 (74% of the maximum, see figure 4).

Figure 4. Percentages of the students answers about the items dealing with Utility.

CONCLUSIONS

The results agree with a high degree of satisfaction of our students, as shown in figures 1-4 above, where we observe that the answers are shifted towards the higher value of the numerical scale in the most of cases. In fact, the response rates of the most of the options reveal a rising curve shifted to the value 3 (high agreement, it is to say, the most favorable opinion). That is the general trend, and this allows us to say that the activity is well worth valued. So, we will program new editions of Educational and Scientific Conferences in successive years.

Furthermore, as additional comments for those cases that fall outside the general trend (Q2, Q8 and Q9), we will say that related with the duration (Q2) it is necessary to refine the schedule and duration of the conferences in successive editions, although this is not an easy issue to improve. About the questions related with recommendations (Q8, Q9), it is necessary to improve advertising and emphasize to all staff of the Faculty (teachers and students) the usefulness of these conferences.

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EDUCATIONAL INSTITUTIONS AS START-UP SCENE CO-BUILDERS/ KEYSTONES IN INCUBATION AND ACCELERATION AT UNIVERSITIES

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ABSTRACT

With reference to Tomas Bata University´s intention to set up a new Creative centre as a starting point for current and graduate students a field research, focused on acquisition of best-practice in supporting the students to find out and develop their ideas and transform them into viable projects and start-ups, was accomplished. Because of the necessity of specifically targeted, high quality and accurate data a qualitative primary research was performed. It was carried out at university start-up centres located in North European countries as these were on the basis of secondary data analysis evaluated as the most expedient and progressive in this field. As a result of in-depth semi-structured interviews with the executive staff of the centres many findings were rendered together with keystones, namely multisource funding, whole university endeavour, provision of mentoring prior to facilities with workspace, embracing student specialization diversity and understanding of requirements as same as aims of each of educational and development programmes of pre-incubation, incubation and acceleration presented in the paper, which can be universally used by newly established university entrepreneurial centres.

Keywords: University Entrepreneurial Centres, Entrepreneurship, Incubation, Acceleration

INTRODUCTION

Tertiary education providers with the effort to support entrepreneurial activities of their students gradually became a very strong link in start-up building chain. The university entrepreneurial centres in a variety of forms most commonly structured as incubators or accelerators have become a breeding ground for start-up scene. As the Tomas Bata University in the Czech Republic shares the same intention to establish a place which will serve as a springboard for new projects and start-ups the first phase of research focused on project development programmes tailored directly to students and recent graduates was conducted.

RESEARCH METHODOLOGY

The first phase of the research targeted universities in Northern Europe which are generally advanced in incubation and acceleration activities and which very well nurture a local start-up scene. The analytical approach to the choice of visited places comprised a secondary analysis of data of the most comprehensive assessment of university business incubators and accelerators UBI Global Awards which evaluates participants from over 60 countries worldwide according to 60+ criteria and subsequent selection based on internally pre-set factors which weighed the similarity of the places to Tomas Bata University and educational and development system offered (analysis of accessible online data). (UBI Global, 2016)
The research sample eventually encompassed following university centres:

Institution	State
Uppsala Innovation Centre	Sweden
VentureLab	Sweden
SDU Cortex Lab	Denmark
LYNfabriken	Denmark
Helsinki Think Company	Finland

Table 1 - Research sample

A qualitative primary research was opted for as the means to acquisition of the most accurate and targeted data. The semi-structured form of interview enabled the research topics to be explored more widely and to the depth. Unmediated primary research also facilitated the encounter with the facilities in which the students undergo the development programmes and meeting with the executives of the centres. All interviews were recorded with consent of interviewees previous to research execution.

The interview was structured into big clusters concerning:

· management and services (founding, running including financing, facilities, staff)
· educational and development system (incubation and acceleration programmes, activities, assessment)
· targeted groups (communication, responsibilities + student application, selection process and criteria)

RESULTS
Presented results summarize the findings which lead to a denomination of the pivotal base for setting of the entrepreneurial university centres and coursing of the supportive educational and development system.
The first table shows that the selected researched institutions included places with long tradition as well as recently set up places when both types affirmed concluding findings about the key setting of entrepreneurial university institutions (vide infra Table 2). All institutions were capable of decrease in reliance on one financial means and were funded from more sources. The institution did not pursue a division according to students´ specializations and quite the other way endorsed the applicants from all own faculties even together with the students of other universities and whose participation at the programmes was conditioned by at least one team member coming from the home university. This approach ensured diversity in student applicants and therefore in the emerging teams and projects too. Also the probability of innovation and enhancement of start-up projects was increased by this approach.

Institution	Establishment	Financing	Target group
Uppsala Innovation Centre	1998 - 2004	*public funding, sponsors	students of all faculties
VentureLab	2001	*public funding, municipality	students of all faculties
SDU Cortex Lab	2012 - 2015	*public funding, sponsors	students of all faculties
LYNfabriken	2002	rent, restaurant	students of all faculties
Helsinki Think Company	2013	*public funding, municipality	students of all faculties

Table 2 - Institutions´ basic information   * Public funding or more precisely finance provided by a particular university

Differentness in the stated initial inducement for setting up entrepreneurial place on the university ground as it is shown in the next table is just seeming.

Institution	Initial inducement for establishment
Uppsala Innovation Centre	gradual deficiency of student research and projects development centres caused by outflow of companies´ research centres, need to pursue innovation
VentureLab	unforced development of projects of entrepreneurialy set faculty at the Lund University
SDU Cortex Lab	subdivision of Idea Houses - institutions providing pre-incubation and incubation programmes for university students in Denmark
LYNfabriken	initiated as a creative workspace for founders
Helsinki Think Company	high unemployment rate of students with university degree, excessive level of theoretically oriented students

Table 3 - Institutions´ initial inducement for establishment

As emerged from the interview the initially stated reasons had common background denominators:

· aim to increase employment rate of own students
· promise for job offerings created by alumni
· nurturing of standing-out student projects
· application of student research findings
· innovation
· university´s PR
· competitive advantage - services offered to own students
· strategic networking

Apart from actively conducing to resolving student unemployment issue as same as contributing to reduction of unemployment ratio universities concurrently build their prestige among their target groups. New strategic partnerships with predominantly local entrepreneurs and companies arise. Applicants and students are offered added value services and university is building image of a socially responsible institution.

Institution	Full-time/part-time employees +	Capacity
Uppsala Innovation Centre	8 employees, 70 partners	80 projects/year
VentureLab	4 employees, partners	20 projects/ 40 students
SDU Cortex Lab	4/ 2 employees, students	15 projects/ 45 students
LYNfabriken	2 employees	40 entrepreneurs/companies
Helsinki Think Company	10 employees, 15 advisors	undetermined

Table 4 - Institutions´ capacities and staffing levels

In all the cases the centres came to existence gradually and mostly developed from modest regime of classroom meetings lead by university teachers who worked above their workload. The process of evolving into centre´s own building with stated capacity, staff and a comprehensive programme was in average several years long. The full-time employees provide for daily operation of the centres and besides that their major responsibility is to build a network of strategic partners from the ranks of entrepreneurship and company representatives. From the beginning an important role in success of the centre plays a communication manager who compiles communication strategy which expedites the whole starting process.

The capacities mentioned in Table 4 are set to suit the number of stated projects or students who are in different stages with recasting their ideas into viable businesses. This means that after they complete a part of the educational and development programme they move to higher programme and vacate their place to other new project developers.

Institution	Programmes and services				
Uppsala Innovation Centre	-	mentoring	pre-incubation	incubation	acceleration
VentureLab	office space	mentoring	pre-incubation	incubation	-
SDU Cortex Lab	office space	mentoring	pre-incubation	incubation	-
LYNfabriken	office space	-	-	-	-
Helsinki Think Company	office space	mentoring	pre-incubation	incubation	-

Table 5 - Institutions´ educational and development programmes and provided services

Although the programmes and services provided by the centres showed some variances the interviews revealed a traceable structure in all the programmes offered by the researched institutions. For the purposes of this paper the apparent structure was simplified and the programmes were defined as programmes of pre-incubation, incubation, acceleration and alumni as they are presented in Table 5 vide supra.

Stage	Student participation on payment	Workspace	Mentoring
Pre-incubation	no	optional	yes
Incubation	no	optional	yes
Acceleration	fee charged *	optional	yes
Alumni	paid rent	yes	no

* Fee is charged after successful completion of acceleration programme in the amount spent on consultations with specialists

Table 6 - Description of stages´ requirements

The consensus about primary need to transfer knowledge via mentoring the students at the entrepreneurial centre prevailed and it was not uncommon to provide it without securing the workplace for the students entering the programmes.

The central idea of pre-incubation is to motivate the students independently on their study focus, study length, kind of idea or the level of its elaboration to join the centre and try to work on it with the support of business mentors employed by the centre. The aim of this phase is to find a principal idea which can be expanded further together with connecting to possible co-working team members necessary for its success. This phase is financially covered by acquired funds so the students do not pay anything in this stage and are not demotivated by it.

Students at the centre are according to interviewees highly motivated to work on their projects as same as on themselves where their motivation results from attention and workplace given to them which they perceive as trust put in them.

Projects which pass the pre-incubation continue to the project´s incubation. In this phase the teams consult the project with business mentors on regular basis and set milestones and deadlines of their work they have to meet. They also get opportunity to meet with business professionals who are invited according to the demands and requisite specializations. This stage is completed by composing a business plan and finding the first customers (commonly from the portfolio of partners in the centre´s company network).

 Acceleration programmes are meant for start-up companies which intend to enhance their business plan, add a value for the customers, ameliorate the minimum viable product and increase their revenue. This programme makes high demands on its providers regarding the requirements put on mentors and from this reason it is predominantly offered by highly specialised centres and institutions with wide range network of business partners who work as external mentors. As example of such institution was Uppsala Innovation Centre which benefits from its long tradition and which could take pride in a huge network of external highly specialised business coaches. On the other hand SDU Cortex Lab in Denmark, Venture Lab in Sweden and Helsinki Think Company in Finland provided programmes which can be categorized as pre-incubation and incubation activities and after the project accomplishes the incubation they dispatch it to the specialized centre with acceleration programme. These acceleration centres are frequently paid.

Uppsala Innovation Centre as the representative of acceleration provider created a unique system of mentoring which resides in paid assistance of necessary business mentors from the centre´s network of professionals who are to students´ disposal for designated time each week. The consultations with specialists are paid per hour by the centre and if the company becomes profitable after completion of the acceleration programme it pays the university the number of used consultations back.

Prosperous companies or more precisely post start-ups are called Alumni. The post acceleration phase resides in leaving the educational and development centres and taking up residence in commercially rented spaces mainly in office buildings or office hotels. An illustrious example is a creative office hotel LYNfabriken in North East Denmark.

CONCLUSIONS

Research confirmed the aim of visionaries among tertiary education providers in Europe to facilitate smoother transition of graduated students to professional life by setting up university incubators which provide pre-incubation and incubation programmes and in some cases also founding of university accelerators. As was presented in the findings this emerging intermediary level is beneficial in many respects and its progressive spreading is probable. Setting of such centres places demands on centres´ executives to acquire new skills required by project development programmes as same as to build a necessitated network of external partners who will become a part of business coaching team.

Basic key findings reside in financing of the centres from more independent sources containing whole university funds, municipality funding and sponsors. A diversity of students in the centre is also essential factor so it is important to enable the entrance to its facilities to all faculties´ students. The programmes should be primarily aimed at knowledge transfer together with team building activities and then secondly on offering a workspace. The more activities take place at the centre the more natural is to become one of the students taking part in its educational and development activities. The same applies to the location of the centre; the more close to the students the more it is sought.

The research proved the rising role of university incubators and accelerators in building a start-up scene in the region which can be perceived as a real new horizon in education.

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EFFECT OF INFORMATION TECHNOLOGIES (IT) PRE-SERVICE TEACHERS' LEARNING APPROACHES ON THEIR ATTITUDE TOWARDS PROGRAMING

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ABSTRACT

It has been widely debated issue in the literature that learning programming requires students to have advanced thinking skills to be successful in programming. Having a negative attitude towards programming is considered as one of the important reasons which cause students to fail in programming. The relationship among students' way of learning programming, their study approaches and their success in programming has not been explored in the literature in detail yet. In this regard, the purpose of the present study is to determine IT preservice teachers' learning styles and their attitude of towards computer programming; and to investigate their relationship. It was determined that whereas IT preservice teachers' year at the university exhibits significant difference with respect to their attitude towards programming; no significant relationship is found between their gender and types of their previous high school. However, it was observed that vocational high school graduates were more inclined toward programming compared to students graduated from other types of high schools. Additionally, it was found that most IT preservice teachers preferred deep studying approach the most effective way of comprehension of education materials since it uses the most effective learning strategy. Another positive correlation was determined between approaches of preservice teachers towards deep studying and their attitude towards programming.
Keywords: Computing, Programmed learning, Teacher training, Learning approaches.

INTRODUCTION

Learning programming requires students to possess high level of cognitive thinking skills (Lau & Yuen, 2009). Students usually develop a negative attitude towards programing (Askar & Davenport, 2009; Baser, 2013). This negative attitude is also effective on students' learning capability for programming. Majority of studies in the relevant literature revealed that students' attitude towards programming is effective on their programming learning capability. Baser (2013) and Korkmaz & Demir (2012) reported various factors effective on success in computer programming such as attitude, motivation and demographical characteristics. Moreover, in studies oriented on self-sufficiency perception of students towards "Introduction to Programming" Course studied in universities (Mazman & Altun, 2013), it was reported that students' attitude toward programming changes. Advanced technological tools are utilized in almost all of education areas frequently. Therefore, as it was reported by Lau and Yuen (2009), programming learning skills play significant role in development of information literacy in educational sciences.

Students taking programming languages course usually experience difficulty in displaying the performance expected from them in programming field. This could be associated with their low attitude level towards programming (Altun & Mazman, 2012). On the other hand, students' negative attitude towards programming could also affect their success in programming. Hence, Haslaman & Askar (2007) and Baser (2013a) suggest that self-sufficiency perceptions of students taking programming language course, have positive significant effect on their success level.

Experimental studies conducted on education of programming languages indicate that educational environments which allow to gain superior problem solving skills could have positive influence on students' success and programming perceptions (Uysal, 2014). Course contents carefully prepared by taking difficulty of programming language course into account motivate students to reach target acquisitions (Forte & Guzdial, 2005). Alternative programming education methods connected with structural programming techniques could foster students' success in programming as well (Robinson, 1995).

It is substantially important task to determine learning approaches of students to enhance quality and productivity of education (Abraham, Vinod, Kamath, Asha, and Ramnarayan, 2008). Although differences among students have taken prominent area of interest in recent reforms in education, no any practical suggestion has been made concerning how to assess these differences.

Identifying learning styles of students could be helpful for teachers to select more efficient education strategies (Lau & Yuen, 2009), allowing to determine origins of differences among students and transition from teacher-centered education to student-centered education more conveniently. In this regard, it is contemplated that the

present study would contribute in developing learning performances of students with different learning styles. The relevant literature search exposes only limited number of studies on attitudes of students towards programming and their self-sufficiency perception towards programming. On the other side, it was found that there was no study investigating the relationship between learning approaches of IT preservice teachers who teach programming in Turkey and their attitude towards programming whereas there was only one study on this subject in the global literature (Lau & Yuen, 2009). Additionally, there are suggestions regarding necessity of investigation of factors influent on performance in programming in the literature (Cetin & Ozden, 2015; Mazman & Altun, 2013; Korkmaz & Altun, 2013; and Başer, 2013).

This study aims to determine attitude of IT preservice teachers towards computer programming, their learning styles and the relationship between them. Along this purpose, following research questions were tried to be answered:
a) How is the attitude of IT preservice teachers towards computer programming?
b) Do attitude of IT preservice teachers towards computer programming display significant difference according to their demographical characteristics (gender, grade, graduated high school)?
c) How is studying approach of IT preservice teacher?
d) Is there significant relationship between attitude of IT preservice teachers towards computer programming and their approach towards study?

METHOD
Study Group
The study group of this research is consisted of IT preservice teachers at the 1st, 2nd, 3rd and 4th grades from the Faculty of Educational Science at the Ahi Evran University. Research data was from 165 preservice teachers by means of a survey form developed in both internet and printed environments. Distributions of gender, grade, type of graduated high school and study approaches of study group were summarized in Table 1.

Table 1: Demographical Characteristics of IT Preservice Teachers

Variable	Characteristics	F	%
Gender	Male	81	49.1
	Female	84	50.9
Grade	1	41	24.8
	2	39	23.6
	3	51	30.9
	4	34	20.6
Type of Graduated High School	Vocational	101	61.2
	Regular	37	22.4
	Anadolu*	27	16.4
Deep Learning Approach		127	77
Superficial Learning Approach		38	23
Total		165	100

In terms of significant figures of Table 1, whereas 61% of participant IT preservice teachers were vocational high school graduates; 77% were the ones adoted deep learning approach.

Data Collection Tools
In identifying learning approaches of IT preservice teachers, "Studying Approach Scale" was developed while "Scale for Measuring Attitude toward Computer Programming" was developed to measure their attitude toward programming. Besides, personal information form was utilized collect demographical characteristics of participants.

Scale for Measuring Attitude toward Computer Programming
 "Scale for Measuring Attitude toward Computer Programming" developed by Baser (2013) in five-point Likert scale was employed to determine attitude of participant preservice teachers toward computer programming based on the scale structured by Wiebe, Williams, Yang and Miller (2003), consisted of 38 items and four factors. As a result of factor analysis and reliability analysis, 9 items were removed from the original scale consisted of 47 items. In development process of the scale, data was collected totally from 220 students, of which 179 were from the Computer and Information Technologies Education (CITE) Department and 41 were from Computer Engineering Department. The scale developed for the purpose of this study was structured on following sub-scales: "Self-confidence in programming and motivation" (Items from 1 to 11 and from 33 to 38); "Benefits of Programming" (Items from 23 to 32); Attitude toward success in programming" (Items from 12 to

19); and Social perception toward success in programming (20, 21 and 22). Internal consistency coefficients of sub-dimensions of the scale range between .618 and .944. The Cronbach's Alpha coefficient for internal consistency of the whole scale was estimated at .947. Scale items include "1-Totally Agree", "2-Agree", "3-Not Sure", "4-Disagree" and "5-Totally Disagree" as answer options.

Scale for Studying Approach
Within the scope of the present research, the scale adapted into Turkish by Yılmaz & Orhan (2011) from the study of Biggs, Kember, & Leung (2001) on studying approaches of university students was employed in determination of learning approaches of preservice teachers. As the scale is comprised of totally 20 items, its two constituent factors were referred as deep and superficial approaches. Of which, 10 items (1, 2, 5, 6, 9, 10, 13, 14, 17 and 18) were designated to measure deep approach; the other 10 (3, 4, 7, 8, 11, 12, 15, 16, 19 and 20) were to measure superficial approach. As items in the scale were structured in five-point Likert Scale, they were offering following opions: "It does not or rarely consider me (1)", "It sometimes considers me (2)", "It considers me in half of occasions (3)", "It considers me frequently (4)" and "It considers me almost all the time (5)". Regarding internal consistency of the scale, Cronbach's Alpha coefficients were estimated for deep approach and superficial approaches at .79 and .73, respectively. Study results reported by Yılmaz and Orhan (2011) suggest that adapted scale was reliable and it was a valid measurement tool to investigate studying approaches of students in higher education in terms of language equivalency and quality.

Data Collection and Analysis
To identify the appropriate statistical method for analysis of collected data, Kolmogorov-Smirnov normality test was utilized. Skewness value was calculated as 4.015 by dividing skewness coefficient (.759) to the skewness standard error (.189). Since this value remains outside the range of -1.96 and 1.96 (p<.05), it was concluded that data was not normally distributed. According to Kalaycı (2009), skewness values (p<.05) greater than 1.96 or less than -1.96 are accepted. Thus, since test results of Kolmogorov-Smirnov normality analysis did not display normal distribution in all groups for dependent variables, non-parametric tests were applied. In terms of descriptive analysis of collected data, frequency (f), percentage (%), mean (X) and standard deviation (Sd) were employed; whereas Kruskal Wallis and Mann-Whitney U tests were conducted for exploratory statistical purposes. The minimum and maximum scores that can be gained by respondents from the scale were 38 and 190, respectively. In assessment of total score, as total gained score closes to 190, it could be implied that positive attitude toward computer programming increases; as it closes to 38, positive attitude decreases. In the evaluation scale utilized in assessment of findings obtained as a result of data analysis, (5-1) / 3 evaluation range is taken as basis; if the correlation level between average score limits and knowledge levels was in the range of 1 – 2.33, then, it could be considered as "Low Level"; it was in the range of 2.34 – 3.67, "Medium Level"; and it was in the range of 3.68 – 5.00, "Advanced Level".

Spearman serial correlation tests were employed to exmine the correlation between attitudes of preservice teacher toward computer programming and their studying approaches. Differences and significance of correlations were investigated according to p<.05 level.

FINDINGS AND CONCLUSIONS
a. How is attitude of IT preservice teachers towards computer programming?
Descriptive statistic results regarding attitudes of preservice teachers towards computer programming and mean scores according to their sub-dimensions were exhibited in Table 2.

Table 2: Descriptive Statistics Results of IT Preservice Teachers regarding Their Attitude Towards Computer Programming

Attitudes Towards Programming	N	Minimum	Maximum	X	Sd
Self-confidence and motivation in programming		1.76	4.76	2.9660	.41685
Benefits of programming		1.30	4.70	2.9370	.42358
Attitude toward success in programming	165	1.13	4.63	2.5220	.65854
Social perception of success in programming		1.00	5.00	3.8586	.86262
General		1.76	4.63	2.9353	.37149

It can be observed from Table 2 that mean scores regarding attitudes of preservice teachers towards computer programming differ for all sub-dimensions in the range of 2.52 and 3.86. For sub-dimension of "Social perception of success in programming", this was considered as "Advanced Level"; for sub-dimension of "Self-confidence and motivation in programming", "Benefits of programming" and "Attitude toward success in programming", its significance was considered as "Medium Level". Thus, it is possible to conclude that general attitude of IT preservice teachers towards programming was at medium level. This result corresponds to the

results reported in the relevant literature. Korkmaz & Altun (2013) reported that students from computer engineering and CITE departments were inclined toward learning programming at medium level in general. However, researchers stated that students' attitude toward programming were observed at higher level especially with engineering students. Similarly, Başer (2013) reported that students from the CITE Department had negative attitude towards programming. According to Ozyurt & Ozyurt (2015), whereas attitudes of students from computer programming department towards programming were positive; their self-confidence levels towards programming were at medium level.

b. Whether attitudes of IT preservice teachers towards computer programming exhibit significant difference according to their demographical characteristics (gender, grade, and type of high school graduated)?
i. Do attitudes of IT preservice teachers toward computer programming exhibit significant difference according to gender?

In order to determine whether attitudes of preservice teacher towards computer programming exhibit statistically significant difference according to their genders, Mann-Whitney U-test results were taken into consideration and they were summarized in Table 3.

Table 3: Mann Whitney U Test Results regarding Attitudes of Preservice Teachers towards Computer Programming according to Their Genders

Gender	N	Mean Distribution				
		Factor 1	Factor 2	Factor 3	Factor 4	General
Male	81	76.40	82.21	79.18	81.23	76.29
Female	84	89.36	83.76	86.68	84.71	89.47
Mann Whitney U		2867.500	3338.000	3092.500	3258.500	2858.500
Z		-1.760	-.211	-1.022	-.483	-1.782
P		.078	.833	.307	.629	.075

*p<=.05

According to Table 3, it was observed that attitudes of IT preservice teachers towards computer programming did not significantly differentiate for none of sub-dimensions of the scale according to their gender variable. This finding corresponds to findings reported by Bakr (2011) and Lau & Yuen (2009). Robinson (1995), who investigated success of students in programming and their attitudes towards programming through an emprical study, concluded that methodical differences were not effective on gender. On the other hand, Whitley (1997), who investigated attitudes of genders towards computer programming through content analysis, concluded that gender was not effective on students' approach towards computer. Similarly, Yıldırım & Kaban (2010) reported in their study in which they investigated attitude of preservice teachers from the CITE department towards computer-aided education that gender variable caused significant difference. On the contrary to this finding, it was reported in literature that gender was significant factor with respect to attitude towards programming and to problem solving skills. Askar & Davenport (2009), Baser (2013), Brosnan (1998) and Kirkpatrick & Cuban (1998) stated that attitude of male students towards programming were higher in comparison with female students. This could have been result of the finding of Milic (2009) and Turkle (1984) that gender was significant variable in resolution of programming tasks. In studies of Ozyurt, (2015), Ozyurt & Ozyurt (2015), which investigated research attitudes of distant education students towards programming, a significant relationship was found between some sub-dimensions of scale and gender variable.

ii. Do attitudes of IT preservice teachers towards computer programming exhibit significant difference according to their years at the university?

In order to determine whether attitudes of preservice teachers toward computer programming exhibit significant difference according to their year at the university, results of the "Kruskall Wallis" test conducted for independent groups were summarized in Table 4 below.

Table 4: Kruskal Wallis Test Results of Preservice Teachers Regarding Their Attitudes Towards Computer Programming According to Their Years at the University

Year at the University	N	Mean Distribution				
		Factor 1	Factor 2	Factor 3	Factor 4	General
1	41	75.54	76.10	74.71	87.48	76.41
2	39	83.68	75.72	69.31	93.67	79.23
3	51	92.99	96.79	96.82	71.29	92.68
4	34	76.24	78.99	87.97	82.93	80.75
Kr. Wallis Chi-S (χ2)		4.001	6.423	9.313	5.729	3.228
Z		3	3	3	3	3
P		.261	.093	.025	.126	.358

*p<=.05

Based on Table 4, attitudes of preservice teachers towards computer programming according to their year at the university exhibited significant difference for preservice teachers at the 3rd year in terms of sub-dimension of "Attitude toward success in programming" (U=9.313, p=.025, Factor 3). In terms of the 1st, 2nd and 4th sub-dimensions, there was no significant difference according to their year at the university. In other words, attitudes of preservice teachers towards computer programming differed only with respect to "Attitude toward success in programming" sub-dimension according to their year at the university. Thus, it is possible to conclude that perceptions of IT preservice teachers towards programming were positively affected by the programming courses given at the 1st, 2nd and 3rd grades. It is possible find similar results in the literature. For example, Mazman & Altun (2013) and Altun & Mazman (2012) claimed that self-sufficiency perceptions of students towards programming increased significantly after they received programming course. Along the same line, Ozyurt & Ozyurt (2015) reported significant correlation between students' year at the university and their attitude towards programming. On the other hand, the difference among their attitude toward programming reduces afterwards of their first experience. There are various other results reported in the literature as well. For instance, Yıldırım and Kaban (2010) stated that there was no significant correlation between students' year at university and their attitude towards computer-aided education. Again, Bakr (2011) indicated that experiences of teachers were not influent on their attitude towards computer.

iii. Do attitudes of IT preservice teachers towards computer programming exhibit significant difference according to the type of their high schools?

In order to determine whether attitudes of preservice teachers toward computer programming exhibit significant difference according to the type of high school where they were graduated from, results of the "Kruskal Wallis" test conducted for independent groups were summarized in Table 5 below.

Table 5: Kruskal Wallis Test Results of Preservice Teachers Regarding Their Attitudes Towards Computer Programming According to the Types of Graduated High School

Type of Graduated High School	N	Mean Distribution				
		Factor 1	Factor 2	Factor 3	Factor 4	General
Vocational	101	87.91	84.69	86.11	79.13	86.08
Regular	37	78.69	77.81	75.22	89.64	80.91
Anadolu*	27	70.54	83.78	82.02	88.39	74.33
Kr. Wallis Chi-S (χ2)		3.272	.586	1.460	1.837	1.397
Z		2	2	2	2	2
P		.195	.746	.482	.399	.497

* (p<=.05)

According to Table 5, it can be observed that whereas the Vocational High School (86.08) exhibited the maximum mean score; the Anadolu High School (74.33) exhibited the minimum mean score. Additionally, according to the Kruskal Wallis test results, attitudes of preservice teachers towards computer programming did not exhibit significant difference with all sub-dimensions according to the type of graduated high school. In other words, perceptions of IT preservice teachers towards computer programming did not exhibit significant difference according to the type of high school where they were graduated from.

c. Which studying approach do IT preservice teachers adopt?

In order to determine studying approach of preservice teacher, statistical results based on the mean scores obtained according to deep approach and superficial approach dimensions were exhibited in Table 6.

Table 6: Descriptive Statistic Results regarding Studying Approaches of IT Preservice Teachers

	N	Minimum	Maximum	X	Sd
Deep Approach	165	15	48	31.70	5.888
Superficial Approach		13	45	27.59	6.596

Table 6 implies that mean score ($\bar{X} = 31.70$) of IT preservice teachers who adopt deep studying approach necessitating comprehension of the course subject rather than only gaining high scores in exams and focusing on core of the subject without losing integrity of the course subject was higher than the mean score ($\bar{X} = 27,59$) of the IT preservice teachers who adopt superficial approach not necessitating concentration and prone to lose integrity of subject because it fragmentizes the subject for convenient memorizing and it passively accepts new subjects and knowledge given to them without questioning. In Table 1, which exhibits demographical characteristics of students, it can be observed that whereas 77% of students adopt "deep studying approach"; 23% adopt "superficial studying approach". Accordingly, it can be concluded based on two tables that IT preservice teachers were the individuals who were inclined to deep studying approach, the most effective way of comprehending education materials and using the most effective learning strategy. In the relevant literature, Olpak & Korucu (2014b), in their study including 245 bachelor degree students from various departments of faculty of educational sciences, reported that majority of students exhibited deep studying approach. On the contrary, Yilmaz & Orhan (2011) indicated in their study conducted on 400 students from different bachelor degree programs that students mostly exhibited superficial approach. Cuhadar, Gunduz and Tanyeri (2013) reported that deep approach and superficial approach mean scores of students from the CITE Department of the Faculty of Educational Sciences at Trakya University were close to each other.

d. Is There Significant Correlation between Attitudes of the IT Preservice Teachers Towards Computer Programming and Their Studying Approach?

As collected data was not normally distributed, the "Spearman Serial Correlation" analysis was conducted to investigate the relationship between two variables. The Spearman Serial Correlation coefficient is expected in the range of -1 and +1. As correlation coefficient approaches to +1, then, this suggests that there is positive perfect correlation; as it approaches to -1, then, this indicates negative perfect correlation. If coefficient is estimated at 0, then, this suggests that there is no linear correlation between variables (Kalaycı, 2009). Table 7 displays correlation coefficients and correlation levels below.

Table 7: Correlation Coefficients and Correlation Levels (Buyukozturk, 2009)

Absolute Value Range (r)	Level of Correlation
0.00 – 0.30	Low
0.31 – 0.70	Medium
0.71 – 1.00	High

Table 8 summarizes analysis results regarding the correlation between studying approaches of preservice teacher and their attitude towards computer programming.

Table 8: The Correlation between Studying Approaches of Preservice Teacher and Their Attitudes toward Computer Programming

Attitude towards Computer Programming		General Mean
Deep Studying Approach	r	.079
	p	.314
	N	165
Superficial Studying Approach	r	-.014
	p	.856
	N	165

According to Table 8, it can be observed that there was low level positive correlation between deep studying approach of IT preservice teacher and their attitudes towards computer programming (r=.079). Based on this result, it was possible to conclude that as mean scores regarding deep studying approach of preservice teachers increased parallel to their positive attitude towards computer programming. On the other hand, low level negative correlation between superficial studying approaches of preservice teacher and their attitude towards computer programming was observed (r=-.014). Hence, it can be deducted at this point that increasing mean scores of preservice teachers regarding superficial studying approach negatively affected their attitude towards computer programming.

Mazman & Altun (2013) reported positive and high level of correlation between self-sufficiency perception of students toward programming and their academic success. Similarly, Ozyurt (2015) determined significant relationship between attitude of distant learning students towards programming and their self-sufficiency perception levels. There are also researches in the literature oriented on different variables effective on computer programming success. For instance, Ozdinc & Altun (2014) investigated factors effective on programming process of IT preservice teachers and reported that their program coding and program reading tasks were under influence of various variables.

RESULT AND SUGGESTIONS

Sampling group of this study employed screening model was consisted of 165 IT preservice teachers. Study results suggested that attitudes of IT preservice teachers towards computer programming were at medium level, which is parallel to the findings reported in the relevant literature. But, IT preservice teachers were expected to be more interested in programming learning. This result addressed the necessity of activities to enhance attitudes of students towards programming, one of the factors effective on students' success.

Additionally, no any difference was observed in attitudes of preservice teachers towards computer programming according to their gender. Thus, it was concluded that tendency of both male and female preservice teachers towards programming were similar. Another finding exposed by the present study was that years of preservice teachers at the university were effective on their attitude towards programming. This difference was on the advantage of students attending to the 3rd year at the university. This result can be interpreted as that new regulations on courses given in curriculums of the 1st and 2nd years in the IT teaching departments would be effective on attitudes of preservice teachers towards programming positively. In terms of types of graduated high school, there was no significant difference among attitudes of preservice teachers towards programming. However, students graduated from vocational high schools were found to be more inclined toward programming. Moreover, it was observed that whereas 127 of IT preservice teachers adopted deep studying approach; 38 adopted superficial studying approach. It was also observed that majority of IT preservice teachers prefered deep studying approach. They displayed minor tendency toward superficial studying approach.

Another result of the present study was that there was positive correlation between mean scores of preservice teachers according to their deep studying approach and their attitude towards computer programming. On the other hand, a negative relationship was determined between superficial studying approaches of preservice teachers and their attitude towards computer programming.

Following suggestions were drawn based on the research findings:
a. Content and gaining of programming course given to IT preservice teachers are required to be prepared by taking perceptions and readiness of students toward programming into consideration.
b. By considering students' studying approaches, student-centered learning environments must be provided in programming education; and education activities must be organized along this purpose. Thus, it must be ensured that students adopt deep studying approach combining the new information with former ones and focusing on the core subject.
c. Course contents must be designated by considering the fact that programming languages necessitate high level of problem solving skill during learning process; and they must be structured so as to enhance motivation of students to reach target skills and competencies (Forte & Guzdial, 2005).
d. Problem-based learning should be encouraged in order to support and improve high-level thinking and problem solving capabilities.

Acknowledgements
Statement on open data
Data of the study could be shared with other researchers via personal communication.
Statement on ethical guidelines
Anonymous data collection process was utilized during this study in order to protect privacy of participants and to avoid conflict of interest. There was no question on questionnaire that reveals the identity of participants. Furthermore, participants discussed the topics anonymously on the discussion forum.

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EFFECT OF SOCIAL MEDIA USAGE ON UNIVERSITY STUDENTS IN AN EMERGING COUNTRY

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ABSTRACT

Social media is considered to be the fastest online communication used for social networking and it has a significant effect in many fields, more so in the context of higher education. Previous studies have treated social media in terms of accessibility, usability and immediacy in a generalised way, while there is a notable lack of studies on social media usage that affects academic work and social activities. This study proposes the existence of informal learning, seeking information, convenience and student engagement in an educational context and tests their influence on social media usage.

A pilot test is conducted for the initial version of the study. A few items are revised based on the pilot test data. All items in the questionnaire are measured on a 5-point Likert scale. Hypotheses were tested with structural equation modeling based on 301 usable survey responses from campus students in Malaysia.

The results indicated that informal learning, seeking information and student engagement are found to be direct drivers of social media usage. In addition, informal learning is found to be the primary factor impacting university students to use social media. However, seeking convenience is found to be not significant to social media usage. The findings suggest that social media can be effectively used in the academia by encouraging informal learning both in and out of classes throughout the semester.

There are several inherent limitations that should be considered when interpreting the findings. Firstly, the unbalanced age ratio might limit the generalisability of the findings. Also, the data were collected from one private university out of 37 private universities based in Malaysia. Besides that, future studies could investigate the moderation effects of other variables such as cultures with diverse samples that lead to new insights on the cultural impact among other age groups and races within Malaysia. Lastly, this study is cross-sectional and it does not take into account the dynamic relationship between students and the utilization of social media.

Keywords : social media; informal learning; seeking information; convenience; student engagement; higher education.

INTRODUCTION

In these recent years, interest has increased in the latest web-based technologies, tools and services through social media. Facebook, Twitter and YouTube have become exponentially popular especially with the Millennials. These networks are based on online interactions, similar interests and personal relationships.

In the context of higher education, social media provides an innovative communication means through the creation of a web based learning zone. It is believed that social media can help students to interact with their peers by sharing ideas and reflect personal perspectives with one another (Camille 2010). Keeping this reality in view, previous studies researched the utilisation of social media among university students (Xie & Stevenson 2014; Tenopir, Volentine &King 2013). The students themselves are adapting the technology in their educational environment (Ruleman 2012). Past literature revealed that these emerging technologies may have a significant impact on the current teaching and learning practices in higher education (e.g. Quintana & Fernández 2015; Morgan 2012; Diener & Hobbs 2012; Eynon & Malmberg 2011).

Frequency, accessibility, usability and immediacy were empirically tested as contributing factors to social media usage. However there is a lack of studies on social media for the purpose of academic learning. There seems to be a

lack of study in social media usage has examined the effects of informal learning, seeking information, convenience and student engagement and tests their influence on social media usage in an empirical setting. Therefore, this study investigates the following research question:

Is there a relationship between informal learning, seeking information, convenience and student engagement of university students and their use of social media?

DEVELOPMENT OF THE THEORATICAL FRAMEWORK AND RESEARCH HYPOTHESES

The research model examines the effects of informal learning, seeking information, convenience and student engagement, which we propose as major variables on students' social media usage. The present study employs a Uses and Gratification (U&G) theory to understand what motivated university students to use social media.

Informal Learning

Informal learning is a learning process that mostly happens in a more random and spontaneous manner. European Commission (2000) defines informal learning as:

"a natural accompaniment to everyday life. Unlike formal and non-formal learning, informal learning is not necessarily intentional learning, and so may well not be recognized even by individuals themselves as contributing to their knowledge and skills."

Madge et al (2009) found that students from the UK have positive opinions on using social media such as Facebook as a learning environment. Facebook is no longer just a place to communicate with friends and others but it is also used for online discussion, group discussion and creating social events. The uses of smartphones and tablets help students in informal activities. In general, information sharing, exchanging ideas among classmates, and reflections are methods which provide both students and academics to use informal learning systems (Ebner et al 2010). The following hypothesis can thus be proposed:

H_1: Informal learning has a positive influence on social media usage.

Seeking Information

Social media does not only revolve social networking sites but it also includes free press such as blogs and word press as a platform to raise any thoughts or source new information. Social networking can be put in to use as a fun way to seek and share information in a timely manner. Keller and Hrastinski (2006) finds that the younger generation have a greater desire to participate in online learning or retrieving information through social media. Moreover, Gerhard & Mayr (2002) suggested that the usage of social media is more related to the educational learning system, particularly at higher education. Kietzmann et al (2011) posits that users can connect to other users from various part of Internet domain with the help of social media for information communication, organisation and information distribution. Therefore, the hypothesis is proposed:

H_2: Seeking information has a positive influence on social media usage.

Seeking Convenience

Social media has brought positive benefits into people's daily lives. Miller and Lu (2003) presents strategies for online learning support, such as offering a more convenient way for students to source additional materials. Some of the materials are not always available in hard copies. Online technologies such as Facebook have available functions such as group creation and e-mail that support educational learning. It makes it convenient for students as it becomes unnecessary to constantly meet face to face for group discussions. Thus, we hypothesise as follows:

H_3: Seeking convenience has a positive influence on social media usage.

Student engagement

There is no generally agreed definition for student engagement (Chapman 2003; Brewster & Fager 2000; Bomia et al 1997). However the most commonly used is by Bomia et al (1997), "students' willingness, need, desire and compulsion to participate and be successful in the learning process". Student engagement can also be identified in various ways such as collaborative learning, active student-faculty interaction, enrichment in education experience and supportive learning environment.

Based on a study done by Al-Bahrani, Patel and Sheridan (2015), their findings shows that student are willing to engage with their faculty if the connection is 'one way' where access to student information is minimised, as they are concerned with privacy issues. Besides that, their findings also shows that student are willing to participate if social media is a voluntary part of class where social media networks are most used by students compared to the email or learning management system. Therefore, we hypothesise as follows:

H4: Student engagement has a positive influence on social media usage.

DATA COLLECTION METHOD

The survey questionnaire has undergone several validation steps. First, the constructs of this study were drawn from extensive review of previous literature. Comments from university professors, four graduate and two undergraduate students were taken into consideration and revised to provide clarity of each item in the questionnaire. The initial version was pilot tested on 25 undergraduate students. Respondents expressed their agreement with each statement using a 5-point scale (1 ="strongly disagree" to 5='strongly agree").

The main field study was conducted among university students in one private university based in Malaysia, the country with 17 million internet users (Haida &Rahim, 2015). Participation was voluntary. Each participant was given a paper-and-pencil self-administered questionnaire. We have collected a total of 301 usable responses.

RESULTS

Table 1 presents the participants' demographic profile namely age, gender, access social media on smartphone and average number of times participants access social media. 50.8% (n=153) were males and remainder 49.2% (n=148) were females. As for age, about 77% of the respondents were below the age of 25. Most respondents (98.3%) access their social media through their smartphones. Around 62.1% of the respondents access their social media more than 10 times a day. This shows that many university students are actively connected online through their smartphone devices.

Table 1 : Respondent demographic characteristics

Characteristics	Total	%
Gender		
Male	153	50.8
Female	148	49.2
Age cohorts		
18-20	103	34.2
21-24	129	42.9
Above 25	69	22.9
Access social media on smartphone		
Yes	296	98.3
No	5	1.7
Average accessing social media		
More than10 times in a day	187	62.1
Less than 9 times a day	68	22.6
Less than 7 times in a week	46	15.3

A structural equation model using SmartPLS (v.3) assessed the measurement model and structural model. The measurement model was tested for reliability and validity. The loadings, cronbach's alpha, composite reliability and average variance explained (AVE) are presented in Table 2. Loadings below 0.70 were dropped (i.e. item Convenience3 and SocialMedia5). Cronbach's alpha ranged from .71 to a maximum of .87, which is higher than the 0.70 threshold by Nunnally (1978). The AVE for all latent variables is higher than 0.50, which indicates strong reliability. Also, the discriminant and convergent validity for all latent variables was conducted. Discriminant validity was found to be strongly indicated as the study's construct is highly correlated within its own in comparison to other constructs. Also, the convergent validity analysis had adequate results.

Table 2 : Loadings, Cronbachs alpha, composite reliability and AVE

Latent variable	Loadings	Cronbach's alpha	Composite reliability	AVE
Informal learning		0.845	0.896	0.682
Learning1	0.847			
Learning2	0.808			
Learning3	0.860			
Learning4	0.787			
Seeking information		0.764	0.848	0.583
Information1	0.775			
Information2	0.760			
Information3	0.736			
Information4	0.784			
Seeking convenience		0.712	0.838	0.634
Convenience1	0.801			
Convenience2	0.773			
Convenience3	*Dropped*			
Convenience4	0.814			
Student Engagement		0.875	0.915	0.731
Engagement1	0.898			
Engagement2	0.814			
Engagement3	0.926			
Engagement4	0.773			
Social Media Usage		0.771	0.854	0.594
SocialMedia1	0.708			
SocialMedia2	0.831			
SocialMedia3	0.764			
SocialMedia4	0.774			
SocialMedia5	*Dropped*			

Table 3 summarises the results of the structural model test. The path coefficients were produced through the bootstrapping procedure with 5,000 bootstrap samples. The association between informal learning, seeking information and student engagement to social media usage are significant, when the effects of age and gender are controlled for. All hypotheses, except for H$_3$, are supported. The path coefficient of informal learning to social media usage is the highest in comparison to the rest ($\beta = 0.574$). The path coefficient of seeking information ($\beta = 0.192$) and student engagement ($\beta = 0.169$) to social media usage are significant at $p < 0.05$. However, the path of seeking convenience to social media usage is not significant ($\beta = -0.131$). Informal learning, seeking information and student engagement explains 52% of the variation in social media usage.

Table 3: Data analysis results

Hypothesis	Description	Beta	Mean	Std Error	T-Value	Decision
H$_1$	Informal learning has a positive influence on social media usage.	0.574	0.572	0.099	5.793***	Supported
H$_2$	Seeking information has a positive influence on social media usage.	0.192	0.196	0.075	2.573**	Supported
H$_3$	Seeking convenience has a positive influence on social media usage.	-0.131	-0.124	0.101	1.295	Not supported
H$_4$	Student engagement has a positive influence on social media usage.	0.169	0.167	0.073	2.318**	Supported

Note. * Sig at 0.10, ** Sig at 0.05, *** Sig at 0.01

DISCUSSION AND IMPLICATIONS

The purpose of this study was to explore the antecedents behind using social media among university students in Malaysia and investigate their influence on social media usage in an empirical setting. The study results confirm that informal learning, seeking information and student engagement are three key antecedents collectively explaining substantial variance in social media usage among university students. The findings lend empirical support for the conception that these three factors play a major part in understanding the usage of social media among Millennials. The study results clearly show that informal learning translates well into social media usage. Social media can be effectively used in academic courses through encouragement to use it during class discussions and assignments. This then enhances the learning experience of students.

While the present study contributes to the body of literature on social media usage, some limitations should be taken into account that might affect the generalisability of the findings. Even though the age differences were controlled in the statistical analyses of this study, the unbalanced age ratio where majority of the respondents are aged below 25 might limit the interpretation of the results. With that, future studies should employ a more balanced sample between undergraduate and graduate students. Also, the data was collected from one private university out of 37 private universities based in Malaysia. For generalisability, the study findings must be corroborated other local universities to take into account for any differing variations in the antecedents. Also, future studies could investigate the moderation effects of other variables such as cultures with diverse samples that lead to new insights on the cultural impact among other age groups and races within Malaysia. Lastly, this study is cross-sectional; in future studies would be valuable to conduct longitudinal study to further corroborate the results found in this research.

In conclusion, we have empirically shown that informal learning, seeking information and student engagement are three key antecedents collectively explaining substantial variance in social media usage among university students.

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EFFECT OF THE USE OF TECHNOLOGY IN MATHEMATICS COURSE ON ATTITUDE: A META ANALYSIS STUDY

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ABSTRACT

Today, there are many studies which have been carried out independently on a certain topic but with different results. There are also many studies which examine the effects of the use of technology in mathematics education on the attitude towards mathematics. Fourteen studies selected in accordance with the objective carried out during 2002-2015 were included in the study. Of these studies, 7 were theses (master's thesis + doctorate), whereas 7 were articles. These studies have been carried out in primary school (2), secondary school (7) and high school (5) levels. The effect of using technology during mathematics courses was first examined by taking all studies into consideration as a result of which it was observed that the effect was statistically significant at a low level. Afterwards, the studies were examined by separating them according to the magnitudes of influence, types and the studies group as a result of which it was determined that they had statistically significant effects on student attitudes at a low level.

INTRODUCTION

Mathematics is among the primary courses for which student success is low thereby resulting in students fearing failure. Mathematics educators carry out studies to increase the interest of students towards mathematics course and create attractive education environments. These studies are sometimes methods, tools-equipment or materials the effectiveness of which has been tested in the teaching environment. The objective of studies during which technology is used for mathematics education is to overcome learning difficulties.

Children are now immersed in technology as soon as they are born. They are adept at and interested in technology. The studies carried out for transforming this interest of children towards technology to a positive attitude towards mathematics by using technology during mathematics courses form the basis of this study.

The following are meant by the use of technology in mathematics teaching;

- Using technology to complement the educational activities,
- Teaching a certain topic via already prepared computer software,
- Direct interaction of the student with technology for presenting course content,
- Interaction of students with technology during education process.

If we consider learning by doing as the student accessing the required knowledge directly, computer is the best education tool for this purpose(Çankaya, 2007). All studies included in the study have used computer technologies in mathematics teaching environments. The effect of studies that examine the contribution of mathematics teaching carried out using technology during the last 14 years on the attitudes of students towards mathematics course via meta-analysis method which is defined as a systematic reevaluation of experimental studies has been examined as part of the study.
Accordingly, the study seeks answers to the following questions:

- What is the general effect of mathematics teaching via technology on the attitudes of students?
- Does the effect size of mathematics teaching via technology on the attitudes of students vary with regard to the type of the academic study carried out?
- Does the general effect size of mathematics teaching using technology on the attitudes of students vary according to class level?

METHOD

Meta-analysis method was used to calculate the effect size of mathematics teaching using technology on the attitudes of students. Meta-analysis can be defined as, "a research method aiming to quantitatively integrate the results of a group of primary studies on a certain topic in order to decide on the latest developments in that topic" (Sanchez-Meca & Marin-Martinez, 2010).

DATA ACQUISITION

Studies carried out for determining the attitudes of students towards mathematics teaching using technology (computer aided education, computer games, smart board use etc.) were included in the study. The studies

consist of articles and theses. ProQuest, EbscoHost, Wilay, Eric, Google Scholar and Ulakbim databases were used to access the articles, whereas YOK national thesis center and ProQuest international thesis center databases were used to access theses. Attitude towards mathematics, computer and technology keywords were used while carrying out a literature survey. A total of 28 publications were reached comprised of 11 thesis and 17 articles. One of the groups using the pre-post test experiment design was determined as the group in which technology is used after which publications that make comparisons between groups or that have included statistics that can be used in meta-analysis (n, $\bar{X}$, ss, t, p) were included.

CODING OF DATA
The included studies were coded as researcher(s), year of publication, type of publication (article, Ph.D. thesis, M.Sc. Thesis), study group (primary, secondary, high) via Excel software. Proper data were then included after each study was examined in detail.

CMA program requires the correlation between pre-test and post-test scores in pre-test post-test studies with control group. Only post-test data were taken into consideration since correlation value was determined in none of the studies. Research data using t-test for dependent and independent groups were included.

VALIDITY AND RELIABILITY OF THE STUDY
All studies encompassing the years 2002-2015 were tried to be included in order to increase the validity of the study focusing on the effect of technology use on attitude in mathematics courses. Funnel Plot suggested by(1979) was used for determining the reliability of the study(Sterne & Harbord, 2004).

Figure 1. Funnel Plot Used for Determining the Reliability of the Study (ForestPlot)

When Figure 1 is examined, it can be stated that the 14 studies are distributed symmetrically around the effect size vertical line and that they are positioned close to the effect size value placed at the center of weight region. The fact that studies are distributed symmetrically in the center in addition to the fact that they are positioned close to the effect size value can be interpreted as having no publication bias (Borenstein et.al., 2009).

DATA ANALYSIS
Hedges's g was used in the study for calculating the effect size and the significance level for statistical analyses was determined as 95%. In addition, the following level classification put forth by Thalheimer and Cook (2002) was used for interpreting the magnitudes of influence.

	Effect size	$\leq 0,15$	insignificant level
0,15	< Effect size	$\leq 0,40$	low level
0,40	<Effect size	$\leq 0,75$	moderate level
0,75	< Effect size	$\leq 1,10$	high level
1,10	< Effect size	$\leq 1,45$	very high level

1,45   < Effect size   perfect level

Chi-square heterogeneity test Cochran's Q was used for evaluating whether the studies included have real heterogeneity or not. A p level that is determined at the end of the heterogeneity test as lower than the accepted level of significance indicates that the study results should be considered as heterogeneous according to the established hypothesis and thus the requirement for using random effects model (Dinçer, 2015). Comprehensive Meta Analysis (CMA) software was used in the study for calculating the effect size variances for all included study, whereas Microsoft Excel package software was used for data coding and recording.

RESULTS
When all 14 studies included in the meta-analysis were taken into consideration, the number of samples in the experiment group was determined as 454 (52%), the number of samples in the control group was determined as 426 (48%) for a total of 880. A total of 12 publications were included in the study 7 of which are articles and 5 are theses. Since 2 of the theses carried out a comparison of two different technologies, these were also taken as sub-groups. Of the 7 theses, 4 were Ph.D. theses and 3 were M.Sc. theses. A total of 14 studies were included. Of the studies included, primary school students were used in 2, secondary school students were used in 7 and high school students were used in 5.

Table 1. Effect size of the Studies and Various Statistical Values

Name of the Study	Type	Class	Effect S.	Standard Error	Variance	Lower Limit	Upper Limit	Z	p
Griffin1, (2008)	Thesis	High School	0,15	0,20	0,04	-0,24	0,54	0,78	0,44
Griffin2, (2008)	Thesis	High School	**0,13**	0,19	0,04	-0,24	0,49	0,67	**0,50**
Aliasgari,(2010)	Article	High School	0,79	0,29	0,08	0,22	1,36	2,73	0,01
Leng,(2005)	Article	High School	0,54	0,19	0,03	0,18	0,91	2,94	0,00
Birgin,(2015)	Article	Secondary	0,18	0,28	0,08	-0,38	0,73	0,63	0,53
Curaoğlu,(2012)	Thesis	Secondary	**-0,17**	0,31	0,10	-0,78	0,44	-0,55	**0,58**
Pili, (2008)	Thesis	Primary school	0,73	0,28	0,08	0,19	1,27	2,65	0,01
Eck,(2006)	Article	Secondary	0,36	0,24	0,06	-0,11	0,83	1,49	0,14
Sulak,(2002)	Thesis	Secondary	0,26	0,23	0,05	-0,19	0,70	1,13	0,26
Çankaya,(2008)	Article	Primary school	0,15	0,11	0,01	-0,07	0,37	1,37	0,17
Boyraz1,(2008)	Thesis	Secondary	0,53	0,32	0,10	-0,09	1,16	1,67	0,09
Boyraz2, (2008)	Thesis	Secondary	0,79	0,33	0,11	0,14	1,45	2,37	0,02
Hangül,(2010)	Article	Secondary	0,64	0,28	0,08	0,10	1,19	2,32	0,02
Avcı,(2014)	Article	High School	0,18	0,23	0,05	-0,27	0,63	0,80	0,42

When Table 1 is examined, it is observed that 2 (14%) studies are insignificant, 6 (43%) are at the small, 4 (29%) at the medium and 2 (14%) at the wide level. It can be interpreted when these results were taken into consideration that the effect of technology on the attitude towards mathematics course is low.

Figure 2. Forest Plot Indicating the Effect Direction of the Studies

When the forest plot was examined, it was observed that studies are mostly at the small effect level and that 2 studies pass the line of insignificance. When the horizontal lines passing through the squares are considered, it was observed that the 95% reliability intervals of the studies by Çuraoğlu(2012), Boyraz1 and Boyraz2(2008) were wide and that it was narrow for the study by Çankaya(2008). When the sizes of the squares inside the lines were taken into consideration, it can be observed that the weights of individual studies in the meta-analysis did not differ significantly. Whereas the diamond at the bottom gives us information about the size and location of the general effect.

Table 2. Effect Sizes and Homogeneity Values of Studies Based on Fixed Effects Model

Model Type	N	Z	p	ES	Q	95% Reliability Interval for Effect size	
						Lower Limit	Upper Limit
Fixed Effects Model	14	5,23	0,000	0,30	17,23	0,19	0,42

When the table given above is examined, it is observed that the statistics are significant (z=5,23; p<0,01). Q value was calculated for determining the model to be used and it was found to be Q =17,23. Chi-square table value was observed as 22.36 at 13 degrees of freedom. Effect size distribution was observed to be homogeneous since the Q value (17.23) was lower in comparison with the critical value of 22.36, hence fixed effects model was used for calculating the average effect size.

The average effect size calculated was 0.30. Since this value is within the limits of the reliability interval, it can be stated when these 14 studies are taken into consideration that the students have a positive attitude towards mathematics course in case technology is used. Again, it can be observed that this effect is at a low level when the level classification of Thalheimer and Cook (2002) are taken into consideration.

Table 3. Effect Sizes and Homogeneity Values According to the Type of Study

Study Type	N	Z	p	ES	Q	95% Reliability Interval for Effect size	
						Lower Limit	Upper Limit
Article	7	4,27	0,000	0,32	8,33	0,17	0,46
Thesis	7	3,03	0,002	0,28	8,83	0,10	0,47

When Table 3 is examined, it can be observed that the statistics for the articles were significant (z=5,23; p<0,01). Q value was calculated for determining the model and it was determined as Q =8.33. Chi-square table value is observed as 12.59 at 6 degrees of freedom. It was observed that effect size distribution was homogeneous since the calculated Q value (8.33) was lower in comparison with the critical value of 12.59, hence fixed effects model was used for calculating the average effect size. The average effect size calculated for articles was 0.32. Since this value is inside the reliability interval limits, the article studies carried out by the researchers indicate that students have a positive attitude towards mathematics course when technology is used during the course.

It is observed when the theses were examined that the statistics was significant (z=3.03;p<0.01). Q value was calculated for determining the model to be used for the theses and it was determined as Q =8.83. Chi-square table value is observed as 12.59 at 6 degrees of freedom. It was observed that effect size distribution was homogeneous since the calculated Q value (8.33) was lower in comparison with the critical value of 12.59, hence fixed effects model was used for calculating the average effect size. The average effect size calculated for articles was 0.28. Since this value is inside the reliability interval limits, the article studies carried out by the researchers indicate that students have a positive attitude towards mathematics course when technology is used during the course.

Again, it can be observed that this effect is at a low level when the level classification of Thalheimer and Cook (2002) are taken into consideration.

Table 4. Effect Sizes and Homogeneity Values According to the Class Where the Studies were Carried Out

Study Type	N	Z	p	ES	Q	95% Reliability Interval for Effect size	
						Lower Limit	Upper Limit
Primary school	2	2,27	0,02	0,24	3,74	0,03	0,44
Secondary School	7	3,38	0,001	0,35	6,55	0,15	0,56
High School	5	3,40	0,001	0,32	6,26	0,14	0,50

When Table 3 is examined, it can be observed that studies carried out at the Secondary School level put forth the highest effect (ES=0.35) according to the class levels. It is observed that the statistics for all school levels (z(primary school) = 2,27; p<0,02, z(Secondary School)= 3,38; p<0,001, z(High School) = 3,40; p<0,001) are statistically significant. Q values were calculated for determining the model to be used for each class level. Q values were determined respectively as 3.74; 6.55; 6.26. Chi-square table values were determined as 3.84 at 1 degree of freedom for primary schools; as 12.59 at 6 degrees of freedom for Secondary Schools; as 9.49 at 4 degrees of freedom for High Schools. The Q values calculated for all class levels were observed to be smaller than the chi-square table values. Since it was observed that the effect size distribution was homogeneous and therefore fixed effects model was used for calculating average effect size.

The average effect sizes calculated for class levels are inside the reliability intervals. Hence, it can be stated that the students put forth a positive attitude towards mathematics course when technology was used during mathematics courses in each class level.

Again, it can be observed that this effect is at a low level when the level classification of Thalheimer and Cook (2002) are taken into consideration.

DISCUSSION RESULTS AND SUGGESTIONS

Each of the 14 studies subject to meta-analysis were studies in which education using technology and ongoing education were compared. Even though a difference in favor of the attitude of students towards the use of technology in mathematics course was determined in 6 of the 14 studies, no statistically significant difference was determined in 8 studies. It was observed when all studies were evaluated together that the use of technology in mathematics courses puts forth a statistically significant difference even though it is a small one.

A statistically significant difference was not determined between the effect sizes of the theses and articles regarding the use of technology during mathematics courses. Effect sizes were determined to be at low levels for both study types.

It was examined whether the studies carried out were effected from the studied group or not and no statistically significant difference was determined between the groups, whereas the effect sizes were determined to be at low levels.

When all these results were taken into consideration, it can be stated that the use of technology in mathematics courses has a statistically significant effect on the attitudes of students towards mathematics course. However, it was observed that studies should be carried out for determining the effect of technology use when it was taken into consideration that this effect has stayed at a low level. Therefore, it is thought that the general effect size may be high in future studies in case the education environment is arranged in accordance with the topic and when the education duration, technology knowledge of the trainer that will provide the education, technology knowledge of students along with the use of high quality software and technologies.

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EFFECTIVE PROJECT MANAGEMENT FOR CREATIVE EUROPE

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ABSTRACT
The article focuses on increasing the efficiency of management of projects supporting European cooperation and mobility in the field of culture. The main research method of the article is the system dynamics (Forrester, 1961, Sterman, 2000), which is based on the concept of system thinking (Bertalanffy, 1976, Senge, 2006). The article presents a case study of a project and characterizes problems that need to be addressed by a project manager during the project management. The main tool of analysis is the system dynamic model. This model offers three options of policies as decision-making mechanisms of a project manager. Finally, using the cost-effectiveness analysis we chose the most suitable solution for a given type of the project. The system dynamic modelling of projects is a powerful tool for increasing the efficiency of decision-making in organizations that invest into development and innovations in the European environment of cultural and creative industries. The research is aimed at creating a simulation of the implemented project in order to improve teaching project management.

INTRODUCTION
Global competition between the regions in Europe is getting stronger. We may observe there is a deepening polarization between the successful and unsuccessful regions, which forces certain localities to search for innovative development strategies. Since this is a new approach to the development of the economies in these regions, it is considered a new cultural policy. The cultural offer is an important soft factor of development that attracts citizens, tourists and investors, while it contributes to the improvement of the image of the given locality. Cultural offer may be an opportunity for regional development and one of the factors and possible solutions. Culture creates image: holding various events (cultural, sports, educational) with the aim of triggering media interest creates a specific environment (Richards and Wilson, in Marková, 2012). The mere fact that "something is happening" means that the region will attract other people who will be interested in creating new projects in the region. That is one of the reasons why former factory halls or other buildings are being turned into new cultural centres, company or shop clusters or renovated premises designated for cultural life and educating people from the city. The aim of municipal and regional strategies is actually very clear: preventing its inhabitants from leaving for work to other places where there is more action. It is quite the other way round: cities want to create localities that will attract new young people.

Let us take the city of Zlín, for example, where the university was involved in the preparation of an international project. The project is described as a case study and elaborated into the form of a system dynamics model. The model serves for demonstrating three decision-making strategies of a manager who is facing a serious problem: the project is behind the schedule. When creating the project we called this approach "Creative project management". (Svirakova, 2014).

The basic objective of project management is the design and implementation of a successful project (Lacko, 2004), i.e. achieving the target in the planned period of time, with defined costs and available resources. Creative project management is a way of creating new value, which is based on unique and talented personality of its creator oriented to creation of a quality product within the specified limits. But in fact, a method of forming new value lies in appropriate setting of processes for creative project management. In addition to project management processes, managers of creative projects must also consider the talent of the creator. Creative project is a temporary organization which is created for the purpose of delivery of original and formally perfect products containing intellectual property, delivered in accordance with pre-agreed target and within specified limits (Svirakova, 2014).

The basis for successful implementation of creative project is a good plan. The purpose of planning is not to create a timetable of tasks, but it is an integrated view of the way we achieve goals. Methods that lead to improved decision-making of managers are highly desirable (Krejčí, Kvasnička and Dömeová, 2011). In our approach to using system thinking and system dynamics, we teach culture managers how important the plan is, what parameters we plan, should plan and what we observe in reality. Modelling is seen as an innovative means of obtaining new knowledge about the course of the implemented project.

ANALYSIS OF A CASE STUDY OF A PROJECT FOR CREATIVE EUROPE "THE CELL FOR

DESIGN"

With this project we want to support the effort of the city to keep graduates of Tomas Bata University in Zlín as a creative workforce that will bring about economic development. Zlín is a regional city with a large and previously unused creative potential. By means of exhibitions and simulation of Coworking Design Centre in Zlín we want to increase the demand for the products resulting from the process of creative design. We also want to increase the cultural image of the city by concentrating creative projects in the centre of Zlín and on the factory compounds and thus support the ideal of attractiveness and usability of the former factory for cultural experiences with a high degree of interaction and getting a new public involved.

Mandate for a creative project under the programme: Creative Europe, partial programme Culture)
General objectives of the program are defined as follows: (1) Enhancing the skills, competences and know-how of representatives of creative industries including the use of digital technologies, innovative approach to the development of the public and business and managerial models; (2) Promotion of the mobility of cultural actors (artists, experts, etc.) and the circulation of artworks. The vision of the Cell for Design project is to contribute to an increase in demand for design products. We want to achieve the vision through the fulfilment of the project objectives. The basis for the Cost-Effectiveness analysis is the indicator of the expense-to-revenue ratio in relation to goodwill, which represents the degree of how an investor is satisfied with the project results and the quality of communication during the project.

General business case of the Cell Project
The vision of the Cell for Design project is to contribute to an increase in demand for design products. Cell designs and manufactures products with original design by request of the audience. We want to achieve the vision through the fulfilment of the objectives of the project, which is the partnership between the four stakeholders: city, art school studios, major galleries and audience. The project will include three joint exhibitions in the cities of partners, i.e. Zlín, Sofia and Wroclaw and one joint exhibition of all the partners in Riga. The project will also include three seven-day simulations of the Coworking Design Centre in Zlín, Sofia and Wroclaw with four activities. The first activity is Coworking Community, its aim is to build creative teams at social contacts and creative work. The second activity is Coworking Round Table as the focal point for creative companies that are planning to upgrade their products. Contact with a new audience is established using the third activity Coworking Square Table. The fourth activity is the Coworking Academy, which will provide space for lectures and practical workshops, whose mission is to share knowledge and skills. Throughout the project there will be an interactive website, whose main target group is the new audience of the general public. In the course of the project a manuscript will be created that records 20 new design stories.

WBS as a plan of the Cell Project
The project plan indicates 12 summary products, each of which fulfils the objective of the project: (1) Project management, (2) Interactive website The Cell for Design, (3) 3D interactive promotional tools The Cell for Design project, (4) Exhibition in Zlín: Recycling Design, (5) Coworking Design Centre in Zlín, (6) Exhibition in Sofia, (7) Coworking Centre Sofia, (8) Exhibition in Wroclaw, (9) Coworking Centre Wroclaw, (10) Final Exhibition: results from all Coworking Design Centres in Zlín, Sofia and Wroclaw, (11) Printed book Design Stories, (12) Final meeting of the project team members. These products are further using WBS (hierarchical structure of the product) divided into more or less extensive products so that their delivery can be more easily controlled. Overall, we awarded the project 2,000 difficulty points according to these deliverables. The planned project duration is 50 months. The total budget of the project is 333 thousand Euros. These three data, i.e. the duration of the project, costs and estimated difficulty of the project scope are fundamental border parameters of our system dynamic model.

PROBLEM FORMULTIAON AND METHODOLOGY
Tracking the actual course of a project is a difficult managerial task. If it is not determined in advance what the project intends to achieve, we can make no assessments as to how big deviation from original objectives occurred and whether the project was successful or not. In the project portfolio in the environment of cultural and creative industries we are still struggling with the same problem: project managers do not have a plan of their project. It is not possible to compare it during the project implementation. Managers control the course of a creative project intuitively and underestimate the importance of planning. Consequently, they are unable to track its actual performance and they are not able to notice project delay. They argue that sophisticated methods, for example Earned Value Management method (PMBOK® guide, 2013) that requires constant updating through working time expressed in cash, is inapplicable. In the environment of cultural and creative industries we often work with a team of volunteers, it is then logical that the measuring of the team performance with help of money is artificial and ineffective. Yet even project managers in the field of culture need to use a sophisticated method to assess their

progress. Project managers in the environment of cultural and creative industries need to know where they are in the project, what the delay is and what is needed to counterbalance the plan and reality (Rehacek, 2015). Clients and sponsors of this type of projects require objectively verifiable information that the task has been fulfilled and whether the project achieved the expected results.

System dynamics is a scientific method of investigation focused on solving real-world problems. At present time knowledge and tools of system thinking play an important role in streamlining the organization management (Kolerova, Bures and Otcenaskova, 2014). System dynamics is aimed at study of behaviour of complex social systems. This scientific methodology helps to better quality understanding of systems, where there is a high degree of detail and dynamic complexity. Specific methodology of system dynamics lies in representation of system issues that we want to solve. These systems are networks of closed loops of feedbacks which constitute levels and flows, are performed in time and are subject to delay. System dynamics relies on simulation in the sense, that with the help of model it is able to introduce a system in a simplified way, and describe the problem which is intended to be solved. Feedback loops and delays are visualized and formalized through levels and flows (Mildeová and Kalina, 2013). In fact, every decision is a risk for the company (Taraba, et al., 2015).

MODEL AND DATA
The model is an appropriate platform because it represents a simplification of reality. Model is a mediator and interpreter between theory and practice. On model we can test the correctness of settings of creative project plan and compare it with the actual project development. From the system dynamics perspective, a model is developed to address a specific set of questions. One models problems, not systems. We emphasize the point because the purpose of a model helps guide its formulation. The problem to be addressed, the audience for the results of the study, the policies one wishes to experiment with, the implementation desired, all influence the content of the model. (Richardson & Pugh, 1981).

Formulating system dynamics model
Forrester, founder of system dynamics, claims (in Glaiel, 2012) that feedback processes control all overall growth, deflections and a decrease (decline). They are determining basis for all changes. They allow new insights into the nature of managerial and economic systems, which in the past were not included in descriptive and static analyses. System approach, which includes also system thinking and mental models, directs the manager during the project to successful process of elements integration in higher unity. The system is visualized through levels and flows. Thanks to understanding the principles of system thinking we are better able to assess the correctness of our decision, and especially its consequences (Senge, 2007 Šviráková, 2014).
System dynamic models are called diagrams of stocks and flows, and generally they are more accurate than diagrams with causal feedback. To design system dynamic models we use the following elements: accumulation, flow, variables and constants. If the system accumulates, it is said to be dynamic. In models we recognize both positive and negative feedback, with the existence of nonlinearities and delays in relations among elements of the system.

Lyneis and Ford (2007) claim we can define general structures that serve as a basis for feedback loops that influence the progress of a project. System dynamics focus on modelling features found in the current systems. The typical features are the progress of a project in time, in terms of sources, managerial mental models and decision-making. Principal project features are the amount of work that is to be done (Work to Do) and amount of work that has been completed (Work Done), handed over and approved (Work Done Approved). The levels of Work to Do and Work Done are connected by a flow that is characterized by the gerund Working. The levels change in time and they are only influenced by the flow. The speed of the flow is influenced by managerial decision-making and the work efficiency of the team.

Products finished in the project are presented to the project manager in the approval procedure, which is connected with quality management of the project and influences further advancement of works on the project. If an output is not approved, the project team needs to rework it. The reworking cycle is not a part of the plan model, but when implementing a project we need to take it into account, as it always arises during the project implementation stage – to a greater or lesser extent. It is the cause of problematic behaviour of a project that often occurs: a delay. Figure 1 below shows the basic structure of the reworking cycle. The variable representing the amount of work that still needs to be done (Rework to Do) includes all the products the manager has found as failing to meet the required (planned) parameters. Therefore, they are submitted to the rework procedure and increase the amount of work that needs to be done under the project. The sooner the handed-over products are checked, the more time there will be for the project team to deliver reworked products and thus decrease the amount of work that still needs to be done.

Fig. 1: Basic system dynamics model

Entering data into the model
The project performance is typically measured using the following indicators: extent, time and adhering to the budget. The project extent is often accompanied by the term "quality", since these two terms are closely related. If we determine the expected extent of a project, which is done using a structured schedule of project results, we also need to define these results with quality parameters. These three project aspects, which have to be measured at all times, form a so-called triple constraints of a project, which means they influence one another, i.e. decreasing a value of one of them results in affecting the value of the two other aspects.

For an alternative method of navigation in the project a measurable parameter will be difficulty of accessibility of planned products (not activities) of the project, which must be estimated as well. We searched for a suitable approach to estimating the work difficulty, which will be simple and understandable for the project team, and we have chosen the point method. This method consists of a point system and allows for determining the difficulty of each project product.

PROBLEM SOLUTION
For manager's interferences management the key variable is, in terms of flow between two levels, Working (Fig. 1). It is a quantity which is measurable in number of points for outcomes of the project team members have to finish (Planned Value) or finished (Earned Value) in one week. Variable Working is dependent variable and is affected by two other variables: real productivity and impact of remaining work on productivity.
Thanks to the obtained data that define the difficulty level for achieving the project products in the course of time we were able to prepare a project plan in a graphic form. The total value of the project is 2,000 difficulty points to be obtained in the course of 50 weeks. The Work Done Approved variable was established on the basis of the simulation results. Figure 2 below shows three strategies we used for simulated project behaviour. The first strategy shows zero reaction to delays in the project (Curve 1). The second strategy reacts to a delay in the project by requesting additional workforce in the last stage of the project (Curve 2). In the third case we start strengthening workforce in the month when a delay is detected (Curve 3).

Fig. 2: Graph: Expected project result, work done approved
Source: own, iThink SW for system dynamics modelling

Figure 3 below shows the cost effectiveness analysis of these three simulated strategies. The analysis is influenced by two variables: workforce costs and customer satisfaction with communication during the project. The third decision-making mechanism in this analysis is at first more expensive than the other two strategies. However, if a decision is taken not to care about the project delay (Curve 1), the project is penalized as it has not met its objective. Therefore, the third decision-making strategy is favorable from the perspective of the cost effectiveness analysis as well as from the perspective of the lowest risks linked to this strategy. In comparison with Strategy No. 2 products are completed at earlier stages of the project, not in its last stage (Fig. 2).

Fig. 3: Graph: Expected cost benefit analysis: three decision-making strategies
Source: own, iThink SW for system dynamics modelling

CONCLUSIONS

Projects in the environment of cultural and creative industries are specific projects the organization of which conceals hardly predictable and not always satisfactorily resolvable challenges. Project manager is usually not capable to assess well in advance the impacts of current delay of reality contrary to whole project to its end. Traditional approach to project management is based on detailed planning of all activities from the beginning to

the end of a project and on the evaluation of project implementation on the basis of workforce costs. The presented approach, which is a foundation for modelling the project course, is based on project planning through the point system: to set the difficulty of each project product. At the end of each stage the managerial progress of work within a given stage is evaluated, value of actually achieved outputs measured and compared with the plan. Creative project management is built on the ability of measuring the achieved quality of a project as well as on precognition of its future development. Tool for dynamic planning and monitoring the development of the project with incorporating prediction is simulation of project development. System dynamic modelling method meets new requirements that are placed on project management: to go beyond technical and engineering disciplines, to create a process that will comply with transdisciplinary and integration approach (Saynisch, 2010). As Soukalová (2011) stated, the essence of management can be simply characterized as an information-communication activity the aim of which is to transfer the information quickly, efficiently, accurately and reliably. Cultural and any other creative or scientific projects cannot be in the 21st century built on rigid and bureaucratic practices that hardly detect problematic project behaviour. Creative environment must remain dynamics and must offer new challenges including an integrated possibility to make changes in planning process.

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EFFECTIVENESS OF INTERNSHIP PRACTICES BY STUDENTS OF MEDICAL SERVICES VOCATIONAL SCHOOLS OF HIGHER EDUCATION

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ABSTRACT

As in the curricula of all disciplines based on practice, theoretica linformation and practic eshould complement one another in the Vocational School of Health Sciences.Clinical practices constitute a significant part of the education provided in the Vocational High Schools. In thi scontext, internship practices provide the students with a significant opportunity to improve their skills. In the present study, the aim is to determine the contributions of internship practice stop reparing studentst professional life and provide recommendations for possible problems. The study group consists of 120 second-gradestudents studying at theVocational Health High School of Karadeniz Technical University in the fall semester of 2015-2016 academic year. Data of there search were obtained via "Internship Efficiency Survey". At the end of the analysis of the data, it was found out that students generally find internship activities, which are practice-based trainings, useful and beneficial.

INTRODUCTION

It is important to set up a visual and auditory background to establish persistency in vocational school of higher education (VSHE) education. While people are able to remember 10% of things they read, 20% of things they see, 50% of things they see and hear and 70% of things they mention, they remember 90% of the things they do and mention(http://www.willarworklearning.com/2006/10/people-remember.html).

In this case, technical background is important. As it is in the training schedules of all disciplines based on practice, theoretical information and implementation mush complement each other in medical services VSHEs. Internship practices constitute a significant portion of the education in VSHEs. In this context, internship implementations provide significant opportunities for skill development in students Mcmillan&Schumacher (2001).

Internship practices as indispensable elements of medical services VSHEs, ensure the development of positive behavior changes by providing students with the means to spend considerable amount of time with several possible role models (Velioğlu 94). However, in order to establish permanent behavioral changes in students, practice areas must be appropriate for the purposes of the training. In planning the internship training, in addition to the suitability of the practice areas in terms of the training, other things such as the numbers and skills of the educators who will manage and evaluate students are also important. The roles and function of the educators during the internship training are very significant for the students. Three factors that support learning in practice are the sufficient amount of trainer support, improvement and monitoring of internship training areas, and increased cooperation with the management of hospitals for placement of students in suitable clinics (Abaans, 1997, Karaöz, 1997, Brown et al., 2005).

Internship training leads to the incorporation of the theoretical knowledge and practice, as well as learning by doing in a real life environment Aştı&Taşocak (1995). The goal is to firstly achieve the improvement of psychomotor skills of the students, and then combine/integrate their theoretical knowledge with their technical skills, and establish permanent behavioral changes (Sözen, 2003, p.10).

The student, by showing cognitive and psychomotor improvements through his/her clinical experience, develops the necessities of professionalism such as adequacy in providing services, communication, decision making and being able to work as a team memberGünay&Özer (2014).

This study aims to determine the contribution of internship practices in preparing students for professional life and suggest solutions to possible issues.

The following research questions were considered in order to reach this aim:

- What are the levels of the students in terms of their awareness and behaviors regarding internship practices?
- Is there a statistically significant difference in the students' awareness and behaviors based on their sex?
- Is there a statistically significant difference in the students' awareness and behaviors based on their departments of study?

THE STUDY

This study is a descriptive work based on a screening method on the effectiveness of internship training of students of medical services vocational schools of higher educations in hospitals. In screening models, the even, individual or object that is subject to the research is aimed to be described as it stands in its own conditions(Karasar, 2006).

Population and Sample

The population of the research consists of second year students enrolled in the Medical Services and Techniques department of the Medical Services Vocational School of Higher EducationatKaradeniz Technical University in the fall semester of the year 2015. The sample of the study consists of associate health personnel candidates (N=120) including students in programs of Medical Lab. (N=43), Medical Doc. (N=42) and Emergency Medicine Tech. (N=35). Demographic characteristics of the participating students are given in the table below.

Table 1 - Distribution of Students Based on Their Demographic Characteristics

	Variables	**f**	**%**
Sex	Male	68	56.7
	Female	52	43.3
Program	M. Lab.	43	35.8
	M. Doc.	42	35.0
	E. M. Tech.	35	29.2

Data Collection Tools

The data of the study were collected with '*Internship Effectiveness Awareness*' and '*Internship Effectiveness Behavior*' scales by utilizing the existing literature and referring to expert opinion. Each scale consisted of 13 items and items were prepared in the form of 5-point Likert-scale. The '*Internship Effectiveness Awareness*' scale was assessed based on responses 'completely agree', 'agree', 'undecided', 'disagree' and 'completely disagree', while the '*Internship Effectiveness Behavior*' scale was assessed based on responses 'always', 'mostly', 'sometimes', 'rarely' and 'never'. The Cronbach Alpha internal consistency coefficient of the Internship Effectiveness Awareness Scale was 0.78, while the same coefficient was 0.74 for the Internship Effectiveness Behavior Scale.

Table2 - IntervalsConsidered in Analyzingthe Data of theMeasurementTool

Rating	Response Interval
Completely Agree	4.20-5.00
Always	
Agree	3.40-4.19
Mostly	
Undecided	2.60-3.39
Sometimes	
Disagree	1.80-2.59
Rarely	
Completely Disagree	1.00-1.79
Never	

Analysis of the Data

- The data were analyzed in the SPSS-17 software. In the analysis of the data, in addition to the assessment of descriptive statistics, independent samples t-test was also used.

FINDINGS

The scores students received from the 'Internship Effectiveness Awareness and Behavior' scales were analyzed using descriptive statistics regarding the 1st research question, and independent samples t-test regarding the 2nd and 3rd research questions. Arithmetic average and standard deviation distributions are given in the tables.

Table3 - DescriptiveStatistics on theInternshipEffectivenessAwarenessandBehaviorScales

Type of Scale	N	Minimum	Maximum	X	SD
Int. Eff. Awareness	120	1.00	5.00	4.24	0.44
Int. Eff. Behavior	120	1.00	5.00	3.41	0.45

Table three shows the scores of 120 prospective medical professionals. If we look at the table, the arithmetic average of the scores the students received from the internship effectiveness awareness scale was X=4.24, while the average was X=3.41 for the internship effectiveness behavior scale.

Table4 - InternshipEffectivenessAwarenessScale t-test Results of the Prospective Associate Healthcare Professionals Based on Their Sex

Sex	N	X	SD	t	dF	p
Female	68	4.49	0.43	2.09	44	0.03*
Male	52	4.23	0.65			
*p<0.05						

Table 4 shows that there is a statistically significant difference in favor of female students in the internship effectiveness awareness scores [t(44) =-2.09; p<0.05]. It may be seen that female students had an average score of 4.49 in the internship effectiveness awareness scale, while male students had an average score of 4.23.

Table5 - InternshipEffectivenessBehaviorScale t-test Results of theProspectiveAssociate Healthcare ProfessionalsBased on TheirSex

Sex	N	X	SD	t	dF	p
Female	68	3.12	0.62	-1.38	44	0.18
Male	52	3.311	0.58			

Table 5 shows no statistically significant differences in the internship effectiveness behaviour score based on the students' sex [t(44)=-1.38; p>0.05]. It may be seen that female students had an average score of 3.12 in the internship effectiveness behavior scale, while male students had an average score of 3.31.

Table6 - InternshipEffectivenessAwarenessScale t-test Results of theProspectiveAssociate Healthcare ProfessionalsBased on The Programs TheyAreEnrolledIn

Prog.	N	X	SD	t	dF	p
M. Lab.	43	4.18	0.42	-0.07	44	0.12
M. Doc.	42	4.23	0.42			
E. M. Tech.	35	4.31	0.39			

Table 6 shows no statistically significant differences in the internship effectiveness awareness score based on the programs the students are enrolled in [t(44) = -0.07; p>0.05]. The average internship effectiveness awareness scores of M. Lab., M. Doc. and E. M. Tech. students were 4.18, 4.23 and 4.31 respectively.

Table7- InternshipEffectivenessBehaviorScale t-test Results of theProspectiveAssociate Healthcare ProfessionalsBased on The Programs TheyAreEnrolledIn

Prog.	N	X	SD	T	dF	p
M. Lab.	43	3.32	0.41	-0.38	44	0.82
M. Doc.	42	3.37	0.36			
E. M. Tech.	35	3.46	0.39			

Tablo 7 shows no statistically significant differences in the internship effectiveness behavior score based on the programs the students are enrolled in [t(44)=- 0.38; p>0.05]. The average internship effectiveness behavior scores of M. Lab., M. Doc. and E. M. Tech. students were 3.32, 3.37 and 3.46 respectively.

CONCLUSIONS
- In this study which examined the internship activity awareness and behavior of prospective associate healthcare professionals, it was observed that the students generally had high scores in terms of both awareness and behavior. The minimum score on the scales was 1.00, while the maximum was 5.00. These findings show that the average scores of the participating students were on the level of 'completely agree' for the *Internship Effectiveness Awareness Scale,* and on the level of 'mostly' for the *Internship Effectiveness Behavior Scale.*
- The participating students generally agreed that internship activity, which is a training in practice was effective. It was observed that the skill training was important for their profession, the skill training duration was adequate, they were regularly inspected by the faculty members of the school, and they were satisfied with their participation in the training.
- Based on the results of this study, it may be argued that, while they have some shortcomings, internship skill trainings are generally functional and they serve their purpose. However, it was determined that internship students had negative views about abiding by hospital rules during their internship. Additionally, the students stated that emergency treatment and first aid training were not provided adequately in their schools. It may be argued that implementations supervised by responsible experts would lead to more serious and effective results and provide students with opportunities to functionally improve themselves before their profession.
- According to the analysis of the content in the internship effectiveness behavior scale, it was determined that skill training was important, the students had the chance to practice what they had learned, they complied with hospital regulations and the staff supported the students. However, it was found that the students attending the internship programs did not have adequate first aid and emergency treatment training, and they may pose serious problems in cases of emergencies. This situation may be considered as a negative point in terms of the effectiveness of the implementation.
- While there were no statistically significant differences found in the students' internship effectiveness behavior scale scores in term of their sex, there were significant differences in their internship effectiveness awareness scales scores in favor of the female students.
- The reason for the result in favor of female students might have occurred as a consequence of the model citizen image attributed to women's role in almost every society (Sadık&Çakan, 2010). According to Kağıtçıbaşı (1990), women are generally expected to be warm-hearted, empathic, sensitive, tolerant, compassionate, thoughtful, tidy and responsible. It is believed that this expectation of roles in by the society lead women to be more sensitive in communication (cited in Sadık and Sari, 2010; Çimen, Yılmaz&Çimen, 2001). Gama (2003) suggested that this result might be considered positive as female students will be prospective mothers in the future.
- There were no statistically significant differences found in the students' average scores in both scales based on the programs they were enrolled in. Additionally, E. M. Tech. students had higher scores in both scales. Consequently, it was observed that the students built up an awareness towards internship practices, however small this awareness might be, and this awareness was reflected on their behaviors in parallel to the education they received. However, these data also show that the reflection of awareness onto the students' behaviors is not on the desired level.
- It is a known issue that the supervising staff in hospitals cannot spare adequate amounts of time for students during their skills training, as the staff have other duties. Therefore, this issue may be resolved by dedicating personnel responsible only for these activities and allocating the entire shifts of these employees to the guidance of the students.
- Students receiving skills training in hospitals are treated like personnel, and they are included in departments where there are shortages of employees. This is not done by assessing the skills and knowledge bases of the students. Thus, the shortcomings of the students may create problems at some points. Therefore, managers of such establishments should stop seeing the students as personnel, and remember that they are students who are there to reinforce their education.
- It would be useful for students to be involved in departments where they can get rid of their shortcomings, reinforce the theoretical education they have received, and find a chance to practice, instead of departments with shortages of personnel. Additionally, in order to eliminate theoretical or practical shortcomings detected, capable personnel in the hospital may provide in-service training, and such issues may be resolved.

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EFFECTS OF AN INTEGRATED APPROACH PROGRAM FOR THE KOREAN ALPHABET LEARNING
OF CHILDREN WITH READING DISABILITY

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ABSTRACT
This study investigates effects of an integrated approach program for the Hangul (Korean Alphabet) learning of children with reading disabilities in Korea. The integrated approach program incorporates the structured activities that provide training of the word structure (spelling), word sound (pronunciation) and word understanding (meaning). In order to verify the improvement of the Hangul learning over the program, reading fluency, phonological awareness, and naming speed (objects, colors of RAN) were measured. Single-group pretest-posttest design was used for the study. The integrated approach program consists of 20 sessions and has applied to 24 elementary students (Grade 1~3) with reading disabilities. Our findings indicate that the integrated approach program for the Hangul learning is effective. The results indicate that the scores of reading fluency and phonological awareness increases, and the RAN for objects and colors has improved. Therefore, this study has significance that the integrated approach program for Hangul, performed in terms of the simultaneous application of the three main elements of word reading, is effective to the children with reading disabilities.

INTRODUCTION

Reading itself is a major curriculum and the basis of learning. Early reading difficulties may cause serious reading disabilities later. Thus, it is important to teach reading accuracy and reading fluency from an early school age (Kim & Kim, 2006). Reading is a complex process which consists of word recognition, accessing meaning, information integration, and inferences. Skilled reading is the result of highly interactive process of the three major elements: alphabetic knowledge, phonetic knowledge, and semantic knowledge (Kim & Kim, 2012; Adams, 1990). Therefore we should include the three elements simultaneously for the effective teaching of reading (Adams, 1990).

However, in a large number of reading intervention studies for children with reading disabilities has focused on a single cause of reading disabilities such as phonological awareness (Kim, 2002; Song & Park, 2003; Lee, 2003), naming speed (Kim & Kim, 2006), or neurological imprinting (Kim, Kim & Lee, 2012). This causal approach could improve reading skills partially, but there are limitations to learn Hangul (Korean alphabet) effectively. Also, an intervention that focuses on weaknesses of children with reading disabilities such as phonological awareness or naming speed lead to decrease their motivation to learn (Jin et al., 2006). Therefore, an integrated approach program is needed for children with reading disabilities to teach Hangul effectively. This study develops the integrated approach program for the learning of Hangul for children with reading disabilities and investigates the effects of the program.

METHOD

1. Participations and Procedures
1) Participants
24 students, who had difficulties in learning Hangul or reading in grades 1 through 3, participated in this study. Intelligence test (K-WISC Ⅲ) and reading measure (KEDI – Individual Basic Learning Skills test, Reading Ⅰ) were used to identify children with reading disabilities. The participants were the students who scored more than -1 SD in intelligence and less than -1 SD in reading measurement. Participants were composed of 10 students in grade 1, 7 students in grade 2, and 7 students in grade 3.
2) Test and Procedures
Each student was administered the reading fluency, phonological awareness, and naming speed (objects and colors of RAN) tests individually by the examiners who were trained for the work. Testing was completed before and after the intervention period. Each intervention was a 30-minute session and conducted one or two sessions per week, a total of 20 sessions. The integrated approach program divided into four steps and we selected each student's step depending on the grade level.

2. The Development process of the integrated approach program for Hangul learning

The integrated approach program was constructed through a review of the literature. And the concurrent validity was verified by two professionals in special education with Ph.D. and two speech & language therapists. For the development of the program, we applied the program to 12 children over 4 years, and potential problems have been resolved. The principles that applied on the integrated approach program for the Hangul learning are as follow.

First, we used the ʹmatching word and pictureʹ strategy to teach the Hangul principles naturally. For this purpose, we chose the words that could be stimulated by picture (Bowen, 1982; Kim, 1994).
Second, the program was composed of the words whose meaning children already know (Lee, 2004).

Third, a neurological imprinting method was implemented using childrenʹs songs and sentences (Bender, 1992; Holling & Renzel, 1988; Kim, Kim, & Lee, 2012).
Fourth, this program includes training of the phonological awareness and the rapid naming that are fundamental for reading abilities (Gerber & Klein, 2004; Kim & Kim, 2006; Kim & Kwon, 2011).
Fifth, the words with phoneme fluctuation were assigned for the last level(Jeon & Koh, 2007).
Sixth, it consists of only six words at a session to motivate students' learning (Lee, 2009; Sperling & Head, 2002)

On the basis of the principles, the integrated approach program consists of 4 steps. Step 1 has 65 words without a closed syllable that are included in the preschool curriculum. Step 2 has 84 words with a closed syllable that are also included in preschool curriculum. Step 3 has 96 words that are included in grade 1 & 2 curriculum. Step 4 has 96 words with phoneme fluctuation that are included in grade 1 & 2 curriculum. A total of 341 words are selected for the program, and only 6 words are used in each session.

RESULTS
The results of the integrated approach program are as follows. Table 1 shows the mean and standard deviation for the each individual measurement. Reading fluency improved from 83 to 129 syllables per minute. Phonological awareness improved from 15 to 27 point. Naming speed also improved after the program. The response time for naming was shortened from 34 to 28 for objects RAN, from 37 to 30 for colors RAN.

Figure 1: Pre- and post-test performance in four variables

The results of a paired sample t-test are shown in Table 1. The paired sample t-test results show significant differences between pre- and post-test of reading fluency (t=-13.0, p<0.001), phonological awareness (t=-9.05, p<0.001), RAN for objects (t=7.46, p<0.001), RAN for colors (t=5.96, p<0.001). This study shows the effects of the integrated approach program for the Hangul learning for children with reading disabilities.

Table 1: Descriptive Statistics and Comparisons of pre- & pst-test scores on measures

variables		Pre-test		Post-test		N	Pre-post differences		t
		M	SD	M	SD				
reading fluency (# of syllables per 1-minute)		83.75	59.13	129.92	62.83	24	-46.18	17.40	-13.00***
Phonological awareness		15.12	10.96	27.38	9.50	24	-11.96	6.47	-9.05***
RAN (response time)	objects RAN	34.83	8.50	28.04	7.13	24	6.79	4.46	7.46***
	colors RAN	37.88	10.05	30.50	9.34	24	7.38	6.07	5.96***

***P < .001

DISCUSSION

This study developed and performed an integrated approach program for the Hangul learning for children with reading disabilities. According to the results of this study, the integrated approach program for the Hangul learning is effective to improve reading fluency, phonological awareness, and naming speed which are primary elements of reading abilities. This study implies that the integrated approach program can be used as an early reading intervention for children with reading disabilities to improve their basic reading skills more effectively.

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EFFECTS OF DISCOVERY LEARNING AND STUDENT ASSESSMENT ON ACADEMIC SUCCESS

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ABSTRACT

In this study the effect of Discovery Learning and course evaluation based on Bloom's Taxonomy on the academic success of undergraduate students in Northern Cyprus was investigated. One demographic questionnaire was distributed to 829 students and two questionnaires were distributed to these students' instructors in order to collect information on the extent they used the Discovery Learning method as well as ascertaining the complexity level of learning intended to be achieved based on the criteria used for course evaluation (e.g. homework, project, and examination). Fourteen instructors of a total of nine courses and 34 classes participated in this study. The results indicated the higher the use of Discovery Learning during the course the lower the course grades were found to be. Also the higher the cognitive level of learning (e.g. analysis, synthesis and evaluation used by the instructor for the course, the lower the course grade was achieved by the students.

Key Words: Discovery Learning, Cognitive Level of Learning, Academic Success

INTRODUCTION

In the last few decades the approach to education is increasingly steering towards more student centered approach of which Discovery Learning is a part. The reason for this is it has been found to instil curiosity and motivation in students to analyze and make sense of the information they encounter (Castronova, 2002). This in return results in better knowledge retention (Balım, 2009).

While expository teaching is based on teachers (who are believed to be an expert on their subject) planning and presenting the information in a set timeframe, generally in an atmosphere where students are passive listeners (Terzi, Eryılmaz, Anadol & Kaya, 2009), Discovery Learning is where the teacher's role is more in the line of being a facilitator helping the students to discover information by deduction and construction (Kaufman, 1971). The main initiators of this approach to learning is Bruner (Denbo, 1994), John Dewy, Jean Piaget, and Lev Vygotsky based on their constructivist learning theories (Castronova, 2002) as well as Hilda Taba's curriculum based projects on Discovery Learning in the 1960's (Kaufman, 1971).

Light, Calkins and Cox (2009), in their book Learning and Teaching in Higher Education, state one of the most prominent and important challenges in teaching in higher education today to be the necessity for teachers to be aware of and accept that just presenting preplanned information to a passive audience is not enough to motivate students to independently "attain and construct their own knowledge during and after higher education" (p. 11). Graduates who will be the new generation of all types of professions need to know how to continuously learn and construct new knowledge by using their high level cognitive skills that they acquire during their higher education.

Although lower level skills in Cognitive Domain (Bloom, Engelhart, Furst, Hill, & Krathwohl, 1956) such as Knowledge, Comprehension and Application (renamed Remembering, Understanding and Applying by Anderson et al., 2000), skills in Affective Domain (Krathwohl, Bloom, & Masia, 1964) and skills in Pychomotor Domain (Dave, 1975; Harrow, 1972; Simpson, 1966) are important for education, higher level cognitive skills are preferred during higher education and beyond. These are Analysis (which involves comparing and contrasting), Synthesis (which involves creating, designing, hypothesizing, inventing and developing) and Evaluation (which inolves judging, recommending, critiquing and justifying) (Huit, 2011). These three cognitive levels were later renamed as Analyzing (which involves comparing and contrasting), Evaluation (which involves criticizing, defending, justifying and summarizing) and Creating (which involves combining, composing, designing, modifying and reorganizing) (Anderson et al., 2000).

Based on the examples given for each of the higher level Cognitive Domain skills (Application, Synthesis and Evaluation), it can be seen that acquiring these will not only help students enrolled in the Faculty of Education be successful in their studies, but when in employment whether they will be teachers, academicians or heads of departments, it will also enable them to compare and contrast information available for course content and/or curriculum, reflect with a critical eye teaching and/or learning processes and enable them to defend and/or justify their ideas to modify, reorganize or design a new course, curriculum or method of education. This in return will help them reach new horizons in the field of education nationally as well as globally. So, not only does higher education have to incorporate this higher level of education using a student centered approach such as Discovery Learning, it also needs to evaluate their practices to see whether it is actually leading to academic success.

Many studies on Discovery Learning versus Expository Teaching have conducted research incorporating a control and experimental group where the pretests have shown students pre-test achievement scores to have no significant difference and in the post-test have shown the Discovery Learning method to have a significant positive effect on the students' academic achievement. Examples of such studies conducted in three different parts of the world are one conducted on fifty-seven seventh grade students in İzmir, Turkey and based on a science course (Balım, 2009), a second on 48 High School students in Pakistan based on a mathematics course (Perveen, 2010), and the third on 160 undergraduate students in Texas, USA based on a biology course (Wilke & Straits, 2001).

There seems to be a consensus within the literature that the approach to education should be more about students discovering and constructing their own knowledge thus leading to the use of higher level cognitive skills, but how are the teachers actually faring? Is there a shift from the use of Expository Teaching to Discovery Learning? Are instructors evaluating the use of higher level cognitive skills? What are the factors that contribute towards the chosen method of teaching? According to Entwistle, McCune & Hounsel, 2002), it is the teachers' past experience (how they were taught as students) and beliefs that shape the method of teaching they choose to adopt. This may be an important factor to consider when choosing an educational approach or a teaching method for students enrolled in programs in the Faculty of Education as <u>they</u> will be the new generation of educators. It is therefore important to find out how the present situation stands.

THE STUDY
This study aims to find the relationship between the instructors' use of Discovery Learning versus Expository Teaching on the Cognitive Domain level of learning and on academic success of students enrolled in the Faculty of Education in Northern Cyprus.

Research questions
1. How is the use of Discovery Learning related to academic success?
2. How is student assessment of homework, project and examination based on Bloom's Taxonomy Cognitive Domain level of learning related to academic success?

Sample
The sample consisted of all except the first year students enrolled in the Faculty of Education in the Eastern Mediterranean University during the 2010 – 2011 academic year Fall semester. Out of the valid 829 cases the majority 465 (54%) were 4th year students followed by 244 (29%) 3rd year students and 138 (17%) 2nd year students. These students were in one of nine courses and 34 groups taught by a total of fourteen instructors.

Instruments
Three instruments were used for this study. The first was the Student Information Questionnaire which aimed to obtain information on the students' year of study, their student number, course and group number (in order to ascertain their instructor). The student number was necessary to be able to obtain their final course grades from the portal. The students were informed of this process and their permission was taken.

The second instrument was the Teaching-Learning Methods Instrument designed by the authors. The participant is requested to mark on the given scale the percentage that they use the Discovery Learning and Expository Teaching for each course they are teaching to the students participating in the study. This and the third instrument was given to the fourteen instructors teaching the 34 groups of 829 students.

The third instrument, Identifying the Level of Learning Questionnaire which was also designed by the authors with the aim of ascertaining the level of learning the instructor aims to assess their students under the following categories: the level of homework, project, examinations and based on the Cognitive Domain of Bloom's Taxonomy. The questionnaire begins with a brief description of the aim of the study and asks the participants to

fill in the course code and group number of the students they are teaching. Following this, a table containing three main sections can be found for each category to be assessed eg. homework, project, examinations. The first column of the table contains the levels of the Cognitive Domain namely Knowledge, Comprehension, Application, Analysis, Synthesis and Evaluation, the second column gives a brief description of the corresponding Cognitive Domain levels and the final section incorporating five columns has the following headings: Never/hardly ever, Sometimes, Half of the time, Usually, Always/nearly always, and asks the participants to tick how often they give e.g. homework that covers each of the levels of the taxonomy.

ANALYSIS

The data collected from the instructors was entered alongside each corresponding students' student numbers, course codes and group numbers using SPSS (version 18). Data gathered from the Teaching-Learning Methods Instrument was entered as the percentage they were using the Discovery Learning method as the opposite percentage showed the use of the Expository Teaching method.

When analyzing the data collected from the Identifying Level of Learning Instrument, each level of the Cognitive Domain was given a value. As can be seen in Table 1 one for Knowledge, two for Comprehension, three for Application, four for Analysis, five for Synthesis and six for Evaluation. The frequency of use of each of the Cognitive Domain levels were also given values starting from one for 'Never/hardly ever used', two for 'Sometimes used', three for Used half of the time', four for 'Usually used' and five for 'Used always/nearly always'. The cells ticked by the instructors were multiplied by the points assigned for the corresponding vertical and horizontal headings as shown in Table 1 and the summation of these was plugged in for each evaluation criteria such as homework, project and examination separately. This was done for all 34 courses.

Table 1 Calculation table of points allocated for each criteria

Points Allocated for Each Level of Complexity	Never/Hardly Ever Used (1)	Used Sometimes (2)	Used Half of the Time (3)	Usually Used (4)	Used Always /Nearly Always (5)
Knowledge (1)	1 x 1	1 x 2	1 x 3	1 x 4	1 x 5
Comprehension (2)	2 x 1	2 x 2	2 x 3	2 x 4	2 x 5
Application (3)	3 x 1	3 x 2	3 x 3	3 x 4	3 x 5
Analysis (4)	4 x 1	4 x 2	4 x 3	4 x 4	4 x 5
Synthesis (5)	5 x 1	5 x 2	5 x 3	5 x 4	5 x 5
Evaluation (6)	6 x 1	6 x 2	6 x 3	6 x 4	6 x 5

The students' grades were obtained from the portal and coded as follows: F = 1; D- = 2; D = 3; D+ = 4; C- = 5; C = 6; C+ = 7; B- = 8; B = 9; B+ = 10; A- = 11; A = 12.

FINDINGS

Using SPSS (version 18) Pearson product-moment correlation analysis amongst five variables the following correlation coefficients showing the extent of their relationship were found. These correlations can be found in Table 2.

Table 2: Correlations between Discovery Learning, Course Grade and Levels of Learning of Homework, Project, and Examination based on Bloom's Taxonomy Cognitive Domain

Variables	1	2	3	4	5
1. Discovery Learning	1.00				
2. Level of Homework	.255**	1.00			
3. Level of Project	-.479**	.076	1.00		
4. Level of Examination	-.013	.859**	.330**	1.00	
5. Course Grade	-.061	-.161**	-.033	-.064	1.00
Mean	29.34	62.93	83.93	64.21	8.73
Standard Deviation	24.46	13.37	17.41	19.78	1.89
N	829	517	609	829	829

Figure 1   Relationship between Discovery Learning, Course Grade, Level of Learning of Homework, Project, and Examination based on Bloom's Taxonomy Cognitive Domain

Table 2 and Figure 1 show the correlations and relationships between Discovery Learning, Course Grade, Level of Learning of Homework, Project, and Examination based on Bloom's Taxonomy Cognitive Domain. It can be seen that out of the 829 valid cases all 829 of the students' evaluation criteria included examination, only 517 included homework and 609 included projects. The results show a positive significant relationship (r = .255) between Discovery Learning and level of learning Homework based on Bloom's Taxonomy Cognitive Domain Level showing that the more the Instructor uses the Discovery Learning mode of education the higher the Cognitive Domain level of complexity the instructor aims at using when assigning homework. Although this may show that the Instructor believes this mode of education will enable students to accomplish higher cognitive levels when homework is assigned, the relationship between Cognitive Domain complexity level of homework and course grade shows a negative significant relationship (r = -.161) showing the student grades to be lower when homework is assigned at this higher complexity level and vice versa.

The correlation between the use of Discovery Learning and level project assignment on Bloom's Taxonomy Cognitive Domain levels shows a negative significant relationship (r = -.479) meaning the more the instructor uses Discovery Learning the lower the level of learning (based on the Cognitive Domain) is set for the project assignment. In addition to this an insignificant negative relationship is found between course grade and the level of learning of project assignment in the Cognitive Domain (r = -.033). Furthermore, the level of complexity of examinations based on the Cognitive Domain has a negative and insignificant relationship with both Discovery Learning and course grade (r = -.013 and -.064 respectively). As the latter has a p value close to .05 (p = .067) this may point out that students obtain lower course grades when a higher level of Cognitive Domain assessment is used.

There was no significant relationship between Discovery Learning and course grade only a small negative relationship (r = -.061 with a p value of .080) which may slightly indicate the higher the use of Discovery Learning the lower the course grade.

CONCLUSIONS AND DISCUSSIONS

The study's first aim was to find out whether the use of Discovery Learning has a relationship with the course grade. This study did not find any conclusive evidence showing any significant positive relationship but only an indication at the p = .080 level that as the use of Discovery Learning increases course grades drop and vice versa. This could be due to the students' prior educational experience and background cultures where they are used to having a teacher, who they believe to be an authority in their field, pass on the information in class. Also, the university entrance examinations in Turkey and North Cyprus are both based on a set curriculum and their evaluation is based on multiple choice questions. Therefore during the lengthy preparation for this examination, students may not have had the opportunity to gain experience or acquire the skills related to discovering their own learning and/or be able to succeed at answering questions involving analyzing, synthesizing and evaluation. It may take these students a little more time to adjust to this way of learning and prepare for the higher cognitive assessment levels. It is important to bear in mind, the majority of the sample consisted of 4th year students showing that they don't seem to have mastered these skills even towards the end of their studies at higher education. This result may also mean that the instructors are more ambitious when it comes to Discovery Learning and because their students are seen to be involved in what they are doing in class, the instructors' expectations of the students may become too high when setting complexity levels for assessment. Further studies can be made to ascertain the underlying problems.

When the first research question is looked at from the Expository Teaching perspective there seems to be a tendency pointing towards the higher the use of Expository Teaching the higher the course grade maybe showing that students are more accustomed to this method of teaching and know what to expect and how to study for this level of evaluation.

The study's second aim was to ascertain how the complexity levels based on the Cognitive Domain on homework, project and examinations affect course grade. The academic term assessments usually begin with homework and some quizzes generally just before the midterm examinations. After some of the material has been covered, a project may be given followed by a final examination. Looking at the correlations depicted in Figure 1 it can be seen that the instructor using more Discovery Learning in class gets more ambitious with the level of complexity when assigning homework but on seeing the homework mark results may realize the students are struggling to cope at this level and so may opt to lower the assessment levels for the project while continuing with Discovery Learning. Correlations between project level of complexity and course grade as well as Discovery Learning and examination level of complexity do not come up significant signalling an area that may need further research. Only a slight significant negative relationship between complexity of level of examinations and course grade was found. This may point to students struggling when instructors use higher cognitive domain levels in examinations.

Again, when the results are taken from the perspective of Expository Teaching, it can be seen that the higher the use of Expository Teaching method in class, the lower the assessment level of homework given is and the students receive a higher course grade. So, in this case it seems the instructor using Expository Teaching gives out projects with complexity at the higher cognitive level after which the correlations between project level of complexity and course grade become insignificant. Again, further investigation is required.

As a result of these findings there may be a message to curriculum designers and instructors to determine the students' educational background and slowly introduce Discovery Learning from the first year of university. Where deemed necessary, instructors may be given in-house training to empower them to use this method more effectively and efficiently. Also when entering university, students' present cognitive domain level skills can also be determined and where necessary the upper cognitive domain skills such as comparing, contrasting (analysis), designing, developing (synthesis), criticizing and justifying (evaluation) can be incorporated within class time, again starting with year one, initially in homework and assignments. Extra class or tutorial time may be allocated for students to do rewrites after continuous feedback and encouragement from the instructors. This will take time, effort and practice for it to become a skill and may initially take time away from the actual subject matter being taught but hopefully the rewards of such activities will be reaped in later years. In order to allow for constant feedback for these skills to be assimilated by the student, preferably within the first year of university, curriculum designers and instructors need to also incorporate sufficient time for this to be able to happen within feasible class sizes.

Although there is a continuous rise in the number of new universities being established both in Turkey and North Cyprus, competition for students should not pressurize instructors to lower the level of cognitive complexity to allow for the average number of students to pass. Instead remedial strategies should be put into place to equip the

students with the necessary skills so they can reach and pass their assignments and examinations at the required cognitive level for higher education.

More in depth research by way of interviews with instructors need to be conducted to ascertain their struggles with Discovery Learning whether it be training requirements for themselves or based on students' requirements due to prior different educational backgrounds. With these modifications this esteemed higher educational institution will hopefully be better armed and ready to effectively and efficiently prepare and equip the new generation of educators with the relevant skills to help educate the following generation to also be able to compete in all fields nationally and globally, facilitate better national economy and have a higher standard of living.

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EFFICIENCY AND TENDENCY OF THE EDUCATIONAL COMPUTER GAMES IN EDUCATION: A DOCUMENT REVIEW

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ABSTRACT

The computer and internet technologies which show an immediate change and development, show its effect in educational field as well as all fields of life. One of the implementation areas of computer and internet technologies is the computer games. While the computer games provide recreational time to the users, it may provide environments for learning some information. Particularly, the usage of the computer games which the school-age children like every much and play without getting bored in education, is an important matter to be considered. The purpose of this study is to determine the efficiency and integration process of the educational computer games to educational environments on the basis of literature by reviewing within the frame of the performed studies. Therefore, 45 thesis and articles including the scientific studies and the educational computer games till 2015, have been analyzed with the document analysis method. It is found in the document analysis that educational computer games have positive results nearly in all studies. It is observed that it has positive effects on the academic successes, problem solving skills, motor skills and attitude, affective specifications like motivation and self-efficiency of the students.

Keywords: Educational computer games, integration, document analysis, computer aided education.

INTRODUCTION

Studies are made for a long time for the integration of education process and educational computer games (Altun, 2013), because, it may be provided to the students to learn with entertainment by using the computer games for education. It is required to provide maximum benefit from technology for obtaining permanent information and entertaining courses. As parallel to the developments in today's information and communication technologies, the computer games shows constant development (Tüzün, 2007). The insensible usage of computer games causes much time and effort loss particularly for the school-age children. From this point of view, the integration of the education and the computer games which the children spend much time and the amount of its benefit, is a major issue which is required to be researched.

As known, the game is an ongoing concept which bases on ancient era. Today, many adults spend most of their times by playing games (Karasan, 2013). To transfer the information and activities to the students through games, is an issue to be considered (Yeşilkaya, 2013). The perspective of the children who play educational games to their environment, world and life and they started to have a critical point of view. The child starts to question his environment and tries to evaluate as depending on the cause-effect relation. The child likes to know therefore he wants to play constantly and the games draw his attention (Fırat, 2011). Today, the adults and the children like computer games very much. The children generally play games in internet cafes due to the pressure and restrictions of the children. The addiction of the children for the computer games may be turned into an opportunity by being transported to class environment in educational game form.

Another point to be considered is the necessity of designing the games in the form that the children shall understand and play without getting bored. In the design of an educational games, the development specifications, individual differences, color tones, purpose of teaching the subject, self-evaluation of the child, the conformity of the behaviors shall be considered, because there are individual differences in the development levels of the children. The children have specific periods and these periods may be critical (Demiral, 2010). These critical periods may be intangible operational period or concrete operational period. Therefore, the development periods and stages are the important factors to be considered while designing and implementing the educational games. A sound basis of a modern education may be laid by providing the development of all kinds of physical, mental and psycho-motor by providing a good education to the children (Çağıltay, 2008).

The educators currently seek ways for including the educational games to the class studies (Su, 2008). In addition to this, there are many issues required to be considered before introducing the games to the class environment. Burenheide (2006) has determined six factors affecting the decisions of the teachers related with the usage of the games in class education:

    a.   *Curriculum:* Providing or not providing outsources and evaluations mentioned in the curriculum in game environment.

    b.   *Time:* To have wide curriculums and limited implementation time.

    c.   *Logical concerns- teacher focused:* The problems that may occur in the organization of the environment and providing the control of the students in the classroom environment where the game is used.

    d.   *Logical concerns- student focused:* Concerns related with the behaviors of the student during the activity (to make noise, not to sit down etc.).

    e.   *Concerns of students' learning:* Whether the game provides active learning.

    f.   *Concerns of students' satisfaction:* The feeling given by the educational games to the students, whether the game meets the needs like social interaction.

Different presentations of the information are needed in learning environment and opportunities must be created for providing this information in virtual word. Therefore the learning process must be supported and become easier (Pivec, 2007). However, the process must not be started before having the schools and teachers adapt to the ideas and techniques used in the new teaching methods. An unexpected technical failure may affect the motivations of the students. Therefore, the teacher must have the skill to solve the problems when needed. The digital games based learning is a new, unused approach in lifelong learning. While participating the students into this environment, the pedagogic experience shall be explained by making an orientation and the effects of a potential conflict that may arise from previous habits and experiences, must be minimized (Bakar, Tüzün, Çağıltay, 2008). If the games have a target for entering to the classes in schools, it must be used and loved by whole students. The game must be designed appropriately and must be designed according to the environment, a game environment with good scripts persuades the student groups for cooperation and orients the process.

Tüzün (2007), has mentioned about the high expectations of the students, the hardness of a logical harmony of the game environment and game fiction and the limitation conceptual frame by the students. However; he has expressed that the reliability of the infrastructure, efficiency and convenience of the information technologies shall be burden to the schools with limited budget. According to İnal (2007); the computer games shall have specifications that shall preserve the motivation in high level and shall attract the attention of the students. While providing the motivation, the educators shall consider to use the games for education, not for only entertainment. As can be understood from the literature, the computer games draw the attention of persons in all ages, particularly the children. This shows the importance of developing education computer games that shall turn the addition of children to the computer games into an opportunity. Therefore, the researchers are interested in the issue whether these games provide the learning and how much are these games efficient in education. From point of this view, the purpose of this study is to examine the integration process and efficiency of educational computer games to educational environment within the performed studies and to determine the confronted elements as depending on the literature. In this respect, the articles and dissertations till 2015 related with the educational computer games, are analyzed and the results are discussed.

METHOD

Document reviewing method is used in this study for determining the tendency in the scientific studies for educational computer games. The research is limited with master-doctoral dissertations and articles. Document reviewing is a technique which carries out the analysis of printed and written materials in a specific matter (Yildirim & Simsek, 2005).

Data Collection Tool

The literature search related with the educational computer games is made by using keywords like "game use in education", "integration of game play in Education", "game implementation in Education", "game-based learning", "educational computer games" and "educational games". The search of the scientific researches is made in database of Web of Science and Google Academic. The search is limited with the experimental studies. At the end of the searches, total 75 studies are achieved. As the result of the prior review, 45 of the articles and dissertations are taken for analysis. The articles are analyzed with the Article Information Collection Form which is developed by the researcher.

Analysis Of The Data

In the analysis of the data which are obtained through the document reviewing, frequency (f) and percentage (%) is used as descriptive statistics.

FINDINGS

The purpose of the studies which are examined in research and these researches, methods, examined themes and results are given in Table 1. When Table 1 is analyzed, it may be expressed that the results are found as positive almost in whole studies and the educational computer games have positive effect on the sub-themes. Then, it is

analyzed in terms of variables like yearly distribution of the studies, subject, participants, number of samples, research method and learning field. The obtained findings are given in graphics.

Table 1: The specifications of the studies which are analyzed in research

Author	Year	Aim of The Study	Method	Sample Size	Grade Level	Instrumentation	Examined Themes	Result
Offenbach	1964	To determine the effect of award and punishment in having pre-school and elementary school 4th grade students predict the most possible case by designing a game in probability.	Qualitative	60	Junior school	Achievement test	AS	Experiment group is more successful than control group
Polat ve Varol	2002	To analyze the effect of the hard, intangible, memorization-based subjects of Social Information course on the academic success with the education given by game.	Mixed	30	Junior school	Achievement test, survey	AS, AC	Experiment group is more successful than control group / Experiment group is more motivation than control group
Tüzün	2004	To identify the motivation elements for an online, multi-user educational computer game. To compare the experiences of the participants.	Qualitative	20	Secondary school	Observation, interview form	AC	Experienced students is more concerned than other
Danet	2004	To analyze Quest Atlantis (QA) games as an alternative educational tool. To measure the usability of a virtual environment for educational purpose.	Qualitative	7	Secondary school	Video recording, interview form	AC	Favorable
Altunay	2004	To determine the effect of game-supported mathematic education on the success of the students in courses and permanency of the learned information	Quantitative	67	Junior school	Achievement test	AS	Experiment group is more successful than control group
Şaşmaz Ören ve Avcı	2004	To analyze the educational games in science course on the academic success	Quantitative	33	Junior school	Achievement test	AS	Experiment group is more successful than control group
Mcechar n	2005	To analyze the effect of the games on the learning.	Quantitative	31	Undergraduate	Achievement test, survey	LA	Favorable
Kula ve Erdem	2005	To analyze the educational computer games on the basic arithmetical process skills	Mixed	46	Junior school	Achievement test, interview form	AS, AC	Male students is more successful than female students
Obut	2005	To analyze the effect of the educational games designed in computer environment on the learning level of students of elementary school 7th grade	Quantitative	70	Junior school	Achievement test	AS	Experiment group is more successful than control group

Tural	2005	To determine the effect of education with the games and activities on the attitude of the students against the mathematics in elementary school 3rd grade mathematic course	Quanti tative	52	Junior school	Achievem ent test, survey	AS, AC	Experiment group is more successful than control group
Zhang	2005	To compare the efficiency of the computer aided education method in teaching triangles with the traditional teaching methods.	Quanti tative	108	Secon dary school	Achievem ent test	AS	Indifferent
Hamalai nen ve diğ.	2006	To determine the effect of 3-dimensional game environments on the cooperative learning.	Mixed	24	Under gradua te	Survey, Achievem ent test, Video recording, interview form	LA	Favorable
Lim, Nonis ve Hedberg	2006	To determine the effect of playing 3-B multi-users games in virtual environment on the attractiveness of Science Course	Quanti tative		Junior school	Survey	AC	Favorable
Kızılkay a, Yılmaz-Soylu ve Tüzün	2006	To analyze the computer literacy of the university students in multi-user virtual environment	Quanti tative	53	Under gradua te	Achievem ent test, survey	AS, AC	Favorable
Neimey er	2006	To analyze whether the educational computer games have effect on the mathematical successes of the students	Quanti tative	50	Secon dary school	Achievem ent test	AS	Control group is more successful than experiment group
İnal ve Çağıltay	2007	To analyze the flow experience of the children within an interactive social game.	Mixed	33	Junior school	Observati on, survey	LA	Puzzle style games in male, story-style games in female is more effective than other
Yağız	2007	To analyze the effect of the educational computer games on the successes in computer course and computer self-efficiency of the elementary school students	Quanti tative	51	Junior school	Achievem ent test, survey	AS, AC	Indefferent
Tüzün	2007	To analyze the major issues and problems of the learning-purpose usages of video games (computer games) used in the classroom.	Mixed	77	Junior school , Secon dary school Under gradua te	Achievem ent test, interview form	AC	Favorable, Experiment group is more successful than control group
Bayırtep e ve Tüzün	2007	To analyze the effect of the educational computer games on the successes in computer course and computer self-efficiency perceptions of the elementary school students	Mixed	51	Secon dary school	Achievem ent test, survey, interview form	AS, AC	Favorable

Olson	2007	To determine whether the games have roles on developing the mathematical reasoning of the students	Qualitative		Junior school	Observation	RD	Favorable
Yağız	2007	To analyze the effect of the game-based learning environment on the successes in computer course and computer self-efficiency of the elementary school students	Quantitative	51	Junior school	Achievement test, survey	AS, AC	Favorable
Roberts on ve Howells	2007	To analyze the motivations and determination of 6th grade students by having them design their own games	Qualitative		Secondary school	Observation	AC	Favorable
Abrams	2008	To analyze the effect of the computer games related with mathematic on the motivation and successes of the elementary and secondary school students	Quantitative	75	Junior school, Secondary school	Achievement test, survey	AS, AC	Success: Indifferent Attitude: Experiment group is more successful than control group
Kebritchi	2008	To analyze the effect of mathematical games on the mathematical successes and motivations of the high school students	Quantitative	193	High school	Achievement test	AS, AC	Experiment group is more successful than control group Motivation is indiffirent
Bakar-H.Tüzün-K. Çağıltay	2008	To determine the opinions of the students related with the educational computer games in courses at formal training.	Qualitative	24	Secondary school	Interview form	AC	Experiment group is more motivation than control group
Virvou ve Katsionis	2008	To analyze the usability and lovability of the virtual reality games for the education	Qualitative	50	Secondary school	Interview form	AC	Experiment group is more effective than control group
Biriktir	2008	To present the interaction between the geometry teaching with game and the student	Quantitative	41	Junior school	Achievement test	AS	Experiment group is more successful than control group
Tatsis et all.	2008	To determine the thoughts of the children related with whether these games are fair by designing two games consisting of probability concepts for the pre-school	Qualitative		Kindergarten	Interview form	AC	Favorable
Erkuş	2008	To present whether the computer games with single user have effect on the word learning for university students.	Mixed	70	Undergraduate	Survey, interview form	AS	Indiffirent
Tüzün, Yılmaz-Soylu, Karakuş, İnal ve Kızılkaya	2009	To analyze a computer game for geography learning for elementary school students	Quantitative	24	Junior school	Achievement test, survey	AS, AC	Experiment group is more intrinsic motivation than control group

Avcı, Sert, Özdinç, Tüzün	2009	To determine the usage effects of the education computer games in information technologies course	Quantitative		Junior school	Achievement test	AS	Favorable
Malta	2010	To analyze effect of the educational computer games on the academic successes of the students	Quantitative		Secondary school	Achievement test	AS	Indiffirent
Demiral	2010	To analyze the effect of judo educational games on the psycho-motor skills in the children between 7-12 years old who learn judo.	Mixed	69	Junior school	Test form of motor skills	MS	Favorable
Long ve Frankie	2010	To develop the mathematical problem solving of the students with digital game design process.	Mixed		Secondary school	Survey, interview form	AC	Experiment group is more successful than control group Experiment group is more attitude and motivation than control group
Baytak ve Land	2010	To provide nutrition habits to the students by having the students design an education game -.	Qualitative		Junior school	Observation	AC	Favorable
İnal	2011	Physical interactive educational game design for children; to determine the design principles	Mixed	50	Secondary school	Achievement test, survey, Observation	AS, AC	Favorable
Güler	2011	To analyze the effect of educational games on academic achievement of 6th grade students on the topic of " Cell and its organelles"	Quantitative	50	Secondary school	Achievement test	AS	Experiment group is more successful than control group
Fırat	2011	To examine the effect of computer assisted instructional games on conceptual knowledge regarding some concepts of the topic of probability.	Quantitative	90	Junior school	Achievement test	AS	Experiment group is more successful than control group
Canbay	2012	To examine the effect of educational games on self-regulated learning strategies, motivational beliefs and academic achievements of 7th grades.	Mixed	52	Secondary school	Survey, Achievement test, interview form	AS, AC, LA	Experiment group is more successful than control group Experiment group is more motivation than control group
Yıldırım	2012	To analyze the effect of educational mobile games , independent from time and space and more flexible in terms of learning compared with educational computer games, on academic achievement of elementary school students	Mixed	82	Secondary school	Survey, Achievement test, interview form	AS, AC	Experiment group is more successful than control group Experiment group is more motivation

							than control group
Altunay	2013	The analyze effect of educational games treated regularly on problem solving skill of children from 11-12 age group.	Quantitative	60	Secondary school	Survey	PSS	Experiment group is more successful than control group
Duman	2013	To determine the effect of educational games on children's attitudes towards fine arts.	Mixed	40	Junior school	Achievement test, survey, Observation	AS, AC	Favorable
Yeşilkaya	2013	To determine the effect of educational games on 7th graders' academic achievement and attitudes toward social sciences studied the topic of "science over time"	Quantitative	50	Secondary school	Achievement test, survey	AS, AC	Indiffirent
Kızılkaya, Cumaoğlu	2014	To examine the effect of using different educational software for word teaching on students' academic achievements and word learning strategies word teaching. (Tutorials and educational games)	Quantitative	68	Secondary school	Achievement test, survey	AS, LA	Favorable
Bulut	2015	To examine effect of educational games designed by 5th and 6th graders through blended learning method on creative thinking skill.	Mixed	23	Secondary school	Survey, Observation	AC	Favorable

Examined Themes: Affective Characteristics (motivation, attitude, self-confidence): AC
Problem Solving Skills: PSS
Academic Success: AS
Learning Approach : LA
Reasoning Development: RD
Motor Skills: MS

Distribution of studies published on Journals by years
The distribution of studies examined is given on the figure 1. It can be seen that empricial studies regarding educational games mostly were published on 2007 (21%) and 2008 (18%). Until 2011 this topic was preferred by researchers; however it lost its popularity in subsequent years. This finding shows that the effects and educational aspects of educational computer games have been discussed mostly between the years of 2005-2011.

Figure 1. The yearly distribution of the analyzed researches

The distribution of the researches based on participants

The distribution of target group in studies examined is given on the figure 2. It can be seen that from the figure 2, researchers have preferred mostly to work with elementary school students (43%) and secondary school students (41%). This finding shows that educational games mostly used in elementary and secondary school level. It is also found that the topic that will be gamificated is chosen based on easy fictional and requiring simple operations. Moreover, when age groups are considered, it can be said that mostly students aged 9-14 were mostly preferred to work with.

Figure 2. Distribution of the researches according to participants

Data Collection Tools used in the research

Data collection techniques used in the framework of research methods is given in the figure 3. It shows that researcher mostly have used academic achievement test (40%) and questionnaire (29%) which are quantitative data collection tools. In most of researches, control group pretest - posttest experimental design was chosen. The difference between participants' academic achievement, and affective characteristics including attitudes and motivations were mostly examined in researches. The figure shows the percentages of using interviews in researches is 20.

Figure 3. Data collection tools used in analyzed researches

The distribution of topics analyzed in researches.
The topics analyzed in researches are given on the figure 4. The issues handled in researches can be divided into six categories; academic achievements, affective characteristics (motivation, attitude and self-confidence), the effect of learning approach, developing reasoning, problem solving skills and motor skills. The figure 4 shows that the most examined issued are academic achievement (44%) and affective characteristics (40%). In addition, the development of reasoning, problem solving and motor skills have been also examined.

Figure 4. Examined issues

DISCUSSION AND RESULT
In this study, 45 theses and articles cover in scientific studies conducted about educational computer games until 2015 by document analysis method and it is found that educational computer softwares provide positive results. It is seen that educational computer software has positive effect on students' academic achievements, problem solving skills, motor skills and affective characteristics including attitude, motivation and self- sufficiency. Moreover, the target population is mostly preferred as elementary and secondary school students. In most of studies, quantitative data collection tools including academic achievement test and questionnaire have been used. There are limited number of qualitative researches.

As a result of document analysis, it is concluded that educational computer games may help to learn abstract concepts that are difficult to learn and to establish more powerful relational connections among them.

As a result of researches and literature analysis conducted, it is found that design elements of educational computer software has impact on learning. It is also seen during treatment some problems aroused due to limited time, technological infrastructure and participants' behaviors and attitudes. Moreover, it is also found that in the integration process of technology and rich educational innovation to formal education, some factors including technological infrastructure compliance, plan and preparation, teacher training, orientation, increasing in workload of teachers, technical support and guidance should be considered. About the design of education software, some problems aroused about necessary financial resources and time, fictionalization of a pedagogically good story, high expectation of users and orientation of users into game environment. It is also seen that students have high expectations on game-based learning environment.

The integration process of computer based environment into educational environment has four components such as pedagogical aspect, technical infrastructure aspect, students and teacher and student size and peer-to-peer size. There are some issues to be considered in the design process of the model to be developed by considering these components. One of them is to develop flexible education programs which provide opportunity for using computer games because implementing educational games to the traditional education programs, is a hard process. Another issue is that the computer games must be designed within the frame of updated learning approaches because the updated learning approaches adopt the progressivism in educational philosophy and this student-centered educational philosophy takes the student to the center and designs the process accordingly. Therefore, in the design of the complex technology implementations such as computer games used in educational environment, the classic design methods such as ADDIE are insufficient. Updated methods like design-based research method which shall make contribution to both design and research of these kind of technologies in developing such environments. The individual difference must be considered and the design shall be made by considering the individual specifications of the student. To implement the educational computer games into class environment is a hard process. In-service trainings for using the computer games in class environments, should be given to the teachers who have major responsibilities in this process. Besides, it is obligatory for the game environment and the game fiction to have a logical harmony. The designers must spend more time in design process by considering such cases.

Under the light of this information, below suggestion may be provided.

- The educational computer games shall be designed by considering the individual specifications of the students.
- The educational computer games shall be designed within the frame of updated learning theories.
- The educational computer games shall be in the qualification that shall provide upper level thinking skills to the students.
- The researches which select the university students as the participants, may provide more different sizes for the educational computer games.
- It maybe suggested to use qualitative tools like observation form, interview form rather than quantitative data collection tools in the studies to be performed.

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EGZERSİZ ÖZ YETERLİK VE EGZERSİZ DAVRANIŞI DEĞİŞİM BASAMAĞI DÜZEYLERİNİN ÜNİVERSİTE ÖĞRENCİLERİNDE İNCELENMESİ

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ÖZET

Üniversite öğrencilerinin fiziksel aktivite yapmaya etkili olan egzersiz öz yeterlilik düzeylerinin incelenmesi ve öğrencilerin kuramlar üstü modele göre egzersiz davranış değişim basamaklarının belirlenmesini amaçlayan çalışmada yaşları 17 ile 27 yıl arası değişen Akdeniz Üniversitesi'nde 2012-2013 akademik yılında eğitim gören ve seçmeli beden eğitimi dersi alan 400 öğrenci gönüllü olarak yer almıştır. Çalışmaya katılan öğrencilerin 199'u erkek (% 49.8), 201'i kadın (%50.2) öğrencilerden oluşmaktadır.Veri toplama aracı olarak araştırmacı tarafından Nigg ve Courneya (2001) tarafından geliştirilen "Egzersiz Öz Yeterlik Anketi ve Marcus ve Lewis (2003) tarafından geliştirilen "Egzersiz Davranışı Değişim Basamakları Anketi" (EDDBA) kullanılmıştır. Yapılan istatistiksel analizde aktif olan erkek öğrencilerin (hareket ve devam grupları), olumsuz etki (Z=-4.33, p<.001), tek başına egzersiz (Z=-2.24, p=.025) ve diğer bireylerden hissedilen baskı (Z=-2.85, p=.004) alt boyutlarında aktif olmayan (eğilim öncesi ve eğilim grupları) erkek öğrencilere göre istatistiksel olarak anlamlı düzeyde daha yüksek öz yeterliğe sahip oldukları belirlenmiştir. Kadın öğrencilerde yapılan istatisitksel analiz sonucunda aktif olan (hareket ve devam grupları) kadın öğrencilerle, aktif olmayan (eğilim öncesi ve eğilim grupları) kadın öğrenciler arasında tek başına egzersiz (Z=-3.10, p=.002) ve diğer bireylerden hissedilen baskı (Z=-3.81, p<.001) alt boyutlarında istatistiksel olarak anlamı fark olduğu, diğer alt boyutlarda aktif ve aktif olmayan gruplar arasında anlamlı fark olmadığı belirlenmiştir.Aktif grupta yer alan kadın öğrencilerin egzersize katılım açısından tek başına egzersiz yapma ve diğer bireylerden hissedilen baskı karşısında egzersiz öz yeterliklerinin yani egzersize katılma ve devam etme güven duygularının daha yüksek olduğu bulunmuştur.

Anahtar Kelimeler: Üniversite Öğrencileri, Kuramlar üstü Model, Egzersiz Davranış Değişimi Basamakları, Egzersiz öz-yeterlik

AN EXAMINATION OF STAGE OF EXERCISE BEHAVIOR CHANGE AND EXERCISE SELF - EFFICACY IN UNIVERSITY STUDENTS

ABSTRACT

The aim of present study was to examine exercise self-efficacy level of university students and to determine their stage of exercise behavior according to transtheoretical theories. Participants were 400 students (199 men and 201 women) who were studying in Akdeniz University in and took elective physical education courses in 2012-2013 academic years. All the students voluntarily took part in present study. Stage of Exercise Behavior Change Questionnaire, developed by Marcus and Lewis and Exercise Self-Efficacy Questionnaire, developed by Nigg and Courneya applied to the participants in classroom setting. Results of statistical analyses revealed that the active men students (in the stage of action and maintenance) had higher self-efficacy sub scale scores in negative affect (Z=-4.33, p<.001), must exercise alone (Z=-2.24, p=.025) and resistance from others (Z=-2.85, p=.004) than the non-active men students (in the stage of pre-contemplation and contemplation).

Statistical analyses in women students showed that there were significance differences between the active (in the stage of action and maintenance) and non-active (in the stage of pre-contemplation and contemplation) women students in must exercise alone (Z=-3.10, p=.002) and resistance from others (Z=-3.81, p<.001) self-efficacy sub scale. Women students in the active group had higher scores in must exercise alone and resistance from others elf efficacy sub scale than non-active counterparts. Active men and active women students had higher self - confidence for participating and maintaining exercise behavior.

Keywords: University students, Exercise Participation, Exercise self-efficacy, stage of exercise behavior change

GİRİŞ

İnsanın hareket etme becerisi her ne kadar hayvanlarla benzeşik olsa da aklıyla birleşerek yaşam kalitesini ve sürecini kendi lehine çevirmesine yardımcı olmuştur. Tarihi evrimi içinde hareket yeteneği, karnını doyurma, korunak yapma, yabancı hayvanlara karsı savunma ihtiyaçlarını karşılarken, daha sonraları beğenilme, takdir edilme ve yeteneğini en üst düzeye çıkartmayla sonuçlanan taşıyıcı bir rol üstlenmiştir. Bir yönüyle insanın hareket etme evrimi sporun da mazisini oluşturmaktadır. Fizik aktivite, iskelet kaslarının kasılması sonucunda üretilen, bazal düzeyin üzerinde enerji harcamayı gerektiren bedensel hareketlerdir. Egzersiz, fizik aktivitenin alt

sınıfı olarak kabul edilir. Planlı yapılandırılmış, istemli, fiziksel uygunluğun bir ya da bir kaç unsurunu geliştirmeyi amaçlayan sürekli aktivitelerdir. Egzersizin amacı oksijen dağılımını ve metabolik süreçleri yoluna koymak, kuvveti, dayanıklılığı geliştirmek, vücut yağını azaltmak, kas-eklem hareketlerini iyileştirmektir. Haftada 3 kez, 20 dakika ve yukarısı bir egzersiz yeterlidir. Haftada 5 kere ya da daha fazla seanslar için 15-25 dakikalık süreler üst düzey yarar sağlar (O'Connor, 1994). Son zamanda yapılan araştırmalarda fiziksel aktivite ve sağlık arasındaki ilişkisi farklı alanlardaki birçok araştırmacı tarafından ele alınıp incelenmiştir. Hareketsiz ya da sedanter yaşamın sağlık sorunları arasında önemli bir şekilde yer bulması, insanların egzersize katılım ve bağlanmaları ile ilgili dünya çapındaki projelere önem verilmesine yol açmıştır. Bireyin fiziksel aktiviteye başlaması, devam etmesi veya ayrılmasının altında yatan nedenlerin açık olarak belirlenmemesi, bu nedenlerin çok faktöre bağlı olması, bu alanda çalışmaya yapanları çok değişik teori ve araştırma dizaynı kullanmaya itmiştir. Fiziksel aktiviteye yönelik tutumunun, fiziksel aktivite yapma istekliliğinin veya niyetinin, katılıcının algıladığı yarar veya engellerin hangisinin, kişinin fiziksel aktiviteye başlaması, devam ettirmesi veya ayrılmasında daha çok belirleyici olduğu ile ilgili net kanıtlar bulunmamaktadır (Lankenau, Solari, Pratt, 2004).

Egzersiz davranışını açıklamaya yönelik birçok model ortaya konmuştur. Bu modellerden biri olan Kuramlar Üstü Model (Transtheoretical model) son yıllarda bireylerin egzersiz davranışının belirlenmesi ve açıklanmasında sıklıkla kullanılmaktadır ve bireyin sağlık davranışındaki değişimi basamak temelli olarak açıklamaktadır (Lewis ve ark., 2013). Kuramlar Üstü Model, fiziksel aktivite ve egzersiz alanında bir çok araştırmacı tarafından incelenmiştir (Marshall ve Biddle, 2001; Barry &Howe, 2005, Spencer ve ark., 2006). Kuramlar Üstü Model beş basamaktan oluşan egzersiz davranışı değişim basamaklarını içermektedir. Bu basamaklar; Eğilim Öncesi, Eğilim, Hazırlık, Hareket ve Devamlılık basamağıdır. Kuramlar Üstü Modele göre kişinin egzersiz davranış basamaklarında ilerlemesinde etken olacak veya bireyin egzersiz davranışını sürdürme ya da değiştirme karar sürecinde etken olan egzersizin olumlu veya olumsuz yönlerini algılama arasındaki egzersize karar verme dengesi, değişim süreçleri (process of change) ve özyeterlik (self-efficacy) kavramları ele alınmıştır (Plotnikoff ve diğ., 2001).

Egzersize katılımın genç bireylerde birçok faydasının olduğu ortaya konulmuştur. Egzersizin olumlu sağlık etkilerinin yanında, egzersize motivasyonel bağlılık sıklıkla ele alınan konulardır. Dishman'a göre egzersize başlayan bireylerin % 50'si ilk 3-6 ay arasında egzersizi bırakmaktadırlar. Robison ve Rogers benzer sonuçların çocuklar, gençler, orta yaşlılar ve yaşlılar da görüldüğünü belirtmiştir (Introduction 1). Üniversitelerin değişen koşullarına bağlı olarak öğrencilerin öz yeterlilikleri yaşam doyumları ve buna bağlı yaşam amaçları farklılık göstermektedir. Günümüz koşullarında analitik, eleştirel, objektif, yaratıcı, yansıtıcı düşünen bireyler yetişmesi üniversitelerin misyonlarından biridir. Çalışmanın amacı, Beden Eğitimi ve Spor Yüksekokulu dışında kalan üniversite öğrencilerinin egzersiz öz yeterlik düzeyleri ve egzersiz davranış değişim basamaklarının incelenmesi, genel öz yeterlilik ile karşılaştırılması çalışmanın amacını oluşturmaktadır.

YÖNTEM
Çalışmaya Akdeniz Üniversitesi'nde 2012-2013 akademik yılında eğitim gören ve daha önce spor faaliyetlerinde aktif olarak katılımı bulunmamış seçmeli beden eğitimi dersi alan 400 öğrenci (199 erkek ve 201 kadın) gönüllü olarak katılmıştır. Veri toplama aracı olarak Nigg ve Courneya (2001) tarafından geliştirilen "Egzersiz Öz Yeterlik Anketi ve Marcus ve Lewis (2003) tarafından geliştirilen "Egzersiz Davranışı Değişim Basamakları Anketi" (EDDBA) kullanılmıştır.

Nigg ve Courneya (2001) tarafından geliştirilen Egzersiz Öz Yeterlik anketi; katılımcıların farklı durumlarda egzersize devam edebilme yeteneği ile ilgili güven düzeyini ölçmekte ve 18 madde ve 6 alt boyuttan (Olumsuz Etki, Mazeret Üretme, Tek Başına Egzersiz Yapabilme, Malzeme Seçimi, Diğer Bireylerden Hissedilen Baskı ve Kötü Hava) oluşmaktadır. Her alt boyut üç maddeden oluşmaktadır. Alt boyutların iç tutarlık katsayıları (cronbach alfa değerleri) .77 ile .87 arasında değişmektedir. Her madde beşli likert ölçekte değerlendirilmektedir (1= hiç güvende hissetmem, 5= çok güvende hissederim). Öz yeterlilik anketinin maddelerinin toplamı için Cronbach alfa değeri. 94 olarak bulunmuştur (Nigg ve Courneya, 2001). Anketin Türkçe versiyonunun geçerliği ve güvenirliği bir ön çalışma ile test edilmiştir. 247 egzersiz katılımcısı üzerinde yapılan çalışmada orijinal ölçekte yer alan altı faktör yapısı desteklenmiştir ve ankette yer alan maddeler anketin %80.20'sini açıklamaktadır. Öz yeterlik anketinin alt boyutlarının iç tutarlık değerleri. 78 ile .93 arasında değişmektedir (Miçoğulları, 2008).

Marcus ve Lewis (2003) tarafından geliştirilen "Egzersiz Davranışı Değişim Basamakları Anketi" (EDDBA) kişinin egzersiz davranışı basamaklarını belirlemeyi amaçlamaktadır. Katılımcıların egzersiz yapmaya yönelik isteklerinin belirlenmeye çalışıldığı ankette yer alan dört maddeye evet/hayır şeklinde cevap verilmektedir. Bireylerin egzersiz yapma niyetleri ve egzersize katılma alışkanlıkları, maddelere verdikleri yanıtlara göre beş ayrı egzersiz davranışı basamağına ayrılmaktadır: Eğilim Öncesi, Eğilim, Hazırlık, Hareket ve Devamlılık (Marcus ve Lewis, 2003). EDDBA'nın Türkçe versiyonuna ait geçerlik ve güvenirlik çalışması Cengiz ve

diğerleri (2010) tarafından yapılmıştır. Anketin kriter geçerliğinin sınanmasına yönelik Cengiz ve diğerleri (2010) tarafından yapılan analizler anketin kirter geçerliğini destekler niteliktedir. Ayrıca, anketin güvenirliği için yapılan test-tekrar test değeri (ICC=.80) yüksek bulunmuştur (Cengiz ve ark., 2010).

Çalışma Akdeniz Üniversitesi yerleşkesinde bulunan ve öğrencilerin daha çok etkinlik alanında olduğu bölgelerde uygulanmıştır. Anketin güvenirliği anketin yapıldığı bölgede ki ciddiyetle orantılı olup öğrencilerin olumlu tepkileri ile karşılanmıştır. Uygulama esnasında herhangi bir zorlukla karşılaşılmamış olup, samimi ve sohbet ortamında kişilerin sıkılmadan ve rahatça katılımı sağlanmıştır. En çok katılım Olbia Kültür Merkezi ve Yakut çarşısında olmuştur. Anket birebir görüşme yoluyla uygulanmıştır.

Elde edilen veriler Microsoft Office 2010 Excel programı ile elektronik ortama aktarılmıştır. İstatistiksel işlemler SPSS 16.0 paket programında gerçekleştirilecektir. Elde edilen verilerin ortalama, standart sapma ve tanımlayıcı istatistikleri hesaplanmış. Kolmogrov-Smirnov normalite testi ile normal dağılım düzeyi kontrol edilmiştir. Değişkenlerin normal dağılım göstermediği belirlenmiş, bundan dolayı da cinsiyet ve aktif ve aktif olmayan grupların arasındaki farklarının belirlenmesi için Ki-kare ve Mann-Whitney-U testleri kullanılmıştır. Anlamlılık düzeyi α=0.05 olarak kabul edilmiştir.

BULGULAR

Üniversite öğrencilerinin fiziksel aktivite yapmaya etkili olan egzersiz öz yeterlilik düzeylerinin incelenmesi ve öğrencilerin kuramlar üstü modele göre egzersiz davranış değişim basamaklarının belirlenmesini amaçlayan çalışmaya yaşları 17 ile 27 yıl arası değişen Akdeniz Üniversitesinde 2012-2013 akademik yılında eğitim gören ve seçmeli beden eğitimi dersi alan 400 öğrenci gönüllü olarak yer almıştır. Çalışmaya katılan öğrencilerin 199'u erkek (% 49.8), 201'i kadın (%50.2) öğrencilerden oluşmaktadır. Erkeklerin yaş ortalaması 20.64±1.56 yıl, kadınların yaş ortalaması 20.49±1.42 yıl olduğu ve erkek ve kadınlar arasında yaş açısından istatistiksel olarak anlamlı fark olmadığı belirlenmiştir (Z=-.651, p=.52).

Çalışmaya yer alan erkek ve kadın öğrencilerin fakülte ve yüksekokul/meslek yüksekokul dağılımı Tablo 1' de verilmiştir.

Tablo 1. Erkek ve kadın öğrencilerin fakülte ve yüksekokul/meslek yüksekokul dağılımı

Fakülte-Yüksekokul / Meslek Yüksekokulu	Erkek (n=199)	Kadın (n=201)
	% (f)	% (f)
Edebiyat Fakültesi	%2 (4)	%3.5 (7)
Eğitim Fakültesi	%8.5 (17)	%13.4 (27)
Fen Fakültesi	%5 (10)	%6.5 (13)
Güzel Sanatlar Fak.	%6.5 (13)	%7.5 (15)
Hukuk Fakültesi	%5 (10)	%3.5 (7)
İletişim Fakültesi	%7 (14)	%7 (14)
İ.İ.B. F.	%9.5 (19	%7.5 (15)
Mühendislik Fakültesi	% 2 (4)	% 2.5 (5)
Antalya Sağlık Y.O.	%3 (6)	%8 (16)
SBMYO	%6 (12)	%10 (20)
Su Ürünleri Fakültesi	%4.5 (9)	%4.5 (9)
TBMYO	%17.1 (34)	%4.5 (9)
Tıp Fakültesi	%5 (10)	%5 (10)
Turizm Fakültesi	%11.1 (22)	%11.4 (23)
Ziraat Fakültesi	%7.5 (15)	%5.5 (11)

Tablo 1. incelendiğinde çalışmada yer alan erkek öğrencilerin %17.1'inin (n=34), Teknik Bilimler Meslek Yüksekokulunda (TBMYO), %11.1'nin ise Turizm Fakültesinde öğrenim gördüğü belirlenmiştir. Kadın öğrencilerin ise %13.4'ü Eğitim Fakültesinde, % 11.4'ünün ise Turizm Fakültesinde öğrenim gördüğü tespit edilmiştir.
Çalışmada yer alan erkek ve kadın öğrencilerin "üniversite içerisinde sunulan egzersiz ve spor yapma olanaklarını nasıl buluyorsunuz?" sorusuna verdikleri cevaplar tablo 2' de verilmiştir.

Tablo 2. Erkek ve kadın öğrencilerin "üniversite içerisinde sunulan egzersiz ve spor yapma olanaklarını nasıl buluyorsunuz?" sorusuna verdikleri cevaplar

Üniversite içerisinde sunulan egzersiz ve spor yapma olanaklarını nasıl buluyorsunuz?	Erkek (n=199)	Kadın (n=201)
	% (f)	% (f)
Çok Yeterli	%7 (14)	%8 (16)
Yeterli	%44.7 (89)	%30.8 (62)
Fikrim yok	%20.1 (40)	%34.8 (70)
Yetersiz	%24.1 (48)	%19.4 (39)
Çok Yetersiz	%4 (8)	%7 (14)

Öğrencilerin egzersiz ve spor olanakları ile ilgili görüşlerinin frekans (f) yüzdelik (%) değerleri incelendiğinde, Erkeklerin %44.7'si (n=89) bu olanakları yeterli bulduğu, %24.1 (n=48) ise olanakları yetersiz bulmuştur. Kadın öğrenciler in %30.8'i (n=62) üniversite içerisinde sunulan spor ve egzersiz yapma olanaklarını yeterli bulurken, %34.8'i (n=70) fikrinin olmadığını belirtmiş, %19.4'ü (n=39) ise spor ve egzersiz olanaklarını yetersiz bulmuştur.
Çalışmaya katılan öğrencilerin egzersiz davranışı Egzersiz Davranışı Değişim Basamakları Anketine verdikleri cevaplara göre Eğilim öncesi, Eğilim, Hazırlık, Hareket ve Devam gruplarına ayrılmıştır. Erkek ve kadın öğrencilerin anket sonucunda grup dağılımları tablo 3'de verilmiştir.

Tablo 3. Erkek ve kadın öğrencilerin Egzersiz Davranışı Değişim Basamakları Anketine verdikleri cevapların dağılımı

			CİNSİYET		
			Erkek	Kadın	Toplam
EGZERSİZ DAVRANIŞI DEĞİŞİM BASAMAKLARI	Eğilim Öncesi	f	47	84	131
		%	%23,6	%41,8	%32,8
	Eğilim	f	24	32	56
		%	%12,1	%15,9	%14,0
	Hazırlık	f	48	47	95
		%	%24,1	%23,4	%23,8
	Hareket	f	29	15	44
		%	%14,6	%7,5	%11,0
	Devam	f	51	23	74
		%	% 25,6%	%11,4	%18,5
Toplam		f	199	201	400
		%	%100,0	%100,0	%100,0

Çalışmada yer alan öğrencilerin egzersiz davranış değişim basamaklarında durumu incelendiğinde erkeklerin %23.6'sının (n=47), kızların ise %41.8'inin Eğilim öncesi aşamasında olduğu belirlenmiştir. Eğilim aşamasındaki dağılım incelendiğinde ise erkeklerin %12.1'inin (n=24), kadınların ise %15.9'nun (n=32) bu aşamada olduğu tespit edilmiştir. Egzersize hazırlık aşamasında olan erkeklerin oranının %24.1 (n=48), kadınların oranının ise %23.4 (n=47) olduğu ortaya çıkmıştır. Hareket aşamasında ise erkeklerin %14.6 (n=29), kadınların ise %7.5'i yer almaktadır. Erkeklerin %25.6'sı (n=51), kadınların ise %11.4'ü (n=23) altı aydan daha uzun bir süredir egzersiz yapmaya devam edildiğinde bireyin geçtiği devam aşamasında olduklarını belirtmişlerdir.

Erkek ve kadınların egzersizin değişim basamaklarına göre karşılaştırılması Ki-kare testi ile gerçekleştirilmiştir. Yapılan istatistiksel analiz sonucunda göre egzersiz değişim aşamaları anketine göre gerçekleştirilen dağılımlar açısından cinsiyet farklılığını anlamlı olduğu belirlenmiştir [X^2(3,N=400)=26.644, p<.001]. Erkekler egzersiz değişim basamaklarında yaklaşık olarak eşit dağılım gösterirken en yüksek dağılımın devam (%25.6) aşamasında olduğu, kadınlarda büyük çoğunluğunun (%41.8) eğilim öncesi dönemde olduğu belirlenmiştir.

Çalışmanın ikinci bölümünde egzersize katılımda etkili olduğu düşünülen egzersiz öz yeterlilik puanları cinsiyet faktörüne göre incelenmiştir. Erkek ve kadın öğrencilerin egzersiz öz- yeterlik anketinin alt boyutlarından elde ettikleri puanların Ortalama (Ort) ve Standart Sapma (SS) değerleri tablo 3.5'de verilmiştir.

Tablo 4. Erkek ve kadın öğrencilerin egzersiz öz- yeterlik anketinin alt boyutlarından elde ettikleri puanların Ortalama (Ort) ve Standart Sapma (SS) değerleri

Egzersiz Öz-Yeterlik	Erkek			Kadın	
	ORT	SS		ORT	SS
Olumsuz Etki	8.4	3.1	Z=-3.37, p=.001	7.4	3.2
Mazeret Üretme	8.3	2.7	Z=-2.39, p=.017	7.6	2.9
Tek Başına Egzersiz	10.1	2.7	Z=-3.69, p<.001	8.9	3.1
Malzeme Seçimi	8.6	2.9	Z=-1.65, p=.098	8.0	2.9
Diğer Bireylerden Hissedilen Baskı	9.1	3.0	Z=-2.77, p=.006	8.2	3.0
Kötü Hava	7.8	3.6	Z=-2.48, p=.013)	7.0	3.5

Cinsiyetler arası fark incelendiğinde erkek ve kadın öğrenciler arasında egzersiz öz-yeterlik alt boyutlarında, olumsuz etki (Z=-3.37, p=.001), mazeret üretme (Z=-2.39, p=.017), tek başına egzersiz (Z=-3.69, p<.001), diğer bireylerden hissedilen baskı (Z=-2.77, p=.006) ve kötü hava (Z=-2.48, p=.013) istatistiksel olarak anlamlı fark olduğu belirlenmiştir. Erkek ve kadınlar arasında malzeme seçimi alt boyutunda anlamlı fark olmadığı belirlenmiştir (p>.05).
Yapılan analiz sonucunda erkek öğrencilerin olumsuz etki, mazeret üretme, tek başına egzersiz, diğer bireylerden hissedilen baskı ve köt hava şartlarında egzersize devam için öz yeterliliklerinin kadın öğrencilere göre daha yüksek olduğu belirlenmiştir (p<.05)

Şekil 1. Erkek ve kadınların Egzersiz Öz Yeterlilik Anketinin alt boyutundan elde ettikleri değerler

Çalışmanın ikinci aşamasında egzersiz değişim basamaklarına göre erkek ve kadın öğrencilerin egzersiz öz yeterlik düzeyleri incelenmiştir. Egzersiz öz yeterlilik cinsiyet karşılaştırmasında anlamlı farklılık olması nedeniyle egzersiz değişim basamaklarındaki gruplar erkek ve kadın olarak ayrı ayrı incelenmiştir. Yapılan istatistiksel analizde aktif olan erkek öğrencilerin (hareket ve devam grupları), olumsuz etki (Z=-4.33, p<.001), tek başına egzersiz (Z=-2.24, p=.025) ve diğer bireylerden hissedilen baskı (Z=-2.85, p=.004) alt boyutlarında aktif olmayan (eğilim öncesi ve eğilim grupları) erkek öğrencilere göre istatistiksel olarak anlamlı düzeyde daha yüksek öz yeterliğe sahip oldukları belirlenmiştir.

Şekil 2. Aktif ve Aktif olmayan erkek öğrencilerin egzersiz öz yeterlilik değerleri

Kadınlarda farklı egzersiz değişim basamağındaki öğrencilerin egzersiz öz yeterlik puanları incelendiğinde ise aktif olan (hareket ve devam grupları) kadın öğrencilerle, aktif olmayan (eğilim öncesi ve eğilim grupları) kadın öğrenciler arasında tek başına egzersiz (Z=-3.10, p=.002) ve diğer bireylerden hissedilen baskı (Z=-3.81, p<.001) alt boyutlarında istatistiksel olarak anlamı fark olduğu, diğer alt boyutlarda aktif ve aktif olmayan gruplar arasında anlamlı fark olmadığı belirlenmiştir (Şekil 3).Aktif grupta yer alan kadın öğrencilerin egzersize katılım açısından tek başına egzersiz yapma ve diğer bireylerden hissedilen baskı karşısında egzersiz öz yeterliklerinin yani egzersize katılma ve devam etme güven duygularının daha yüksek olduğu bulunmuştur.

Şekil 3. Aktif ve Aktif olmayan kadın öğrencilerin egzersiz öz yeterlilik değerleri

TARTIŞMA
Bu çalışmanın amacı, Prochaska ve DiClemente tarafından 1984 yılında egzersiz davranışının açıklanması ve belirlenmesi amacı ile önerilen Kuramlar Üstü Model (KÜM) göz önünde bulundurularak, üniversite öğrencilerin egzersiz öz-yeterliklerinin egzersiz davranışı değişim basamaklarına ve cinsiyet faktörüne göre karşılaştırılmasıdır. Akdeniz Üniversitesinde 2012-2013 akademik yılında eğitim gören ve seçmeli beden eğitimi dersi alan 400 öğrenci gönüllü olarak yer almıştır. Çalışmaya katılan öğrencilerin 199'u erkek (% 49.8), 201'i kadın (%50.2) öğrencilerden oluşmaktadır.

Çalışmada yer alan öğrencilerin egzersiz davranış değişim basamaklarında durumu incelendiğinde erkeklerin %23.6'sının (n=47), kızların ise %41.8'inin Eğilim öncesi aşamasında olduğu belirlenmiştir. Eğilim aşamasındaki dağılım incelendiğinde ise erkeklerin %12.1'inin (n=24), kadınların ise %15.9'nun (n=32) bu aşamada olduğu tespit edilmiştir. Egzersize hazırlık aşamasında olan erkeklerin oranının %24.1 (n=48), kadınların oranının ise %23.4 (n=47) olduğu ortaya çıkmıştır. Hareket aşamasında ise erkeklerin %14.6 (n=29), kadınların ise %7.5'i yer almaktadır. Erkeklerin %25.6'sı (n=51), kadınların ise %11.4'ü (n=23) altı aydan daha uzun bir süredir egzersiz yapmaya devam edildiğinde bireyin geçtiği devam aşamasında olduklarını belirtmişlerdir.

Cinsiyetler arası fark incelendiğinde erkek ve kadın öğrenciler arasında egzersiz öz-yeterlik alt boyutlarında, olumsuz etki, mazeret üretme, tek başına egzersiz, diğer bireylerden hissedilen baskı ve kötü hava istatistiksel olarak anlamlı fark olduğu belirlenmiştir ($p<.05$). Erkek ve kadınlar arasında malzeme seçimi alt boyutunda anlamlı fark olmadığı belirlenmiştir ($p>.05$).

Aktif olan erkek öğrencilerin, olumsuz etki,   tek başına egzersiz ve diğer bireylerden hissedilen baskı alt boyutlarında aktif olmayan erkek öğrencilere göre istatistiksel olarak anlamlı düzeyde daha yüksek öz yeterliğe sahip oldukları belirlenmiştir. Kadın öğrencilerde ise aktif olan öğrencilerle, aktif olmayan öğrenciler arasında tek başına egzersiz ve diğer bireylerden hissedilen baskı alt boyutlarında istatistiksel olarak anlamı fark olduğu, diğer alt boyutlarda aktif ve aktif olmayan gruplar arasında anlamlı fark olmadığı belirlenmiştir.
Aktif grupta yer alan kadın öğrencilerin egzersize katılım açısından tek başına egzersiz yapma ve diğer bireylerden hissedilen baskı karşısında egzersiz öz yeterliklerinin yani egzersize katılma ve devam etme güven duygularının daha yüksek olduğu bulunmuştur.
Bu çalışmanın bulguları; Bucksch, Fine & Kolip'in (2008) 7 ayrı üniversiteden 588 katılımcı, Fischer ve Bryant'ın (2008) 449 bayan üniversite öğrencisi, Oral ve Aktop'un (2014) üniversite öğrencileri üzerinde yaptıkları çalışma sonuçları ile benzerlik göstermektedir. Bu çalışmalarda da egzersiz davranışı değişim basamaklarının ilk aşamalarındaki bireylerin egzersizi kayıp olarak algılama puanlarının daha yüksek olduğu, değişim basamaklarının üst sıralarında olan bireylerin ise egzersizi kazanç olarak algılama puanlarının yüksek olduğu bulunmuştur.

Sonuç olarak genç nesil grubunu oluşturan üniversite öğrencilerinin egzersiz davranışı değişim basamaklarının hangi aşamalarında olduklarını öğrenmek önemli bir veri kaynağı oluşturmaktadır. Çalışmamıza katılan üniversite öğrencilerinin % 46,80'nin aktif olmayan basamakta (eğilim ve eğilim öncesi), % 29,50'sinin ise aktif olan basamakta (hareket ve devam) yer aldığı görülmektedir. Erkeklerin kadınlara göre daha aktif basamakta olma oranının daha yüksek olduğu belirlenmiştir. Literatürde de yer aldığı gibi çalışma sonucunda da egzersiz öz yeterliği ile aktif ve aktif olmayan grupta yer almanın ilişkili olduğu görülmektedir. Bedenen, ruhen ve sosyal açıdan daha sağlıklı nesillerin yetişmesi için egzersiz ve fiziksel aktiveteye katılım ve aktiviteyi devam ettirme büyük önem taşımaktadır. Üniversite ortamlarında, kampüslerde, genç nesillerin daha fazla spora katılımını sağlayacak seminer, tanıtım ve spor alanı çeşitliliği ve yeterliliği gibi konulara önem verilmesinin gerektiği düşünülmektedir.

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EĞİTİM HİZMETLERİ PAZARLAMASI VE YABANCI ÖĞRENCİLERİN YURT DIŞI ÜNİVERSİTE TERCİHLERİ ÜZERİNE BİR ALAN ARAŞTIRMASI[*]

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ÖZET

Küreselleşmenin etkisi birçok farklı alanda olduğu gibi eğitim hizmetleri alanında da görülmektedir. ABD, İngiltere, Avustralya ve Kanada gibi ülkelerde eğitim hizmetleri önemli bir sektör haline gelmiştir. Eğitim amacıyla dünyanın farklı ülkelerine giden öğrencilerin sayısı da önemli oranda atmıştır. Bu çalışmada Türkiye'de yükseköğrenim görmek için farklı ülkelerden gelen öğrencilerin ülke ve üniversite tercihlerini etkileyen faktörler araştırılmıştır. Araştırma 64 farklı ülkeden gelen ve Türkiye'yi ve Bursa Uludağ Üniversitesini tercih eden 319 öğrenciyle yüz yüze anket uygulaması yapılarak gerçekleştirilmiştir. Araştırmada gerçekleştirilen faktör analizi sonucunda; ülke ve şehir özellikleri, üniversitenin fiziki ve akademik olarak sağladığı imkânlar, pazarlama faaliyetleri, fiyat-kalite algısı ve tavsiyelerin öğrencilerin tercihlerinde etkili olduğu bulunmuştur.

Anahtar Kelimeler: Eğitim Hizmetleri, Eğitim Hizmetleri Pazarlaması, Yabancı Öğrenci, Yükseköğretim, Faktör Analizi

ABSTRACT

The impact of globalization is seen in the field of education services, as in many different areas. Education services in countries such as USA, the UK, Australia and Canada has become a major industry. The number of students going to different countries around the world for education has taken on considerably. In this study, factors influencing country and university preferences of foreign students come from different countries to take higher education in Turkey were investigated. The research was carried out through face to face interviews with 319 students who prefer Turkey and Uludağ University and come from 64 different countries. As a result of factor analysis performed in this study, country and city properties, the university's physical and academic facilities, marketing activities, the price-quality perception and advices have been found to be effective in the preferences of the students.

Keywords: Education Services, Marketing of Education Services, Foreign Student, Higher Education, Factor Analysis

Giriş

Kendi ülkesi dışında eğitim alan öğrenci sayısının günümüzde giderek artması, kurumlar arasındaki rekabetin artması ve öğrencilerin eğitim hizmetleri satın alırken beklentilerinin yüksek olması, yükseköğretim kurumlarının stratejik pazarlama faaliyetlerine yönelmelerine neden olmaktadır.

Rekabetin yoğun olarak yaşandığı günümüzde eğitime en fazla yatırım yapan ve eğitimli insan gücüne sahip ülkeler avantaj sağlamaktadır. Bu rekabet, kendini eğitim hizmetleri sektöründe de göstermektedir. Sayısı her geçen gün artan devlet ve vakıf üniversiteleri kendilerine öğrenci çekmek için yoğun bir rekabet içerisine girmektedir. Öğrenci merkezli yaklaşım sergileyen üniversitelerin bunlardan haberdar olması ve verdiği hizmetler yönünden pazarlama stratejileri geliştirmesi bu tür üniversiteler için büyük bir üstünlük oluşturmaktadır (Binbaşıoğlu, 2011: 2465).

Eğitim hizmetlerinde Türkiye'de ve dünyada son yıllarda çok hızlı bir değişim yaşanmaktadır. Hükümetler tarafından yürütülen eğitim hizmetlerinin özelleştirilmesi süreci tüm dünyada hızla devam etmektedir. Gelişmiş

ülkelerde bu süreç çok daha önce başlamıştır. Türkiye'de ise bu süreç, özellikle 1980'li yıllardan bugüne hızla artmaktadır. Dünyada en iyi yatırım insana bir diğer ifadeyle eğitime yapılan yatırımdır. Bu nedenle eğitim hizmetlerinin daha etkin ve kaliteli olarak verilmesi için hükümetler, eğitimi devlet tekelinden çıkarıp, özel sektörü de bu hizmete ortak etmeye ve hazırlamaya; böylelikle eğitim sektöründe rekabet oluşturarak eğitimde kaliteyi artırmayı hedeflemektedir (Taşkın ve Büyük, 2002: 7).

20. yüzyılın son çeyreğinden itibaren gelişmiş ülkelerde bilgi toplumuna geçiş süreci başlamış ve bilgi ekonomisi adı verilen yeni bir küresel ekonomik yapı oluşmuştur. Bu yeni yapıda bireylerin ekonomik gücü bilgi ve öğrenim düzeyleriyle, ülkelerin rekabet gücü ise beşeri ve sosyal sermayeleriyle ölçülür hale gelmiştir (T.C. Yükseköğretim Kurulu, 2007: 13). Bu süreç, bilginin üretilmesi, yorumlanması, zenginleştirilmesi, eleştirilmesi ve paylaşılmasından birinci derecede sorumlu uluslararası eğitim sektörünün baş aktörleri olan yükseköğretim kurumlarından özellikle üniversitelerden beklentileri arttırmış ve hemen hemen tüm ülkelerde yükseköğretim toplumların ilgi odağı haline gelmiştir. Bilgi çağının önemini kavrayan ülkelerde yükseköğretim kurumları kaliteli insan gücü yetiştirme, bilgi üretme ve aktarma, yenilikçi ve eleştirel bakış açısını yayma gibi özellikleriyle, toplumun geleceğini derinden etkileme potansiyeline sahip olduğundan bu ülkelerde artan beklentileri karşılamak üzere eğitime olan yatırımlar arttırılmıştır (Dış Ekonomik İlişkiler Kurulu, Eylül 2012: 6).

Bu çalışmanın amacı eğitim hizmetleri pazarlaması konusunu ele alarak, yabancı uyruklu öğrencilerin yurt dışı üniversiteleri tercih etme kararlarını etkileyen faktörleri belirlemektir. Bunun için çalışmanın devamında ilk olarak, eğitim hizmetleri pazarlamasına ve tüketici olarak öğrencilerin yurt dışı eğitim kurumu tercih etme kararlarına etki eden karar kriterlerine ilişkin literatür taraması yer almaktadır. Sonrasında ise gerçekleştirilen araştırmaya ait metodoloji belirtilerek, elde edilen analiz sonuçları sunulmakta ve çalışmanın değerlendirildiği sonuç bölümüyle çalışma sonlandırılmaktadır.

Literatür Taraması

Toplumların ve ekonomilerin küreselleşmesiyle birlikte dünya çapında yükseköğretim sistemleri de genişlemiştir. Yükseköğretim sektörü günümüzde özellikle çoğunluğun İngilizce konuştuğu ülkelerde (Kanada, ABD, Avustralya ve Birleşik Krallık gibi) küresel anlamda oturmuştur. Kendi ülkesinde ve denizaşırı ülkelerde okuyan öğrenciler arasında rekabetin artmasından dolayı, yükseköğretim kurumları artık kendilerini uluslararası rekabet ortamında pazarlamaları gerektiğini kabul etmişlerdir (Hemsley-Brown and Oplatka: 2006: 4). Ayrıca küreselleşmeyle birlikte yükseköğretim önemli bir ihracat sektörü haline gelmiş ve birçok ülkede uluslararası öğrencileri kendine çeken üniversite kampüsleri açılmıştır. Önceleri uluslararası iş ortaklarına öğrenci yetiştirme yetkisi vererek gelişen iş modeli, günümüzde ise yabancı ülkelere kendi üniversitelerini kurduran yatırım iş modeline dönüşmektedir. Yükseköğretim, bilgi ve iletişim teknolojilerindeki gelişmeler ve İngilizcenin dünyanın ortak dili olmasıyla, uluslararası iş dünyasındakine benzer şekilde eğitim hizmetleri sektörü de geleneksel küreselleşme kalıplarını takip etmektedir (Healey, 2006: 11).

Hızla gelişen teknolojinin toplumları yakınlaştırdığı, toplumlar arası etkileşimin arttığı son yıllarda, eğitim sistemlerinin yaşanan değişimlere ayak uyduracak şekilde yeniden yapılandırılması hemen hemen tüm ülkelerde ele alınmaktadır (Şenel ve Gençoğlu, 2003: 47). Üniversiteler her zaman uluslararası eğilimlerden etkilenirler ve geniş bir uluslararası akademik, bilimsel ve araştırma çevrelerince işletilirler. Uluslararasılaşma, üniversiteler ve hükümetlerin küreselleşmeye ayak uydurabilmek için gerçekleştirdiği politikalar ve programlardır. Küreselleşmenin en çok görülen tarafı öğrencilerin kendi vatandaşı olduğu ülkenin dışında başka bir ülkede öğrenim görmesidir. Uluslararası öğrenci akışında bireysel kararların etkisinin yanı sıra ulusal ve kurumsal stratejilerin bir yansıması da bulunmaktadır. Uluslararası öğrencilerin üniversitelere yatırdıkları ücretler ve diğer ödemeleriyle birlikte "büyük bir iş ve pazar" oluşmuştur (Altbach vd., 2009: 7-8).

Hükümetler eğitimi, ulusal ekonomi ve zenginliğin gelişmesi için başlıca alan olarak görmektedir. Artan rekabet karşısında ülkelerin eğitim sistemlerinin uluslararası seviyede ve kalite güvence standartlarının sürekli iyileştirme içinde olması gerektiği açıktır. Küresel uyumluluğu korumak için uluslararası öğrenme ve araştırma çoğu yükseköğretim kurumu için önemli bir hedef haline gelmiştir (British Council, 2012: 1).

Küresel ekonomilerin özgürleşmesi ve kapitalizmin tırmanışının özellikle kuzey yarımküre büyük şehirler tarafından benimsenmesi, tüm dünyada insan çabasına dayalı girişimlerde pazarlar yaratmıştır. Yaratılan pazarların başında eğitim, özellikle yükseköğretim sektörü gelmektedir (Maringe and Sing, 2014: 768).

Eğitim, somut (fakülte, öğrenme araçları gibi) ve soyut bileşenlerin yardımıyla kişilere bilgi tabanlı soyut bir kazanım sağlayan ve sonunda da alıcının bir mülkiyet elde etmediği bir hizmettir. Soyut kazanımlara örnek

olarak, kişinin bilgisinin artması, belli bir alanda uzmanlaşması ve yeteneklerinin gelişmesi verilebilir. Teknolojik gelişmelerin artması ve küresel sınırların ortadan kalkması eğitim pazarlamasının önemini arttırmıştır (Kalenskaya et al., 2013: 369).

Yükseköğretimin pazarlanması düşüncesi 1980'lerin ortalarında, üniversitelerin daha fazla öğrenci ve para kazanmak için rekabet etmeleri sonucunda ortaya çıkmıştır (Filip, 2012: 913). Son 30 yıl içinde dünya çapında birçok hükümet eğitimi pazarlamak için çeşitli politikalar uygulamaktadır. Özel programların açılması, ayrıcalıklı okulların oluşturulmasıyla bu bir tercih haline getirilerek ve rekabet teşvik edilmektedir (Waslander, 2010: 7).

Yükseköğretim alanında özelleşme, farklılaşma, merkezden uzaklaşma, uluslararasılaşma ve artan rekabet gibi çevresel değişimler birçok ülkede ortak değişimler olarak göze çarpmaktadır. Bu değişimler yükseköğretim kurumlarının yönetilme biçimlerini de etkilemekte ve yükseköğretimin bir pazar haline gelmesinde itici güç olmaktadır. Birçok Avrupa ülkesinde yükseköğretim özelleştirilmiş ve öğrenim ücretlerinden komisyon alınmaya başlanmıştır. Bu sayede yükseköğretim daha fazla, bir tüketici pazarı haline gelmiş ve üniversitelerin öğrenci beklentilerini daha fazla göz önünde bulundurmalarını gerektirmiştir. Yükseköğretim kurumları arasında kurumsal, ulusal ve uluslararası rekabetin güçlenmesi, kurumların daha fazla pazar yönelimli ve iş odaklı çalışma biçimlerini benimsemelerini gerektirmiştir. Yükseköğretim idaresi, politikası, yapısı ve konumundaki büyük çaplı değişimler tüm dünyada meydana gelmektedir (Nicolescu, 2009: 35). Üniversitelerdeki öğrencilerin sayısı arttıkça hükümetler, bütçe kesintileriyle sonuçlanan artan maliyetleri karşılayabilmek için üniversiteleri kendi finansal kaynak stratejilerini değiştirmeye zorlamaktadır. Kaynak yaratmadaki anahtar strateji, hem üniversitelerin hem de hükümetlerin karlarını yükseltmek için uluslararası öğrenci alımlarını artırmaktır. Örneğin, Birleşik Krallık'ta parasal anlamda, uluslararası bir öğrencinin parasal değeri, ulusal bir öğrencinin parasal değerinin üç katı fazladır. Uluslararası öğrenci pazarındaki artan rekabet, çok çeşitli ülkelerdeki öğrencileri bir araya getirerek, sınıfların hacmini artırmakta ve sınıfların demografik yapısını değiştirmektedir. Bu nedenle eğitim hizmetleri pazarlaması, yükseköğretimin uluslararası hale gelmesine önemli katkılar sağlamaktadır (Maringe and Sing, 2014: 768).

Yükseköğretimde küreselleşmenin önemli bir yanı da kurumların yurtdışında kendi kampüslerini ve programlarını oluşturmasıdır. Son yıllarda yükseköğretim kurumları bu şekilde daha fazla kar odaklı hale gelmiştir. Bu kar odaklılık ve pazarın serbest ve kuralsız olması, eğitimi öğrenci isteklerine hizmet eden serbest bir pazar haline dönüştürmüştür. Yatırımların, henüz karşılanmamış istekleri karşılayacağı, sağlıklı bir rekabeti ve yenilikleri destekleyeceği, yerel eğitim kurumlarıyla karşılaştırıldığında daha teşvik edici ve daha yüksek bir eğitim kalitesi sağlayacağı düşünülmektedir (Lieven and Martin, 2006: 41-42).

Yükseköğretimde hedeflenen pazar göz önüne alındığında, sektörün öğrenciler, işverenler ve kurumlar gibi birçok müşterisi olduğu kabul edilmekte ve bunların yükseköğretim hizmetlerinde ana hak sahipleri olduğu görülmektedir. Tüketici olarak öğrenci kavramı eleştiriliyor olsa da öğrenciler yükseköğretim sisteminin doğrudan müşterisidirler. Çalışanların öğrenimleri süresince kazandıkları bilgi, yetenek ve becerilerini kullanması, işverenlere de yükseköğretim sürecinin sonucu bir fayda olarak geri dönmektedir. Bazı yazarlar mezunlarını bir "ürün", işverenleri de "müşteri" olarak görmesine karşın, aslolan hem işverenler hem de çalışanlar yükseköğretim hizmetlerinin bir müşterisidirler. Öğrenciler, yükseköğretim hizmetlerinin birincil tüketicileri, işverenler ise ikincil ya da dolaylı müşterileri olarak görülmektedir. Son olarak, toplum da yükseköğretimin sonuçlarından faydalanmaktadır. Bu üç kategori, başta öğrenciler olmak üzere, yükseköğretimden pay almaktadır. Dahası öğrenciler, işverenler ve toplumun haricinde, başka pay alanlar da vardır. Bunlar ebeveynler, hükümet ve diğer kaynak sağlayıcılar, kalite güvence araçları, sıkı denetim otoriteleri şeklinde sayılabilir. Bazen, pay alanların istekleri ve gereksinimleri tamamen örtüşmemektedir. Dolayısıyla yükseköğretim daha karmaşık etkinlikler ile daha fazla kurumu tatmin etmek zorunda kalmaktadır. Birincil müşteri olan öğrenciler genellikle ayrı tutulur ve onlara farklı davranılır (Nicolescu, 2009: 37-38).

Eğitim hizmeti satın alınmasına yönelik satın alma karar süreci ve satın alma karar kriterleri diğer ürün ve hizmetlerin satın alınmasında izlenen süreçten ve satın alma davranışlarını etkileyen etmenlerden çok farklı değildir. Müşteri olarak ifade edilen öğrenciler ihtiyacın ortaya çıkmasından sonra bilgi araştırma aşamasına geçerler. Birr sonraki aşama ise toplanan bilgilerin değerlendirilmesidir. Değerlendirme aşamasının çıktısı belli bir marka (kurum) ya da ürün (program) seçimi olduğundan, müşteriler seçim yapabilmek için değerlendirme kriterler seti geliştirirler. Değerlendirme kriterleri alternatifler arasında seçim yapmada dikkate alınan özellikler olarak da tanımlanabilir (Özdemir, 2011: 41). Bu kriterler maliyet ve performans gibi objektif kriterler olduğu gibi; prestij, marka imajı ve moda gibi sübjektif kriterler de olabilir. Kullanılan kriterlerden hangilerinin önemli olduğu müşteri tercihlerine göre değişiklik gösterebilir (Odabaşı ve Barış, 2002: 366).

Öğrenciler gerekli bilgileri bir araya getirdiğinde, genellikle katılacakları eğitim kurumlarının bir listesini oluştururlar. Seçeneklerin daraltıldığı eleme süreci bir ya da iki seçenek kalana kadar sürmektedir. Bu aşamada, öğrenciler düşündüğü üniversiteleri ziyaret edebilir ve eğitim kurumlarının sunduğu imkânları yerinde görmek isteyebilirler. Öğrenciler bir karara varabilmek için kendi öncelikleri ve değerlerine göre seçim kriterleri oluşturmaktadır. Öğrencinin bu öncelikleri ve değerleri, her bir bireyin kendi tercihlerine göre değişim göstermektedir (Al-Fattal, 2010: 36). Uluslararası öğrencilerin ülke ve okul seçimi aşamasında dikkate aldığı birçok değerlendirme kriteri bulunmaktadır. Bu kriterler çeşitli kaynaklara göre farklılık göstermektedir. Anthony Böhm ve arkadaşlarının (2004: 21) yaptığı araştırmaya göre uluslararası öğrencilerin ülke ve okul seçimi karar verme sürecinde dikkate aldığı karar verme kriterleri aşağıdaki tablo 1'de gösterilmektedir.

Tablo 1. Uluslararası Öğrencilerin Karar Verme Aşamasında En Çok Başvurduğu Kriterler

Karar Verme Kriterleri	Karar Verme Kriterlerinin Açıklaması
Eğitim Kalitesi	Eğitim süreciyle bağlantılıdır. Bu tam anlamıyla eğitimde ülkenin akademik saygınlığına sosyal desteklerine ve farklılıklarına yönelik anlayışı ifade etmektedir. Akademik kaynakların yeterliliği, akademisyenlerin öğretme kabiliyeti, müfredatının tüm dünya ile ekonomik, sosyal, politik, kültürel, çevresel gerçeklerle uyumlu olması ülkenin eğitim kalitesini belirleyen unsurlar arasındadır.
İş İmkânları	İş imkânları eğitimin çıktısıyla ilgilidir. Bu kriter ev sahibi ülkenin yerel ve küresel olarak iş imkanlarını ifade etmektedir.
Satın Alım Gücü	Öğrencilerin masraflarını ve okul harçlarını ülkenin herhangi bir bölgesinde karşılayabilmeleri noktasında oluşan algıdır. Alım gücünün yüksek olduğu algısı olan bir ülke, diğer ev sahibi ülkelere göre seçilme olasılığını arttırmış demektir.
Kişisel Güvenlik	Ev sahibi ülke içinde olan emniyet ve güvenin genel algısı anlamına gelmektedir
Yaşam Biçimi	Spor, müzik, moda, gece hayatı ve diğer kültürel faktörlerin birleşiminden oluşur. Ayrıca kültürel hoşgörü, kabullenme, benzerlikler ve farklılıklar da bu kriter içinde değerlendirilebilir.
Eğitime Erişilebilirlik	Bu kriter ev sahibi ülkedeki kurumlara ve programlara erişim kolaylığını belirtmektedir.

Yukarıdaki tablo 1'e göre öğrenciler okul seçimi yaparken, aynı zamanda ülke seçimi de yapmaktadırlar. Ülke seçiminde ülkedeki satın alım gücü, kişisel güvenlik, yaşam biçimi ve ülkenin öğrencilere sunduğu iş imkânları değerlendirme aşamasındaki önemli kriterlerdir.

Bazı lise öğrencileri değerlendirme sürecinin bir parçası olarak uzun kompozisyon yazılması istenen okullara başvurmaktan kaçınmaktadırlar. Evde yaşamanın aile ve arkadaşlardan uzak bir koleje gitmenin yaratacağı ruhsal baskıyı azaltabileceğini hissettiklerinden evlerine daha yakın okulları seçmeyi tercih ederler (Kotler and Fox, 1995: 311).

Eğitim için ülke seçimindeki diğer etmenler, o ülkenin ortak dili, bilim ve teknoloji tabanlı programların bulunması kendi ülkesindeki mevcut yükseköğretim sisteminin nasıl algılandığı, kendi ülke nüfusunun göreceli zenginliği ve gayri safi milli hasıla büyüme oranı şeklinde sıralanabilir (Mazzarol and Soutar, 2002: 2).

Çalışmanın bundan sonraki bölümünde yabancı uyruklu öğrencilerin ülke ve üniversite tercihlerindeki faktörleri belirlemeye yönelik araştırma ve sonuçları yer almaktadır.

Araştırmanın Metodoloji

Bu araştırmanın amacı, Uludağ Üniversitesi'nde (Bursa-Türkiye) yükseköğrenim gören yabancı uyruklu öğrencilerin ülke ve üniversite tercihlerini etkileyen faktörlerin belirlenmesidir. Bu amaç doğrultusunda elde edilecek sonuçlar, eğitim kurumları olarak üniversitelerin diğer rakip üniversiteler arasından kendilerinin daha çok tercih edilmesinde üniversite yönetimlerince izlenecek pazarlama stratejilerinin belirlenmesi ve uygulanması açısından oldukça önemlidir. Araştırmanın kapsamı olarak 1000'in üzerinde yabancı uyruklu öğrencinin öğrenim gördüğü üniversitelerden biri olan Uludağ Üniversitesi olarak belirlenmiştir. Araştırma kapsamının bu şekilde belirlenmesinde araştırmaya ayrılan zaman, çaba, maliyet ve ulaşım zorlukları gibi unsurlar etkili olmuştur.

Araştırmanın ana kütlesi, Türkiye'de yükseköğrenimine devam eden yabancı uyruklu öğrencilerden oluşmaktadır. Ancak Türkiye'deki tüm yabancı uyruklu öğrencilere ulaşmak çok zor ve çok maliyetli olacağından, sadece Uludağ Üniversitesi'nde yükseköğrenimine devam eden yabancı uyruklu öğrenciler

örneklem çerçevesi olarak seçilmiştir. Örneklem çerçevesi 1883 yabancı uyruklu öğrenciden oluşmaktadır. Mevcut araştırma için örneklem büyüklüğü %95 güven düzeyinde 319 kişi olarak hesaplanmıştır. Araştırmada tesadüfi olmayan örnekleme yöntemlerinden kolayda örnekleme yöntemi kullanılmıştır.

Veri toplama yöntemi olarak yüz yüze anket yöntemi kullanılmıştır. Anketler 2 Mart 2015 ile 30 Nisan 2015 tarihleri arasında uygulanmıştır. Araştırma süresince 350 adet anket formu dağıtılmış, içlerinde eksik ya da hatalı olanlar çıkarıldıktan sonra kodlanarak analiz edilmiştir. Değerlendirmeye alınan anket sayısı 319 olmuştur. Araştırmada kullanılan anket formu iki bölümden oluşmaktadır. İlk bölümde, yabancı uyruklu öğrencilere ilişkin demografik bilgileri içeren sınıflandırma soruları bulunmaktadır. Bu soruların üç tanesi kapalı uçlu soru, dört tanesi ise açık uçlu soru şeklinde sorulmuştur. Anket sorularının ikinci bölümde öğrencilerin ülke ve üniversite tercihine ilişkin değerlendirmelerine ait 56 ifadeyi içeren 5'li likert ölçeği uygulanmıştır. Araştırmada yer alan ifadeler geniş bir literatür taraması sonucunda oluşturulmuştur. Ölçek sorularını oluşturan ifadelerin yer aldığı ilgili literatür aşağıdaki tablo 2'de görülmektedir. Anket formu hazırlandıktan sonra anket formunun güvenilirliğini ve geçerliliğini test etmek için örneklem grubunda yer alan 30 öğrenciyle yüz yüze görüşmeyle anket yöntemi kullanılarak bir pilot araştırma gerçekleştirilmiştir. Ankette bulunan 56 ifadenin güvenilirliği bir diğer ifadeyle Cronbach Alfa Katsayısı 0,966 olarak bulunmuştur. Bu oldukça yüksek bir değerdir.

Tablo 2. Anket formunda yer alan ifadeler ve bu ifadelere ilişkin literatür

Araştırmada Yer Alan İfadeler	İlgili Literatür
Aile	Mazzarol ve Soutar;2002, Soutar ve Turner;2002, Telli Yamamoto;2006, Maringe;2006,Vrontis,Thrassou,Melanthiou;2007
Yakın çevre ve akrabalar	Mazzarol ve Soutar;2002, Judson, James ve Aurand; 2004
Mezunlar	Mazzarol ve Soutar;2002, Soutar ve Turner;2002, Judson, James ve Aurand; 2004, Vrontis,Thrassou,Melanthiou;2007
Arkadaşlar	Mazzarol ve Soutar;2002, Soutar ve Turner;2002, Judson, James ve Aurand; 2004, Telli Yamamoto;2006, Maringe; 2006, Vrontis,Thrassou,Melanthiou;2007
Öğretmenler	Judson, James ve Aurand; 2004, Vrontis,Thrassou,Melanthiou;2007
Yurtdışı eğitim acenteleri / eğitim danışmanları	Mazzarol ve Soutar;2002, Shank ve Beasley;1998, Mazzarol, Soutar ve Thein; 2001 Veloutsou, Lewis ve Paton;2004
Dış ülkede yaşayan tanıdıklar	Mazzarol ve Soutar; 2002
Kampüsün güvenli olması	Veloutsou, Lewis ve Paton;2004,Gray, Fam ve Llanes;2003
Kampüs alanının genişliği	Mazzarol, Soutar ve Thein; 2001 Mazzarol ve Soutar;2002, Shank ve Beasley;1998, Joseph ve Joseph;1997
Etkileyici bir kampüse sahip olması	Soutar ve Turner;2002, Veloutsou, Lewis ve Paton;2004, Joseph ve Joseph;1997
Şehir merkezine yakın olması	Joseph ve Joseph;1997, Anderson; 1999, Ivy;2008
Uluslararası öğrenci sayısı	Mazzarol ve Soutar;2002, Shank ve Beasley;1998, Mazzarol, Soutar ve Thein;2000
Kütüphane hizmetlerinin yeterliliği	Gray, Fam ve Llanes;2003, Price, Matzdorf, Smith, Agahi;2003, Veloutsou, Lewis ve Paton;2004, Telli Yamamoto;2006
Teknolojik altyapının yeterliliği	Mazzarol ve Soutar;2002, Mazzarol, Soutar ve Thein;2000
Sunulan spor faaliyetleri	Joseph ve Joseph;1997, Anderson; 1999, Telli Yamamoto;2006
Akademik gelişim faaliyetleri (konferans, seminer, kulüp vb.)	Joseph ve Joseph;1997, Telli Yamamoto;2006

Tablo 2. Anket formunda yer alan ifadeler ve bu ifadelere ilişkin literatür (Devamı)

Araştırmada Yer Alan İfadeler	İlgili Literatür
Sosyo-kültürel gelişim etkinlikleri(tiyatro, sergi, konser vb.)	Soutar ve Turner;2002, Anderson; 1999, Price, Matzdorf, Smith, Agahi;2003, Telli Yamamoto;2006
Üniversiteye toplu taşımayla ulaşımın kolay	John A. Muffo;1987

olması	
Konaklama imkânı	Shank ve Beasley;1998, Veloutsou, Lewis ve Paton;2004, Joseph ve Joseph;1997, Price, Matzdorf, Smith, Agahi;2003
Prestijli bir üniversite olması	Mazzarol ve Soutar;2002, John A. Muffo; 1987, Price, Matzdorf, Smith, Agahi;2003, Judson, James ve Aurand; 2004, Veloutsou, Lewis ve Paton;2004, Ivy, 2008, Gray, Fam ve Llanes;2003
Başvuru koşulları	Vrontis,Thrassou,Melanthiou;2007
Ders içeriğinin kalitesi	Mazzarol ve Soutar;2002, Soutar ve Turner;2002, Price, Matzdorf, Smith, Agahi;2003, John A. Muffo;1987, Shank ve Beasley;1998, Joseph ve Joseph;1997, Anderson;1999, Gray, Fam ve Llanes;2003, Vrontis,Thrassou,Melanthiou;2007
Akademik kadronun niteliği	Shank ve Beasley;1998, Soutar ve Turner;2002, Mazzarol ve Soutar;2002, Mazzarol, Soutar ve Thein; 2001 Joseph ve Joseph;1997, Gray, Fam ve Llanes;2003
Ders ve eğitim programlarının çeşitliliği	Mazzarol ve Soutar;2002, Shank ve Beasley;1998, Mazzarol, Soutar ve Thein; 2001 Ivy;2001
Üniversitenin öğrenci düşüncelerine önem vermesi	Mazzarol ve Soutar;2002, Price, Matzdorf, Smith, Agahi;2003
Okuyan öğrenci profilinin niteliği	Araştırmacılar tarafından eklenmiştir.
İş dünyasıyla bağlantılarının kuvvetli olması	Ivy;2001
Staj imkânı sunması	Araştırmacılar tarafından eklenmiştir.
Mezuniyet sonrası iş bulma kolaylığı	Veloutsou, Lewis ve Paton;2004, Joseph ve Joseph;1997, Gray, Fam ve Llanes;2003
Mezunların nitelikli işlerde çalışıyor olması	Mazzarol ve Soutar;2002, Soutar ve Turner;2002, Maringe; 2006
Başvuru ücreti	Shank ve Beasley;1998
Eğitime ödenecek bedel	Mazzarol ve Soutar;2002, John A. Muffo;1987, Joseph ve Joseph;1997, Gray, Fam ve Llanes;2003
Ödeme kolaylığı	Maringe; 2006
Burs imkânları	John A. Muffo;1987
Finansal yardım (burs ya da kredi) olanakları	John A. Muffo;1987, Shank ve Beasley;1998, Ivy, 2008, Telli Yamamoto;2006
Seyahat maliyetleri	Mazzarol ve Soutar;2002, Maringe; 2006
Konaklama maliyetleri	Joseph ve Joseph;1997
Ülke imajı	Cubillo,Sánchez,Cerviño;2006
Kendi ülkeme yakınlığı	Mazzarol ve Soutar;2002, John A. Muffo;1987, Shank ve Beasley;1998, Soutar ve Turner;2002
İklim şartları	Mazzarol ve Soutar;2002, Veloutsou, Lewis ve Paton;2004
Üniversitenin bulunduğu bölgenin güvenilir olması	Mazzarol ve Soutar;2002, Gray, Fam ve Llanes;2003
Devlet politikası	Mazzarol ve Soutar;2002, Gray, Fam ve Llanes;2003
Vize koşulları (vize alma ve uzatma)	Araştırmacılar tarafından eklenmiştir.
Öğrencilere çalışma izni sağlaması	Araştırmacılar tarafından eklenmiştir.
Eğitim sistemi	Araştırmacılar tarafından eklenmiştir.
Göçmenlik imkânı	Mazzarol ve Soutar;2002
Şehrin yaşam maliyeti	Mazzarol ve Soutar;2002, Veloutsou, Lewis ve Paton;2004, Cubillo,Sánchez,Cerviño;2006, Maringe; 2006
Heyecan verici bir şehir olması	Mazzarol ve Soutar;2002
Şehrin coğrafi alanı	Veloutsou, Lewis ve Paton;2004
Şehrin nüfus yoğunluğu	Cubillo,Sánchez,Cerviño;2006
Farklı kültürleri tanıma isteği	Cubillo,Sánchez,Cerviño;2006
Kampüsün önceden gezilmiş olması	Vrontis,Thrassou,Melanthiou;2007, Kırmızı Sarıçoban;2013
Üniversitenin web sitesinin çekiciliği ve bilgilendiriciliği	Mazzarol ve Soutar;2002, Mazzarol, Soutar ve Thein; 2001 Telli Yamamoto;2006, Wright, O'Neill;2002
Tanıtıcı materyallerin (broşür, katalog, CD, vb.) yeterliliği	Mazzarol ve Soutar;2002, Mazzarol, Soutar ve Thein; 2001 Ivy, 2008, Telli Yamamoto;2006
Fuar tanıtımlarının yeterliliği	Ivy, 2008, Telli Yamamoto;2006
Üniversite ile ilgili dergi/gazete/billboardlar reklamları	Mazzarol ve Soutar;2002, Mazzarol, Soutar ve Thein; 2001 Telli Yamamoto;2006

Araştırma Bulguları

Araştırmada yer alan sınıflandırma sorularında katılımcıların cinsiyet, yaş, geldiği ülkeler, Türkiye'de eğitim gördükleri fakülteler, devam ettikleri eğitim düzeyi, Türkiye'ye gelme şekli ve öğrencilerin Türkiye'de kalacağı süreye ilişkin veriler toplanmıştır. Buna göre öğrencilerin cinsiyet dağılımı aşağıdaki tablo 3'de görülmektedir.

Tablo 3. Öğrencilerin Cinsiyet Dağılımı

Cinsiyet	Sıklık	Yüzde
Bayan	108	33,9
Erkek	211	66,1
Toplam	319	100

Tablo 3 incelendiğinde araştırmaya katılan öğrencilerin yaklaşık üçte ikisinin erkek olduğu görülmektedir. Öğrencilerin yaş dağılımı ise aşağıdaki tablo 4'de görülmektedir.

Tablo 4. Öğrencilerin Yaş Dağılımı

Yaş	Sıklık	Yüzde
17	5	1,6
18	26	8,2
19	43	13,5
20	42	13,2
21	42	13,2
22	22	6,9
23	45	14,1
24	38	11,9
25	25	7,8
26	11	3,4
27 ve üzeri	20	6,2
Toplam	319	100,0

Tablo 4 incelendiğinde araştırmaya katılan öğrencilerin genel olarak 17-26 yaş aralığında olduğu görülmektedir. Özellikle 19-24 yaş aralığında daha fazla sayıda öğrenci araştırmaya katılım göstermiştir. Öğrencilerin geldiği ülkelerin dağılımı ise aşağıdaki tablo 5'de görülmektedir.

Tablo 5. Öğrencilerin Geldiği Ülkelerin Dağılımı

Kıta	Ülkeler	Sıklık	Yüzde
Avrupa	Almanya	2	0,6
	Arnavutluk	31	9,7
	Belçika	1	0,3
	Bosna Hersek	3	0,9
	Bulgaristan	2	0,6
	İngiltere	1	0,3
	İtalya	1	0,3
	Fransa	5	1,6
	Karadağ	5	1,6
	Kosova	18	5,6
	Makedonya	23	7,2
	Moldova	1	0,3
	Sırbistan	2	0,6
	Ukrayna	1	0,3
	Yunanistan	10	3,1
Asya	Afganistan	11	3,4
	Azerbaycan	16	5,0
	Bangladeş	2	0,6
	Çin	4	1,3
	Doğu Türkistan	3	0,9
	Endonezya	16	5,0
	Filistin	2	0,6
	Gürcistan	9	2,8

	Hindistan	1	0,3
	Irak	4	1,3
	Kazakistan	5	1,6
	Kırgızistan	1	0,3
	Lübnan	1	0,3
	Malezya	2	0,6
	Moğolistan	3	0,9
	Myanmar	2	0,6
	Pakistan	3	0,9
	Rusya	4	1,3
	Suriye	19	6,0
	Suudi Arabistan	1	0,3
	Tacikistan	8	2,5
	Tayland	1	0,3
	Türkmenistan	17	5,3
Afrika	Cezayir	2	0,6
	Cibuti	1	0,3
	Çad	3	0,9
	Etiyopya	2	0,6
	Fas	10	3,1
	Fildişi Sahili	3	0,9
	Gana	2	0,6
	Gine Bissau	3	0,9
	Gine Conakry	2	0,6
	Kamerun	1	0,3
	Kenya	3	0,9
	Komor	1	0,3
	Kongo	5	1,6
	Liberya	1	0,3
	Mali	6	1,9
	Moritanya	3	0,9
	Mısır	1	0,3
	Nijer	4	1,3
	Nijerya	6	1,9
	Orta Afrika Cumhuriyeti	1	0,3
	Senegal	1	0,3
	Somali	4	1,3
	Sudan	2	0,6
	Tanzanya	3	0,9
	Togo	2	0,6
	Uganda	2	0,6
	Toplam	319	100,0

Tablo 5 incelendiğinde araştırmaya katılan öğrencilerin üç ayrı kıtadan ve 64 farklı ülkeden geldikleri görülmektedir. Araştırmanın yapıldığı dönemde Avrupa ülkeleri içinden en fazla sayıda öğrenci sırasıyla Arnavutluk, Makedonya, Kosova ve Yunanistan'dan gelmiştir. Asya ülkeleri içinden ise en fazla sayıda öğrenci sırasıyla Suriye, Türkmenistan, Azerbaycan ve Endonezya'dan gelmiştir. Afrika ülkeleri içinden ise en fazla sayıda öğrenci sırasıyla Fas, Mali ve Nijerya'dan gelmiştir. Araştırmaya katılım gösteren öğrencilerin eğitim gördükleri fakülteler ise aşağıdaki tablo 6'da görülmektedir.

Tablo 6. Öğrencilerin Eğitim Gördükleri Fakülteler

Fakülte	Sıklık	Yüzde
İktisadi ve İdari Bilimler Fakültesi	33	10,34
Fen Edebiyat Fakültesi	21	6,58
Mühendislik Fakültesi	35	10,97
Eğitim Fakültesi	17	5,32
Hukuk Fakültesi	1	0,3
Tıp Fakültesi	12	3,76
İlahiyat Fakültesi	146	45,76
Ziraat Fakültesi	1	0,3
Veteriner Fakültesi	3	0,94
Mimarlık Fakültesi	7	2,19
Sosyal Bilimler Enstitüsü	30	9,40
Sağlık Bilimleri Enstitüsü	13	4,07
Toplam	319	100

Tablo 6 incelendiğinde araştırmaya katılan öğrencilerin yaklaşık yarısının lisans düzeyinde ilahiyat fakültesinde eğitim gördüğü, bunu mühendislik fakültesi, iktisadi ve idari bilimler fakültesinin izlediği görülmektedir. Öğrencilerin yaklaşık %15'inin lisansüstü eğitim (Sosyal Bilimler Enstitüsü ile Sağlık Bilimleri Enstitüsü) yaptığı görülmektedir. Araştırmanın yapıldığı dönemde öğrencilerin devam ettikleri eğitim düzeyleri ise aşağıdaki tablo 7'de görülmektedir.

Tablo 7. Öğrencilerin Devam Ettikleri Eğitim Düzeyi

Eğitim Durumu	Sıklık	Yüzde
Lisans Hazırlık	121	37,9
Lisans 1.sınıf	42	13,2
Lisans 2. Sınıf	41	12,9
Lisans 3. Sınıf	21	6,6
Lisans 4. Sınıf	51	16,0
Yüksek Lisans Hazırlık	4	1,3
Yüksek Lisans	28	8,8
Doktora	11	3,4
Toplam	319	100,0

Tablo 7 incelendiğinde araştırmaya katılan öğrencilerin yaklaşık %38'inin hazırlık sınıflarında olduğu görülmektedir. Diğer öğrenim düzeylerinde ise yaklaşık olarak dengeli bir dağılım söz konusudur. Araştırmanın yapıldığı dönemde öğrencilerin Türkiye'ye gelme şekli ise aşağıdaki tablo 8'de görülmektedir.

Tablo 8. Öğrencilerin Türkiye'ye Gelme Şekli

Gelme Şekli	Sıklık	Yüzde
Kendi İmkânlarıyla	69	21,6
Bursla	250	78,4
Toplam	319	100,0

Tablo 8 incelendiğinde araştırmaya katılan öğrencilerin büyük çoğunluğunun burs imkânlarıyla geldiği görülmektedir. Araştırmanın yapıldığı dönemde yabancı uyruklu öğrencilerin Türkiye'de kalacağı süre aşağıdaki tablo 9'da görülmektedir.

Tablo 9. Öğrencilerin Türkiye'de Kalacağı Süre

Süre / Yıl	Sıklık	Yüzde
2	15	4,7
3	21	6,6
4	15	4,7
5	189	59,2
6	66	20,7
7	13	4,1
Toplam	319	100,0

Tablo 9 incelendiğinde araştırmaya katılan öğrencilerin büyük çoğunluğunun (yaklaşık %60) Türkiye'de 5 yıl kalmayı planladığı görülmektedir. Bu süre araştırmaya katılım gösteren öğrencilerin çoğunluğunun hazırlık sınıfını okuması ve devamında çoğunluğu 4 yıl olan lisans düzeyinde eğitim alacak olmalarıyla doğrudan ilişkilidir.

Çalışmanın devamında araştırmanın anket formunda yer alan ölçek sorularına uygulanan faktör analizine ve elde edilen sonuçlara ilişkin bilgiler verilmektedir.

Faktör Analizi ve Sonuçları

Faktör analizi, birbirleriyle ilişkili çok sayıdaki ifadeyi az sayıda, anlamlı ve birbirinden bağımsız faktörler haline getiren başta sosyal bilimler olmak üzere pek çok alanda sıkça kullanılan istatistik tekniklerinden biridir (Kalaycı, 2005: 403-405). Faktör analizi, birbiriyle ilişkili p tane fadeyi bir araya getirerek az sayıda ilişkisiz ve kavramsal olarak anlamlı yeni ifadeler (faktörler, boyutlar) bulmayı, keşfetmeyi amaçlayan çok değişkenli bir istatistiktir (Çakmak vd., 2013: 7). Faktör analizinin iki temel amacı bulunmaktadır. Bunlar; ifade sayısını azaltmak ve ifadeler arası ilişkilerdeki yapıyı ortaya çıkarmak başka bir ifadeyle ifadeleri sınıflandırmaktır (Doğan ve Başokçu, 2010: 65-66). Faktör analizinin yapılacağı örneklemin yeterliliği Kaiser - Meyer - Olkin (KMO) yöntemiyle ölçülmüş ve elde edilen değerler aşağıdaki tablo 10'da belirtilmiştir.

Tablo 10. KMO ve Bartlett's Test Sonuçları

Kaiser-Meyer-Olkin Örnek Uygunluğu		,933
Bartlett's Küresellik Testi	Ki Kare Yaklaşık Değeri	10031,957
	Serbestlik Derecesi	1540
	Anlamlılık	,000

KMO değerleri faktör analizinin iyi olup olmadığı (90 ve üzeri çok iyi, 80 - 89 iyi, 70 - 79 orta, 60 - 69 kötü, 50 - 59 çok kötü, 50 altı kabul edilemez) hakkında bilgi vermektedir (Semerci, 2003: 230-231). Buradan hareketle yukarıdaki tablo 5.10 incelendiğinde, KMO uygunluk değerinin 0,933 olduğu ve veri grubuna faktör analizinin yapılmasının uygun olduğunu görülmektedir. Ayrıca Bartlett testi sonucu anlamlılık değeri 0,00 (0,05'den küçük) olduğu için araştırmada kullanılan ölçek anlamlı bulunmuştur. KMO ve Bartlett ölçümlerinden sonra, öğrencilerin eğitim hizmeti almak için ülke ve üniversite tercihinde etkili olan kriterleri belirlemek için anket sorularına faktör analizi uygulanmıştır. Faktör analizinde asal bileşenler tekniği kullanılmış ve varimax rotasyonu yapılmıştır. Aşağıdaki tablo 11 incelendiğinde, elde edilen 5 faktörün toplam varyansın %49,98'ini açıkladığı görülmektedir.

Tablo 11. Varyans Değerleri

Faktörler	Öz Değerler	Açıklanan Toplam Varyans Yüzdesi	Kümülatif Yüzde
1	17,742	24,511	24,511
2	3,605	7,458	31,969
3	2,540	6,211	38,181
4	2,134	6,036	44,217
5	1,968	5,765	49,982

Faktör analizi dahilinde yapılan varimax rotasyonu sonucu, analizde yer alan her bir ifadeye (değişken) ilişkin faktör yükleri bulunmuş ve bu aşağıdaki tablo 12'de gösterilmiştir.

Tablo 12. Döndürülmüş Faktör Analizi Sonuçları

	İfadeler	Faktörler ve Faktör Yükleri				
		1	2	3	4	5
22	Ders içeriğinin kalitesi	,815				
45	Eğitim sistemi	,808				
23	Akademik kadronun niteliği	,772				
24	Ders ve eğitim programlarının çeşitliliği	,768				
25	Üniversitenin öğrenci düşüncelerine önem vermesi	,745				
34	Burs imkânları	,741				
29	Mezuniyet sonrası iş bulma kolaylığı	,708				
35	Finansal yardım (burs ya da kredi) olanakları	,702				
14	Teknolojik altyapının yeterliliği	,695				
20	Prestijli bir üniversite olması	,694				
41	Üniversitenin bulunduğu bölgenin güvenilir olması	,682				
28	Staj imkânı sunması	,669				
38	Ülke imajı	,648				
13	Kütüphane hizmetlerinin yeterliliği	,647				
18	Üniversiteye toplu taşımayla ulaşımın kolay olması	,637				
19	Konaklama imkânı	,634				
16	Akademik gelişim faaliyetleri (konferans, seminer, kulüp vb.)	,628				
43	Vize koşulları (vize alma ve uzatma)	,622				
44	Öğrencilere çalışma izni sağlaması	,611				
30	Mezunların nitelikli işlerde çalışıyor olması	,606				
27	İş dünyasıyla bağlantılarının kuvvetli olması	,596				
37	Konaklama maliyetleri	,570				
21	Başvuru koşulları	,553				
26	Okuyan öğrenci profilinin niteliği	,539				
17	Sosyo-kültürel gelişim etkinlikleri (tiyatro, sergi, konser vb.)	,529				
36	Seyahat maliyetleri	,526				
33	Ödeme kolaylığı	,519				
47	Şehrin yaşam maliyeti	,511				
51	Farklı kültürleri tanıma isteği	,506				
8	Kampüsün güvenli olması					
15	Sunulan spor faaliyetleri					
55	Fuar tanıtımlarının yeterliliği		,681			
54	Tanıtıcı materyallerin (broşür, katalog, CD, vb.) yeterliliği		,623			
53	Üniversitenin web sitesinin çekiciliği ve bilgilendiriciliği		,576			
56	Üniversiteyle ilgili dergi/gazete/billboardlar reklamları		,567			
9	Kampüs alanının genişliği		,563			
52	Kampüsün önceden gezilmiş olması		,524			
12	Uluslararası öğrenci sayısı					
11	Şehir merkezine yakın olması					
49	Şehrin coğrafi alanı			,711		
40	İklim şartları			,670		
48	Heyecan verici bir şehir olması			,662		
50	Şehrin nüfus yoğunluğu			,657		
39	Kendi ülkesine yakınlığı			,596		
42	Devlet politikası					

Tablo 12. Döndürülmüş Faktör Analizi Sonuçları (Devamı)

	İfadeler	Faktörler ve Faktör Yükleri				
		1	**2**	**3**	**4**	**5**
31	Başvuru ücreti				,632	
32	Eğitime ödenecek bedel				,513	
10	Etkileyici bir kampüse sahip olması				,505	
46	Göçmenlik imkânı					
4	Arkadaşlar					,770
2	Yakın çevre ve akrabalar					,758
3	Mezunlar					,686
5	Öğretmenler					,662
1	Aile					,516
7	Dış ülkede yaşayan tanıdıklar					
6	Yurtdışı eğitim acenteleri/eğitim danışmanları					

Yukarıdaki tablo 12 incelendiğinde analizde yer alan ifadelerin hangi faktör altında gruplandırılacağını belirleyen faktör yükleri görülmektedir. Söz konusu gruplandırma, faktör yükü 0,50 ve altında kalan ifadelerin analiz dışında bırakılması kriteri dâhilinde yapılmıştır. Buradan hareketle, 56 ifade içerisinden 8 tanesi (6, 7, 8, 11, 12, 15, 42 ve 46 numaralı ifadeler) faktör yükü 0,50'ın altında kaldığı için analizden çıkarılmıştır. Analizden çıkarılan ifadeler şunlardır:
1. Yurtdışı eğitim acenteleri/eğitim danışmanları *(6 no.lu ifade)*
2. Dış ülkede yaşayan tanıdıklar *(7 no.lu ifade)*
3. Kampüsün güvenli olması *(8 no.lu ifade)*
4. Şehir merkezine yakın olması *(11 no.lu ifade)*
5. Uluslararası öğrenci sayısı *(12 no.lu ifade)*
6. Sunulan spor faaliyetleri *(15 no.lu ifade)*
7. Devlet politikası *(42 no.lu ifade)*
8. Göçmenlik imkânı *(46 no.lu ifade)*

Belirlenen kriter dahilinde yukarıda belirtilen 8 ifadenin analizden çıkarılması sonucu, kalan 48 ifade 5 faktör altında gruplandırılmış ve her bir faktör içerdiği ifadeleri (değişken) kapsayacak şekilde isimlendirilmiştir. İsimlendirilen faktör grupları aşağıda ayrıntılı olarak belirtilmektedir:

1. Faktör: Üniversitenin Fiziki ve Akademik Olarak Sağladığı İmkânlar: İlk faktör altına yüklenen 29 ifadenin faktör yükleri yüksek olduğundan dolayı bu faktörün altındaki maddelerin ölçeğin faktör yapısına önemli katkılar sağladığı saptanmıştır. Öğrencilerin eğitim hizmetlerini satın almalarında etkili olan üniversitenin hem fiziki hem de akademik olarak sağladığı imkânlara ilişkin 29 ifadeyi içermektedir. Öğrenciler eğitim hizmeti satın alırken üniversitenin tüm olanaklarından faydalanmak istemektedirler. Faktör 1 altında yer alan ifadelerin yüklenme değerleri 0.506 ile 0.815 arasında değişmektedir. Birinci faktörü oluşturan maddelerin içerdiği ifadelere bakılarak ve ilgili literatür dikkate alındığında Faktör 1 "Üniversitenin Fiziki ve Akademik Olarak Sağladığı İmkanlar" olarak isimlendirilmiştir. Buradan hareketle, bu faktör boyutunun teorik bilgiyi desteklediği görülmektedir.

2. Faktör: Üniversitenin Pazarlama Faaliyetleri: Üniversitelerin amaçlarına ulaşmasında pazarlama faaliyetlerinin biçimsel bir organizasyon yapısı içerisinde gerçekleştirilmesi yön belirleyici olmaktadır. Üniversitenin bilinirliğini arttıran faaliyetlerin başında gelen tanıtım hizmetlerinin, üniversite öğrencilerinin tercihlerini etkileme oranı, oldukça yüksektir. Aynı zamanda üniversiteler arasında farklılık yaratmak, hedef kitleye doğru ve hızlı bir şekilde ulaşabilmek, hem mevcut öğrencilerin hem de potansiyel öğrencilerin memnuniyetini arttırmak gibi üniversitenin gelişiminde pek çok fayda sağlamaktadır. Bu boyutta üniversitelerin kullanabileceği tutundurma araçları 6 ifadeyi içermektedir.

3. Faktör: Ülke ve Şehir Özellikleri: Eğitim hizmeti satın alacak öğrenciler aynı zamanda eğitim alacakları ülke ve şehri de incelemekte ve coğrafik özelliklerine dikkat etmektedir. Bu bağlamda, bu boyutta 5 ifade bulunmaktadır ve ifadelerde iklimin, şehrin kalabalığının ve heyecan verici bir şehir olması öğrenciler üzerinde etkisi bulunduğu görülmektedir. Dolayısıyla analiz sonuçları teorik bilgiyi desteklediği görülmektedir.

4. Faktör: Üniversitenin Fiyat-Kalite Algısı: Öğrenciler eğitim hizmeti satın alırken en çok dikkat ettiği konulardan birisi de alacağı eğitimin maliyetidir. Bu maliyetlerin başında başvuru ücreti ve okul harcı

gelmektedir. Bu boyutta 3 değişken bulunmakta ve değişkenlerde maliyetlerin öğrenciler üzerindeki etkisi görülmektedir. Analiz sonuçları teorik bilgiyi destekler niteliktedir.

5. Faktör: Üniversite Tercihinde Tavsiyeler: Bu faktör eğitim hizmeti satın alacak öğrencilerin tavsiyelerin önemini ortaya koymaya yönelik olarak 5 ifadeden oluşmaktadır. Öğrenciler üniversite tercihlerini yaparken ailenin, yakın çevre ve akrabaların, mezunların, arkadaşların ve öğretmenlerin tavsiyelerini dikkate aldıkları görülmektedir.

Sonuç

Birçok sektörde etkilerini gösteren küreselleşme ve yaşanan rekabet eğitim hizmetleri sektöründe de önemli değişimlere neden olmaktadır. Birçok ülkede olduğu gibi özellikle Türkiye'de açılan üniversite sayısındaki artış, yükseköğretim kurumlarını özel sektörün çeşitli uygulamalarını kullanmaya itmektedir. Bu uygulamaların başında ise pazarlama strateji ve uygulamaları gelmektedir. Sadece yurt içindeki rekabet değil, küreselleşmenin etkisiyle küresel rekabet de yükseköğretim kurumlarını bu rekabet içinde hedefledikleri yerlere gelmelerinde pazarlama anlayışından yararlanmaya yöneltmektedir. Öğrencilerin beklentilerinin yükselmesi, günümüzün yoğun rekabet ortamında bulunan yükseköğretim kurumlarının stratejik pazarlama planları yapmaları zorunlu kılmaktadır.

Öğrencilerin yükseköğretim kurumu tercihini etkileyen birçok faktör bulunmaktadır. Soutar ve Turner'in 2002 yılında Avusturalya'da yaptıkları bir çalışmada üniversite seçiminde belirleyici ve önemli olan dört unsur bulunmuştur. Bunlar; akademik prestij, mezuniyet sonrası iş beklentisi, eğitim kalitesi ve eğitim programlarının uygunluğudur. Uluslararası öğrenciler eğitim alacakları üniversiteyi seçerken birçok faktörden etkilenirler. Öğrencilerin seçimlerini etkileyen diğer faktörler; uluslararası ilişkiler, üniversitenin lokasyonu, okulun derecesi, aynı üniversiteye giden arkadaşlar, ailelerin tavsiyeleri ve maliyettir. Ming'in 2010 yılında yaptığı araştırmaya göre Malezya'daki öğrencilerin üniversite seçimini etkileyen faktörler ise lokasyon, akademik program, üniversitenin prestiji, eğitimsel özellikler, maliyet, finansal yardımlara ulaşılabilirlik, iş bulma olanakları, reklam, eğitim sistemi ve kampüs ziyaretleridir. İspanya'da 2006 yılında Cubillo, Sanchez ve Cervino tarafından yapılan araştırmaya göre öğrencilerin üniversite tercihini etkileyen beş faktör bulunmaktadır. Bunlar; kişisel nedenler, ülke imajının etkisi, şehir imajının etkisi, üniversite imajı ve programının uygunluğudur. Tüm bu faktörler, pazarlama stratejilerinin ve programlarının geliştirilmesi ve uygulanmasında oldukça önemlidir.

Araştırma sonucunda Uludağ Üniversitesi'nde (Bursa-Türkiye) öğrenim gören yabancı uyruklu öğrencilerin üniversite tercihleri 5 faktör altında toplanmıştır. İlk faktör öğrencilerin eğitim hizmetlerini satın almalarında etkili olan üniversitenin hem fiziki hem de akademik olarak sağladığı imkânlara ilişkindir. Bu faktöre göre öğrenciler eğitim hizmeti satın alırken özellikle üniversitenin sahip olduğu fiziki ve akademik olanaklarını oldukça önemsemekte (faktör yükü en yüksek olan bu faktördür) ve bu olanaklardan faydalanmak istemektedirler.

Üniversitelerin amaçlarına ulaşmasında pazarlama faaliyetlerinin kullanılması oldukça belirleyici olmaktadır. İkinci faktöre göre üniversitenin bilinirliğini arttıran faaliyetlerin başında gelen tanıtım hizmetlerinin, üniversite öğrencilerinin tercihlerini etkileme oranının oldukça yüksek olduğu görülmektedir. Pazarlama faaliyetleri; hedef kitleye hızlı bir şekilde ulaşabilmek, üniversiteler arasında farklılık yaratmak, mevcut ve potansiyel öğrencilerin memnuniyetini arttırmak gibi üniversitenin gelişiminde pek çok fayda sağlamaktadır. Üçüncü faktör öğrencilerin eğitim hizmetlerini satın almalarında etkili olan ülke ve şehir özelliklerine ilişkindir. Öğrenciler ülkenin iklim şartlarına, kendi ülkesine yakınlığına ve şehrin coğrafik özelliklerine de dikkat etmektedir.

Öğrencilerin eğitim hizmeti satın alırken en çok dikkat ettiği konulardan birisi de fiyat-kalite algısıdır. Öğrenciler aldığı hizmetin sağlayacağı faydayla maliyetini karşılaştırmaktadır. Dördüncü faktörde bu unsurları içeriğinde barındırmaktadır. Maliyet faktörleri, başvuru ücreti ve eğitime ödenecek bedelden oluşmaktadır. Etkileyici bir kampüse sahip üniversitelerin fiyat-kalite algısının yüksek olduğu görülmektedir. Beşinci faktör eğitim hizmeti satın alacak öğrencilerin tavsiyelerin önemini ortaya koymaktadır. Öğrenciler, üniversite tercihlerini yaparken başta arkadaşları olmak üzere yakın çevre ve akrabalarının, mezunların, öğretmenlerinin ve ailenin tavsiyelerini dikkate almaktadırlar.

Sonuç olarak, yükseköğretim çevresi giderek yarışmacı bir hal almaktadır. Bu noktada günümüzde öğrenci ve müşteri ikileminin yaşandığı bir ortamda yükseköğretime başvuran öğrenciler artık pasif değildirler. Öğrenciler yükseköğretim başvurusunu kariyerlerini hazırlamada bir yatırım kararı olarak görmektedirler. Yükseköğretime başvuranların tercihlerdeki davranışlarının değiştiği açık bir şekilde görülmektedir. Üniversiteler bu değişimden dolayı kendilerini yenileme çabası içine girmeli ve pazarlama stratejilerini öğrencilerin tercihlerine göre

geliştirmelidirler. Bu noktada pazarlama strateji ve uygulamalarının yükseköğretim kurumlarının yöneticileri tarafından da bilinmesi artık bir şart olmaktan çıkmış, zorunluluk haline gelmiştir. Ancak bu uygulamaların özellikle devlet üniversiteleri tarafından yerine getirilmesi de vakıf üniversitelerine göre bir parça daha zordur. Zaman içinde kanun ve yönetmeliklerde yapılacak çeşitli değişiklikler ve özellikle yöneticilerin anlayışlarının değişmesi ile Türk üniversiteleri de başta yurt içi olmak üzere küresel rekabette de daha rekabetçi olabileceklerdir.

Bu çalışmanın araştırma kısmında yer alan kısıtlar çalışmanın kapsamının geniş çaplı olma çabasını etkilemiştir. Bundan sonra yapılacak çalışmalarda kapsamın daha geniş tutulması, farklı ülke karşılaştırmalarının da yapılması konunun farklı boyutlarıyla araştırılabilmesine de olanak sağlayacaktır.

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EĞİTİM HİZMETLERİ PAZARLAMASI VE YABANCI ÖĞRENCİLERİN YURT DIŞI ÜNİVERSİTE TERCİHLERİ ÜZERİNE BİR ALAN ARAŞTIRMASI*

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ÖZET

Küreselleşmenin etkisi birçok farklı alanda olduğu gibi eğitim hizmetleri alanında da görülmektedir. ABD, İngiltere, Avustralya ve Kanada gibi ülkelerde eğitim hizmetleri önemli bir sektör haline gelmiştir. Eğitim amacıyla dünyanın farklı ülkelerine giden öğrencilerin sayısı da önemli oranda atmıştır. Bu çalışmada Türkiye'de yükseköğrenim görmek için farklı ülkelerden gelen öğrencilerin ülke ve üniversite tercihlerini etkileyen faktörler araştırılmıştır. Araştırma 64 farklı ülkeden gelen ve Türkiye'yi ve Bursa Uludağ Üniversitesini tercih eden 319 öğrenciyle yüz yüze anket uygulaması yapılarak gerçekleştirilmiştir. Araştırmada gerçekleştirilen faktör analizi sonucunda; ülke ve şehir özellikleri, üniversitenin fiziki ve akademik olarak sağladığı imkânlar, pazarlama faaliyetleri, fiyat-kalite algısı ve tavsiyelerin öğrencilerin tercihlerinde etkili olduğu bulunmuştur.

Anahtar Kelimeler: Eğitim Hizmetleri, Eğitim Hizmetleri Pazarlaması, Yabancı Öğrenci, Yükseköğretim, Faktör Analizi

ABSTRACT

The impact of globalization is seen in the field of education services, as in many different areas. Education services in countries such as USA, the UK, Australia and Canada has become a major industry. The number of students going to different countries around the world for education has taken on considerably. In this study, factors influencing country and university preferences of foreign students come from different countries to take higher education in Turkey were investigated. The research was carried out through face to face interviews with 319 students who prefer Turkey and Uludağ University and come from 64 different countries. As a result of factor analysis performed in this study, country and city properties, the university's physical and academic facilities, marketing activities, the price-quality perception and advices have been found to be effective in the preferences of the students.

Keywords: Education Services, Marketing of Education Services, Foreign Student, Higher Education, Factor Analysis

Giriş

Kendi ülkesi dışında eğitim alan öğrenci sayısının günümüzde giderek artması, kurumlar arasındaki rekabetin artması ve öğrencilerin eğitim hizmetleri satın alırken beklentilerinin yüksek olması, yükseköğretim kurumlarının stratejik pazarlama faaliyetlerine yönelmelerine neden olmaktadır.

Rekabetin yoğun olarak yaşandığı günümüzde eğitime en fazla yatırım yapan ve eğitimli insan gücüne sahip ülkeler avantaj sağlamaktadır. Bu rekabet, kendini eğitim hizmetleri sektöründe de göstermektedir. Sayısı her geçen gün artan devlet ve vakıf üniversiteleri kendilerine öğrenci çekmek için yoğun bir rekabet içerisine girmektedir. Öğrenci merkezli yaklaşım sergileyen üniversitelerin bunlardan haberdar olması ve verdiği hizmetler yönünden pazarlama stratejileri geliştirmesi bu tür üniversiteler için büyük bir üstünlük oluşturmaktadır (Binbaşıoğlu, 2011: 2465).

Eğitim hizmetlerinde Türkiye'de ve dünyada son yıllarda çok hızlı bir değişim yaşanmaktadır. Hükümetler tarafından yürütülen eğitim hizmetlerinin özelleştirilmesi süreci tüm dünyada hızla devam etmektedir. Gelişmiş

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ülkelerde bu süreç çok daha önce başlamıştır. Türkiye'de ise bu süreç, özellikle 1980'li yıllardan bugüne hızla artmaktadır. Dünyada en iyi yatırım insana bir diğer ifadeyle eğitime yapılan yatırımdır. Bu nedenle eğitim hizmetlerinin daha etkin ve kaliteli olarak verilmesi için hükümetler, eğitimi devlet tekelinden çıkarıp, özel sektörü de bu hizmete ortak etmeye ve hazırlamaya; böylelikle eğitim sektöründe rekabet oluşturarak eğitimde kaliteyi artırmayı hedeflemektedir (Taşkın ve Büyük, 2002: 7).

20. yüzyılın son çeyreğinden itibaren gelişmiş ülkelerde bilgi toplumuna geçiş süreci başlamış ve bilgi ekonomisi adı verilen yeni bir küresel ekonomik yapı oluşmuştur. Bu yeni yapıda bireylerin ekonomik gücü bilgi ve öğrenim düzeyleriyle, ülkelerin rekabet gücü ise beşeri ve sosyal sermayeleriyle ölçülür hale gelmiştir (T.C. Yükseköğretim Kurulu, 2007: 13). Bu süreç, bilginin üretilmesi, yorumlanması, zenginleştirilmesi, eleştirilmesi ve paylaşılmasından birinci derecede sorumlu uluslararası eğitim sektörünün baş aktörleri olan yükseköğretim kurumlarından özellikle üniversitelerden beklentileri arttırmış ve hemen hemen tüm ülkelerde yükseköğretim toplumların ilgi odağı haline gelmiştir. Bilgi çağının önemini kavrayan ülkelerde yükseköğretim kurumları kaliteli insan gücü yetiştirme, bilgi üretme ve aktarma, yenilikçi ve eleştirel bakış açısını yayma gibi özellikleriyle, toplumun geleceğini derinden etkileme potansiyeline sahip olduğundan bu ülkelerde artan beklentileri karşılamak üzere eğitime olan yatırımlar arttırılmıştır (Dış Ekonomik İlişkiler Kurulu, Eylül 2012: 6).

Bu çalışmanın amacı eğitim hizmetleri pazarlaması konusunu ele alarak, yabancı uyruklu öğrencilerin yurt dışı üniversiteleri tercih etme kararlarını etkileyen faktörleri belirlemektir. Bunun için çalışmanın devamında ilk olarak, eğitim hizmetleri pazarlamasına ve tüketici olarak öğrencilerin yurt dışı eğitim kurumu tercih etme kararlarına etki eden karar kriterlerine ilişkin literatür taraması yer almaktadır. Sonrasında ise gerçekleştirilen araştırmaya ait metodoloji belirtilerek, elde edilen analiz sonuçları sunulmakta ve çalışmanın değerlendirildiği sonuç bölümüyle çalışma sonlandırılmaktadır.

Literatür Taraması

Toplumların ve ekonomilerin küreselleşmesiyle birlikte dünya çapında yükseköğretim sistemleri de genişlemiştir. Yükseköğretim sektörü günümüzde özellikle çoğunluğun İngilizce konuştuğu ülkelerde (Kanada, ABD, Avustralya ve Birleşik Krallık gibi) küresel anlamda oturmuştur. Kendi ülkesinde ve denizaşırı ülkelerde okuyan öğrenciler arasında rekabetin artmasından dolayı, yükseköğretim kurumları artık kendilerini uluslararası rekabet ortamında pazarlamaları gerektiğini kabul etmişlerdir (Hemsley-Brown and Oplatka: 2006: 4). Ayrıca küreselleşmeyle birlikte yükseköğretim önemli bir ihracat sektörü haline gelmiş ve birçok ülkede uluslararası öğrencileri kendine çeken üniversite kampüsleri açılmıştır. Önceleri uluslararası iş ortaklarına öğrenci yetiştirme yetkisi vererek gelişen iş modeli, günümüzde ise yabancı ülkelere kendi üniversitelerini kurduran yatırım iş modeline dönüşmektedir. Yükseköğretim, bilgi ve iletişim teknolojilerindeki gelişmeler ve İngilizcenin dünyanın ortak dili olmasıyla, uluslararası iş dünyasındakine benzer şekilde eğitim hizmetleri sektörü de geleneksel küreselleşme kalıplarını takip etmektedir (Healey, 2006: 11).

Hızla gelişen teknolojinin toplumları yakınlaştırdığı, toplumlar arası etkileşimin arttığı son yıllarda, eğitim sistemlerinin yaşanan değişimlere ayak uyduracak şekilde yeniden yapılandırılması hemen hemen tüm ülkelerde ele alınmaktadır (Şenel ve Gençoğlu, 2003: 47). Üniversiteler her zaman uluslararası eğilimlerden etkilenirler ve geniş bir uluslararası akademik, bilimsel ve araştırma çevrelerince işletilirler. Uluslararasılaşma, üniversiteler ve hükümetlerin küreselleşmeye ayak uydurabilmek için gerçekleştirdiği politikalar ve programlardır. Küreselleşmenin en çok görülen tarafı öğrencilerin kendi vatandaşı olduğu ülkenin dışında başka bir ülkede öğrenim görmesidir. Uluslararası öğrenci akışında bireysel kararların etkisinin yanı sıra ulusal ve kurumsal stratejilerin bir yansıması da bulunmaktadır. Uluslararası öğrencilerin üniversitelere yatırdıkları ücretler ve diğer ödemeleriyle birlikte "büyük bir iş ve pazar" oluşmuştur (Altbach vd., 2009: 7-8).

Hükümetler eğitimi, ulusal ekonomi ve zenginliğin gelişmesi için başlıca alan olarak görmektedir. Artan rekabet karşısında ülkelerin eğitim sistemlerinin uluslararası seviyede ve kalite güvence standartlarının sürekli iyileştirme içinde olması gerektiği açıktır. Küresel uyumluluğu korumak için uluslararası öğrenme ve araştırma çoğu yükseköğretim kurumu için önemli bir hedef haline gelmiştir (British Council, 2012: 1).

Küresel ekonomilerin özgürleşmesi ve kapitalizmin tırmanışının özellikle kuzey yarımküre büyük şehirler tarafından benimsenmesi, tüm dünyada insan çabasına dayalı girişimlerde pazarlar yaratmıştır. Yaratılan pazarların başında eğitim, özellikle yükseköğretim sektörü gelmektedir (Maringe and Sing, 2014: 768).

Eğitim, somut (fakülte, öğrenme araçları gibi) ve soyut bileşenlerin yardımıyla kişilere bilgi tabanlı soyut bir kazanım sağlayan ve sonunda da alıcının bir mülkiyet elde etmediği bir hizmettir. Soyut kazanımlara örnek

olarak, kişinin bilgisinin artması, belli bir alanda uzmanlaşması ve yeteneklerinin gelişmesi verilebilir. Teknolojik gelişmelerin artması ve küresel sınırların ortadan kalkması eğitim pazarlamasının önemini arttırmıştır (Kalenskaya et al., 2013: 369).

Yükseköğretimin pazarlanması düşüncesi 1980'lerin ortalarında, üniversitelerin daha fazla öğrenci ve para kazanmak için rekabet etmeleri sonucunda ortaya çıkmıştır (Filip, 2012: 913). Son 30 yıl içinde dünya çapında birçok hükümet eğitimi pazarlamak için çeşitli politikalar uygulamaktadır. Özel programların açılması, ayrıcalıklı okulların oluşturulmasıyla bu bir tercih haline getirilerek ve rekabet teşvik edilmektedir (Waslander, 2010: 7).

Yükseköğretim alanında özelleşme, farklılaşma, merkezden uzaklaşma, uluslararasılaşma ve artan rekabet gibi çevresel değişimler birçok ülkede ortak değişimler olarak göze çarpmaktadır. Bu değişimler yükseköğretim kurumlarının yönetilme biçimlerini de etkilemekte ve yükseköğretimin bir pazar haline gelmesinde itici güç olmaktadır. Birçok Avrupa ülkesinde yükseköğretim özelleştirilmiş ve öğrenim ücretlerinden komisyon alınmaya başlanmıştır. Bu sayede yükseköğretim daha fazla, bir tüketici pazarı haline gelmiş ve üniversitelerin öğrenci beklentilerini daha fazla göz önünde bulundurmalarını gerektirmiştir. Yükseköğretim kurumları arasında kurumsal, ulusal ve uluslararası rekabetin güçlenmesi, kurumların daha fazla pazar yönelimli ve iş odaklı çalışma biçimlerini benimsemelerini gerektirmiştir. Yükseköğretim idaresi, politikası, yapısı ve konumundaki büyük çaplı değişimler tüm dünyada meydana gelmektedir (Nicolescu, 2009: 35). Üniversitelerdeki öğrencilerin sayısı arttıkça hükümetler, bütçe kesintileriyle sonuçlanan artan maliyetleri karşılayabilmek için üniversiteleri kendi finansal kaynak stratejilerini değiştirmeye zorlamaktadır. Kaynak yaratmadaki anahtar strateji, hem üniversitelerin hem de hükümetlerin karlarını yükseltmek için uluslararası öğrenci alımlarını artırmaktır. Örneğin, Birleşik Krallık'ta parasal anlamda, uluslararası bir öğrencinin parasal değeri, ulusal bir öğrencinin parasal değerinin üç katı fazladır. Uluslararası öğrenci pazarındaki artan rekabet, çok çeşitli ülkelerdeki öğrencileri bir araya getirerek, sınıfların hacmini artırmakta ve sınıfların demografik yapısını değiştirmektedir. Bu nedenle eğitim hizmetleri pazarlaması, yükseköğretimin uluslararası hale gelmesine önemli katkılar sağlamaktadır (Maringe and Sing, 2014: 768).

Yükseköğretimde küreselleşmenin önemli bir yanı da kurumların yurtdışında kendi kampüslerini ve programlarını oluşturmasıdır. Son yıllarda yükseköğretim kurumları bu şekilde daha fazla kar odaklı hale gelmiştir. Bu kar odaklılık ve pazarın serbest ve kuralsız olması, eğitimi öğrenci isteklerine hizmet eden serbest bir pazar haline dönüştürmüştür. Yatırımların, henüz karşılanmamış istekleri karşılayacağı, sağlıklı bir rekabeti ve yenilikleri destekleyeceği, yerel eğitim kurumlarıyla karşılaştırıldığında daha teşvik edici ve daha yüksek bir eğitim kalitesi sağlayacağı düşünülmektedir (Lieven and Martin, 2006: 41-42).

Yükseköğretimde hedeflenen pazar göz önüne alındığında, sektörün öğrenciler, işverenler ve kurumlar gibi birçok müşterisi olduğu kabul edilmekte ve bunların yükseköğretim hizmetlerinde ana hak sahipleri olduğu görülmektedir. Tüketici olarak öğrenci kavramı eleştiriliyor olsa da öğrenciler yükseköğretim sisteminin doğrudan müşterisidirler. Çalışanların öğrenimleri süresince kazandıkları bilgi, yetenek ve becerilerini kullanması, işverenlere de yükseköğretim sürecinin sonucu bir fayda olarak geri dönmektedir. Bazı yazarlar mezunlarını bir "ürün", işverenleri de "müşteri" olarak görmesine karşın, aslolan hem işverenler hem de çalışanlar yükseköğretim hizmetlerinin bir müşterisidirler. Öğrenciler, yükseköğretim hizmetlerinin birincil tüketicileri, işverenler ise ikincil ya da dolaylı müşterileri olarak görülmektedir. Son olarak, toplum da yükseköğretimin sonuçlarından faydalanmaktadır. Bu üç kategori, başta öğrenciler olmak üzere, yükseköğretimden pay almaktadır. Dahası öğrenciler, işverenler ve toplumun haricinde, başka pay alanlar da vardır. Bunlar ebeveynler, hükümet ve diğer kaynak sağlayıcılar, kalite güvence aracıları, sıkı denetim otoriteleri şeklinde sayılabilir. Bazen, pay alanların istekleri ve gereksinimleri tamamen örtüşmemektedir. Dolayısıyla yükseköğretim daha karmaşık etkinlikler ile daha fazla kurumu tatmin etmek zorunda kalmaktadır. Birincil müşteri olan öğrenciler genellikle ayrı tutulur ve onlara farklı davranılır (Nicolescu, 2009: 37-38).

Eğitim hizmeti satın alınmasına yönelik satın alma karar süreci ve satın alma karar kriterleri diğer ürün ve hizmetlerin satın alınmasında izlenen süreçten ve satın alma davranışlarını etkileyen etmenlerden çok farklı değildir. Müşteri olarak ifade edilen öğrenciler ihtiyacın ortaya çıkmasından sonra bilgi araştırma aşamasına geçerler. Birr sonraki aşama ise toplanan bilgilerin değerlendirilmesidir. Değerlendirme aşamasının çıktısı belli bir marka (kurum) ya da ürün (program) seçimi olduğundan, müşteriler seçim yapabilmek için değerlendirme kriterler seti geliştirirler. Değerlendirme kriterleri alternatifler arasında seçim yapmada dikkate alınan özellikler olarak da tanımlanabilir (Özdemir, 2011: 41). Bu kriterler maliyet ve performans gibi objektif kriterler olduğu gibi; prestij, marka imajı ve moda gibi sübjektif kriterler de olabilir. Kullanılan kriterlerden hangilerinin önemli olduğu müşteri tercihlerine göre değişiklik gösterebilir (Odabaşı ve Barış, 2002: 366).

Öğrenciler gerekli bilgileri bir araya getirdiğinde, genellikle katılacakları eğitim kurumlarının bir listesini oluştururlar. Seçeneklerin daraltıldığı eleme süreci bir ya da iki seçenek kalana kadar sürmektedir. Bu aşamada, öğrenciler düşündüğü üniversiteleri ziyaret edebilir ve eğitim kurumlarının sunduğu imkânları yerinde görmek isteyebilirler. Öğrenciler bir karara varabilmek için kendi öncelikleri ve değerlerine göre seçim kriterleri oluşturmaktadır. Öğrencinin bu öncelikleri ve değerleri, her bir bireyin kendi tercihlerine göre değişim göstermektedir (Al-Fattal, 2010: 36). Uluslararası öğrencilerin ülke ve okul seçimi aşamasında dikkate aldığı birçok değerlendirme kriteri bulunmaktadır. Bu kriterler çeşitli kaynaklara göre farklılık göstermektedir. Anthony Böhm ve arkadaşlarının (2004: 21) yaptığı araştırmaya göre uluslararası öğrencilerin ülke ve okul seçimi karar verme sürecinde dikkate aldığı karar verme kriterleri aşağıdaki tablo 1'de gösterilmektedir.

Tablo 1. Uluslararası Öğrencilerin Karar Verme Aşamasında En Çok Başvurduğu Kriterler

Karar Verme Kriterleri	Karar Verme Kriterlerinin Açıklaması
Eğitim Kalitesi	Eğitim süreciyle bağlantılıdır. Bu tam anlamıyla eğitimde ülkenin akademik saygınlığına sosyal desteklerine ve farklılıklarına yönelik anlayışı ifade etmektedir. Akademik kaynakların yeterliliği, akademisyenlerin öğretme kabiliyeti, müfredatının tüm dünya ile ekonomik, sosyal, politik, kültürel, çevresel gerçeklerle uyumlu olması ülkenin eğitim kalitesini belirleyen unsurlar arasındadır.
İş İmkânları	İş imkânları eğitimin çıktısıyla ilgilidir. Bu kriter ev sahibi ülkenin yerel ve küresel olarak iş imkanlarını ifade etmektedir.
Satın Alım Gücü	Öğrencilerin masraflarını ve okul harçlarını ülkenin herhangi bir bölgesinde karşılayabilmeleri noktasında oluşan algıdır. Alım gücünün yüksek olduğu algısı olan bir ülke, diğer ev sahibi ülkelere göre seçilme olasılığını arttırmış demektir.
Kişisel Güvenlik	Ev sahibi ülke içinde olan emniyet ve güvenin genel algısı anlamına gelmektedir
Yaşam Biçimi	Spor, müzik, moda, gece hayatı ve diğer kültürel faktörlerin birleşiminden oluşur. Ayrıca kültürel hoşgörü, kabullenme, benzerlikler ve farklılıklar da bu kriter içinde değerlendirilebilir.
Eğitime Erişilebilirlik	Bu kriter ev sahibi ülkedeki kurumlara ve programlara erişim kolaylığını belirtmektedir.

Yukarıdaki tablo 1'e göre öğrenciler okul seçimi yaparken, aynı zamanda ülke seçimi de yapmaktadırlar. Ülke seçiminde ülkedeki satın alım gücü, kişisel güvenlik, yaşam biçimi ve ülkenin öğrencilere sunduğu iş imkânları değerlendirme aşamasındaki önemli kriterlerdir.

Bazı lise öğrencileri değerlendirme sürecinin bir parçası olarak uzun kompozisyon yazılması istenen okullara başvurmaktan kaçınmaktadırlar. Evde yaşamanın aile ve arkadaşlardan uzak bir koleje gitmenin yaratacağı ruhsal baskıyı azaltabileceğini hissettiklerinden evlerine daha yakın okulları seçmeyi tercih ederler (Kotler and Fox, 1995: 311).

Eğitim için ülke seçimindeki diğer etmenler, o ülkenin ortak dili, bilim ve teknoloji tabanlı programların bulunması kendi ülkesindeki mevcut yükseköğretim sisteminin nasıl algılandığı, kendi ülke nüfusunun göreceli zenginliği ve gayri safi milli hasıla büyüme oranı şeklinde sıralanabilir (Mazzarol and Soutar, 2002: 2).

Çalışmanın bundan sonraki bölümünde yabancı uyruklu öğrencilerin ülke ve üniversite tercihlerindeki faktörleri belirlemeye yönelik araştırma ve sonuçları yer almaktadır.

Araştırmanın Metodoloji

Bu araştırmanın amacı, Uludağ Üniversitesi'nde (Bursa-Türkiye) yükseköğrenim gören yabancı uyruklu öğrencilerin ülke ve üniversite tercihlerini etkileyen faktörlerin belirlenmesidir. Bu amaç doğrultusunda elde edilecek sonuçlar, eğitim kurumları olarak üniversitelerin diğer rakip üniversiteler arasından kendilerinin daha çok tercih edilmesinde üniversite yönetimlerince izlenecek pazarlama stratejilerinin belirlenmesi ve uygulanması açısından oldukça önemlidir. Araştırmanın kapsamı olarak 1000'in üzerinde yabancı uyruklu öğrencinin öğrenim gördüğü üniversitelerden biri olan Uludağ Üniversitesi olarak belirlenmiştir. Araştırma kapsamının bu şekilde belirlenmesinde araştırmaya ayrılan zaman, çaba, maliyet ve ulaşım zorlukları gibi unsurlar etkili olmuştur.

Araştırmanın ana kütlesi, Türkiye'de yükseköğrenimine devam eden yabancı uyruklu öğrencilerden oluşmaktadır. Ancak Türkiye'deki tüm yabancı uyruklu öğrencilere ulaşmak çok zor ve çok maliyetli olacağından, sadece Uludağ Üniversitesi'nde yükseköğrenimine devam eden yabancı uyruklu öğrenciler

örneklem çerçevesi olarak seçilmiştir. Örneklem çerçevesi 1883 yabancı uyruklu öğrenciden oluşmaktadır. Mevcut araştırma için örneklem büyüklüğü %95 güven düzeyinde 319 kişi olarak hesaplanmıştır. Araştırmada tesadüfi olmayan örnekleme yöntemlerinden kolayda örnekleme yöntemi kullanılmıştır.

Veri toplama yöntemi olarak yüz yüze anket yöntemi kullanılmıştır. Anketler 2 Mart 2015 ile 30 Nisan 2015 tarihleri arasında uygulanmıştır. Araştırma süresince 350 adet anket formu dağıtılmış, içlerinde eksik ya da hatalı olanlar çıkarıldıktan sonra kodlanarak analiz edilmiştir. Değerlendirmeye alınan anket sayısı 319 olmuştur. Araştırmada kullanılan anket formu iki bölümden oluşmaktadır. İlk bölümde, yabancı uyruklu öğrencilere ilişkin demografik bilgileri içeren sınıflandırma soruları bulunmaktadır. Bu soruların üç tanesi kapalı uçlu soru, dört tanesi ise açık uçlu soru şeklinde sorulmuştur. Anket sorularının ikinci bölümde öğrencilerin ülke ve üniversite tercihine ilişkin değerlendirmelerine ait 56 ifadeyi içeren 5'li likert ölçeği uygulanmıştır. Araştırmada yer alan ifadeler geniş bir literatür taraması sonucunda oluşturulmuştur. Ölçek sorularını oluşturan ifadelerin yer aldığı ilgili literatür aşağıdaki tablo 2'de görülmektedir. Anket formu hazırlandıktan sonra anket formunun güvenilirliğini ve geçerliliğini test etmek için örneklem grubunda yer alan 30 öğrenciyle yüz yüze görüşmeyle anket yöntemi kullanılarak bir pilot araştırma gerçekleştirilmiştir. Ankette bulunan 56 ifadenin güvenilirliği bir diğer ifadeyle Cronbach Alfa Katsayısı 0,966 olarak bulunmuştur. Bu oldukça yüksek bir değerdir.

Tablo 2. Anket formunda yer alan ifadeler ve bu ifadelere ilişkin literatür

Araştırmada Yer Alan İfadeler	**İlgili Literatür**
Aile	Mazzarol ve Soutar;2002, Soutar ve Turner;2002, Telli Yamamoto;2006, Maringe;2006,Vrontis,Thrassou,Melanthiou;2007
Yakın çevre ve akrabalar	Mazzarol ve Soutar;2002, Judson, James ve Aurand; 2004
Mezunlar	Mazzarol ve Soutar;2002, Soutar ve Turner;2002, Judson, James ve Aurand; 2004, Vrontis,Thrassou,Melanthiou;2007
Arkadaşlar	Mazzarol ve Soutar;2002, Soutar ve Turner;2002, Judson, James ve Aurand; 2004, Telli Yamamoto;2006, Maringe; 2006, Vrontis,Thrassou,Melanthiou;2007
Öğretmenler	Judson, James ve Aurand; 2004, Vrontis,Thrassou,Melanthiou;2007
Yurtdışı eğitim acenteleri / eğitim danışmanları	Mazzarol ve Soutar;2002, Shank ve Beasley;1998, Mazzarol, Soutar ve Thein; 2001 Veloutsou, Lewis ve Paton;2004
Dış ülkede yaşayan tanıdıklar	Mazzarol ve Soutar; 2002
Kampüsün güvenli olması	Veloutsou, Lewis ve Paton;2004,Gray, Fam ve Llanes;2003
Kampüs alanının genişliği	Mazzarol, Soutar ve Thein; 2001 Mazzarol ve Soutar;2002, Shank ve Beasley;1998, Joseph ve Joseph;1997
Etkileyici bir kampüse sahip olması	Soutar ve Turner;2002, Veloutsou, Lewis ve Paton;2004, Joseph ve Joseph;1997
Şehir merkezine yakın olması	Joseph ve Joseph;1997, Anderson; 1999, Ivy;2008
Uluslararası öğrenci sayısı	Mazzarol ve Soutar;2002, Shank ve Beasley;1998, Mazzarol, Soutar ve Thein;2000
Kütüphane hizmetlerinin yeterliliği	Gray, Fam ve Llanes;2003, Price, Matzdorf, Smith, Agahi;2003, Veloutsou, Lewis ve Paton;2004, Telli Yamamoto;2006
Teknolojik altyapının yeterliliği	Mazzarol ve Soutar;2002, Mazzarol, Soutar ve Thein;2000
Sunulan spor faaliyetleri	Joseph ve Joseph;1997, Anderson; 1999, Telli Yamamoto;2006
Akademik gelişim faaliyetleri (konferans, seminer, kulüp vb.)	Joseph ve Joseph;1997, Telli Yamamoto;2006

Tablo 2. Anket formunda yer alan ifadeler ve bu ifadelere ilişkin literatür (Devamı)

Araştırmada Yer Alan İfadeler	**İlgili Literatür**
Sosyo-kültürel gelişim etkinlikleri(tiyatro, sergi, konser vb.)	Soutar ve Turner;2002, Anderson; 1999, Price, Matzdorf, Smith, Agahi;2003, Telli Yamamoto;2006
Üniversiteye toplu taşımayla ulaşımın kolay	John A. Muffo;1987

olması	
Konaklama imkânı	Shank ve Beasley;1998, Veloutsou, Lewis ve Paton;2004, Joseph ve Joseph;1997, Price, Matzdorf, Smith, Agahi;2003
Prestijli bir üniversite olması	Mazzarol ve Soutar;2002, John A. Muffo; 1987, Price, Matzdorf, Smith, Agahi;2003, Judson, James ve Aurand; 2004, Veloutsou, Lewis ve Paton;2004, Ivy, 2008, Gray, Fam ve Llanes;2003
Başvuru koşulları	Vrontis,Thrassou,Melanthiou;2007
Ders içeriğinin kalitesi	Mazzarol ve Soutar;2002, Soutar ve Turner;2002, Price, Matzdorf, Smith, Agahi;2003, John A. Muffo;1987, Shank ve Beasley;1998, Joseph ve Joseph;1997, Anderson;1999, Gray, Fam ve Llanes;2003, Vrontis,Thrassou,Melanthiou;2007
Akademik kadronun niteliği	Shank ve Beasley;1998, Soutar ve Turner;2002, Mazzarol ve Soutar;2002, Mazzarol, Soutar ve Thein; 2001 Joseph ve Joseph;1997, Gray, Fam ve Llanes;2003
Ders ve eğitim programlarının çeşitliliği	Mazzarol ve Soutar;2002, Shank ve Beasley;1998, Mazzarol, Soutar ve Thein; 2001 Ivy;2001
Üniversitenin öğrenci düşüncelerine önem vermesi	Mazzarol ve Soutar;2002, Price, Matzdorf, Smith, Agahi;2003
Okuyan öğrenci profilinin niteliği	Araştırmacılar tarafından eklenmiştir.
İş dünyasıyla bağlantılarının kuvvetli olması	Ivy;2001
Staj imkânı sunması	Araştırmacılar tarafından eklenmiştir.
Mezuniyet sonrası iş bulma kolaylığı	Veloutsou, Lewis ve Paton;2004, Joseph ve Joseph;1997, Gray, Fam ve Llanes;2003
Mezunların nitelikli işlerde çalışıyor olması	Mazzarol ve Soutar;2002, Soutar ve Turner;2002, Maringe; 2006
Başvuru ücreti	Shank ve Beasley;1998
Eğitime ödenecek bedel	Mazzarol ve Soutar;2002, John A. Muffo;1987, Joseph ve Joseph;1997, Gray, Fam ve Llanes;2003
Ödeme kolaylığı	Maringe; 2006
Burs imkânları	John A. Muffo;1987
Finansal yardım (burs ya da kredi) olanakları	John A. Muffo;1987, Shank ve Beasley;1998, Ivy, 2008, Telli Yamamoto;2006
Seyahat maliyetleri	Mazzarol ve Soutar;2002, Maringe; 2006
Konaklama maliyetleri	Joseph ve Joseph;1997
Ülke imajı	Cubillo,Sánchez,Cerviño;2006
Kendi ülkeme yakınlığı	Mazzarol ve Soutar;2002, John A. Muffo;1987, Shank ve Beasley;1998, Soutar ve Turner;2002
İklim şartları	Mazzarol ve Soutar;2002, Veloutsou, Lewis ve Paton;2004
Üniversitenin bulunduğu bölgenin güvenilir olması	Mazzarol ve Soutar;2002, Gray, Fam ve Llanes;2003
Devlet politikası	Mazzarol ve Soutar;2002, Gray, Fam ve Llanes;2003
Vize koşulları (vize alma ve uzatma)	Araştırmacılar tarafından eklenmiştir.
Öğrencilere çalışma izni sağlaması	Araştırmacılar tarafından eklenmiştir.
Eğitim sistemi	Araştırmacılar tarafından eklenmiştir.
Göçmenlik imkânı	Mazzarol ve Soutar;2002
Şehrin yaşam maliyeti	Mazzarol ve Soutar;2002, Veloutsou, Lewis ve Paton;2004, Cubillo,Sánchez,Cerviño;2006, Maringe; 2006
Heyecan verici bir şehir olması	Mazzarol ve Soutar;2002
Şehrin coğrafi alanı	Veloutsou, Lewis ve Paton;2004
Şehrin nüfus yoğunluğu	Cubillo,Sánchez,Cerviño;2006
Farklı kültürleri tanıma isteği	Cubillo,Sánchez,Cerviño;2006
Kampüsün önceden gezilmiş olması	Vrontis,Thrassou,Melanthiou;2007, Kırmızı Sarıçoban;2013
Üniversitenin web sitesinin çekiciliği ve bilgilendiriciliği	Mazzarol ve Soutar;2002, Mazzarol, Soutar ve Thein; 2001 Telli Yamamoto;2006, Wright, O'Neill;2002
Tanıtıcı materyallerin (broşür, katalog, CD, vb.) yeterliliği	Mazzarol ve Soutar;2002, Mazzarol, Soutar ve Thein; 2001 Ivy, 2008, Telli Yamamoto;2006
Fuar tanıtımlarının yeterliliği	Ivy, 2008, Telli Yamamoto;2006
Üniversite ile ilgili dergi/gazete/billboardlar reklamları	Mazzarol ve Soutar;2002, Mazzarol, Soutar ve Thein; 2001 Telli Yamamoto;2006

Araştırma Bulguları

Araştırmada yer alan sınıflandırma sorularında katılımcıların cinsiyet, yaş, geldiği ülkeler, Türkiye'de eğitim gördükleri fakülteler, devam ettikleri eğitim düzeyi, Türkiye'ye gelme şekli ve öğrencilerin Türkiye'de kalacağı süreye ilişkin veriler toplanmıştır. Buna göre öğrencilerin cinsiyet dağılımı aşağıdaki tablo 3'de görülmektedir.

Tablo 3. Öğrencilerin Cinsiyet Dağılımı

Cinsiyet	Sıklık	Yüzde
Bayan	108	33,9
Erkek	211	66,1
Toplam	319	100

Tablo 3 incelendiğinde araştırmaya katılan öğrencilerin yaklaşık üçte ikisinin erkek olduğu görülmektedir. Öğrencilerin yaş dağılımı ise aşağıdaki tablo 4'de görülmektedir.

Tablo 4. Öğrencilerin Yaş Dağılımı

Yaş	Sıklık	Yüzde
17	5	1,6
18	26	8,2
19	43	13,5
20	42	13,2
21	42	13,2
22	22	6,9
23	45	14,1
24	38	11,9
25	25	7,8
26	11	3,4
27 ve üzeri	20	6,2
Toplam	319	100,0

Tablo 4 incelendiğinde araştırmaya katılan öğrencilerin genel olarak 17-26 yaş aralığında olduğu görülmektedir. Özellikle 19-24 yaş aralığında daha fazla sayıda öğrenci araştırmaya katılım göstermiştir. Öğrencilerin geldiği ülkelerin dağılımı ise aşağıdaki tablo 5'de görülmektedir.

Tablo 5. Öğrencilerin Geldiği Ülkelerin Dağılımı

Kıta	Ülkeler	Sıklık	Yüzde
Avrupa	Almanya	2	0,6
	Arnavutluk	31	9,7
	Belçika	1	0,3
	Bosna Hersek	3	0,9
	Bulgaristan	2	0,6
	İngiltere	1	0,3
	İtalya	1	0,3
	Fransa	5	1,6
	Karadağ	5	1,6
	Kosova	18	5,6
	Makedonya	23	7,2
	Moldova	1	0,3
	Sırbistan	2	0,6
	Ukrayna	1	0,3
	Yunanistan	10	3,1
Asya	Afganistan	11	3,4
	Azerbaycan	16	5,0
	Bangladeş	2	0,6
	Çin	4	1,3
	Doğu Türkistan	3	0,9
	Endonezya	16	5,0
	Filistin	2	0,6
	Gürcistan	9	2,8

	Hindistan	1	0,3
	Irak	4	1,3
	Kazakistan	5	1,6
	Kırgızistan	1	0,3
	Lübnan	1	0,3
	Malezya	2	0,6
	Moğolistan	3	0,9
	Myanmar	2	0,6
	Pakistan	3	0,9
	Rusya	4	1,3
	Suriye	19	6,0
	Suudi Arabistan	1	0,3
	Tacikistan	8	2,5
	Tayland	1	0,3
	Türkmenistan	17	5,3
Afrika	Cezayir	2	0,6
	Cibuti	1	0,3
	Çad	3	0,9
	Etiyopya	2	0,6
	Fas	10	3,1
	Fildişi Sahili	3	0,9
	Gana	2	0,6
	Gine Bissau	3	0,9
	Gine Conakry	2	0,6
	Kamerun	1	0,3
	Kenya	3	0,9
	Komor	1	0,3
	Kongo	5	1,6
	Liberya	1	0,3
	Mali	6	1,9
	Moritanya	3	0,9
	Mısır	1	0,3
	Nijer	4	1,3
	Nijerya	6	1,9
	Orta Afrika Cumhuriyeti	1	0,3
	Senegal	1	0,3
	Somali	4	1,3
	Sudan	2	0,6
	Tanzanya	3	0,9
	Togo	2	0,6
	Uganda	2	0,6
	Toplam	319	100,0

Tablo 5 incelendiğinde araştırmaya katılan öğrencilerin üç ayrı kıtadan ve 64 farklı ülkeden geldikleri görülmektedir. Araştırmanın yapıldığı dönemde Avrupa ülkeleri içinden en fazla sayıda öğrenci sırasıyla Arnavutluk, Makedonya, Kosova ve Yunanistan'dan gelmiştir. Asya ülkeleri içinden ise en fazla sayıda öğrenci sırasıyla Suriye, Türkmenistan, Azerbaycan ve Endonezya'dan gelmiştir. Afrika ülkeleri içinden ise en fazla sayıda öğrenci sırasıyla Fas, Mali ve Nijerya'dan gelmiştir. Araştırmaya katılım gösteren öğrencilerin eğitim gördükleri fakülteler ise aşağıdaki tablo 6'da görülmektedir.

Tablo 6. Öğrencilerin Eğitim Gördükleri Fakülteler

Fakülte	Sıklık	Yüzde
İktisadi ve İdari Bilimler Fakültesi	33	10,34
Fen Edebiyat Fakültesi	21	6,58
Mühendislik Fakültesi	35	10,97
Eğitim Fakültesi	17	5,32
Hukuk Fakültesi	1	0,3
Tıp Fakültesi	12	3,76
İlahiyat Fakültesi	146	45,76
Ziraat Fakültesi	1	0,3
Veteriner Fakültesi	3	0,94
Mimarlık Fakültesi	7	2,19
Sosyal Bilimler Enstitüsü	30	9,40
Sağlık Bilimleri Enstitüsü	13	4,07
Toplam	319	100

Tablo 6 incelendiğinde araştırmaya katılan öğrencilerin yaklaşık yarısının lisans düzeyinde ilahiyat fakültesinde eğitim gördüğü, bunu mühendislik fakültesi, iktisadi ve idari bilimler fakültesinin izlediği görülmektedir. Öğrencilerin yaklaşık %15'inin lisansüstü eğitim (Sosyal Bilimler Enstitüsü ile Sağlık Bilimleri Enstitüsü) yaptığı görülmektedir. Araştırmanın yapıldığı dönemde öğrencilerin devam ettikleri eğitim düzeyleri ise aşağıdaki tablo 7'de görülmektedir.

Tablo 7. Öğrencilerin Devam Ettikleri Eğitim Düzeyi

Eğitim Durumu	Sıklık	Yüzde
Lisans Hazırlık	121	37,9
Lisans 1.sınıf	42	13,2
Lisans 2. Sınıf	41	12,9
Lisans 3. Sınıf	21	6,6
Lisans 4. Sınıf	51	16,0
Yüksek Lisans Hazırlık	4	1,3
Yüksek Lisans	28	8,8
Doktora	11	3,4
Toplam	319	100,0

Tablo 7 incelendiğinde araştırmaya katılan öğrencilerin yaklaşık %38'inin hazırlık sınıflarında olduğu görülmektedir. Diğer öğrenim düzeylerinde ise yaklaşık olarak dengeli bir dağılım söz konusudur. Araştırmanın yapıldığı dönemde öğrencilerin Türkiye'ye gelme şekli ise aşağıdaki tablo 8'de görülmektedir.

Tablo 8. Öğrencilerin Türkiye'ye Gelme Şekli

Gelme Şekli	Sıklık	Yüzde
Kendi İmkânlarıyla	69	21,6
Bursla	250	78,4
Toplam	319	100,0

Tablo 8 incelendiğinde araştırmaya katılan öğrencilerin büyük çoğunluğunun burs imkânlarıyla geldiği görülmektedir. Araştırmanın yapıldığı dönemde yabancı uyruklu öğrencilerin Türkiye'de kalacağı süre aşağıdaki tablo 9'da görülmektedir.

Tablo 9. Öğrencilerin Türkiye'de Kalacağı Süre

Süre / Yıl	Sıklık	Yüzde
2	15	4,7
3	21	6,6
4	15	4,7
5	189	59,2
6	66	20,7
7	13	4,1
Toplam	319	100,0

Tablo 9 incelendiğinde araştırmaya katılan öğrencilerin büyük çoğunluğunun (yaklaşık %60) Türkiye'de 5 yıl kalmayı planladığı görülmektedir. Bu süre araştırmaya katılım gösteren öğrencilerin çoğunluğunun hazırlık sınıfını okuması ve devamında çoğunluğu 4 yıl olan lisans düzeyinde eğitim alacak olmalarıyla doğrudan ilişkilidir.

Çalışmanın devamında araştırmanın anket formunda yer alan ölçek sorularına uygulanan faktör analizine ve elde edilen sonuçlara ilişkin bilgiler verilmektedir.

Faktör Analizi ve Sonuçları

Faktör analizi, birbirleriyle ilişkili çok sayıdaki ifadeyi az sayıda, anlamlı ve birbirinden bağımsız faktörler haline getiren başta sosyal bilimler olmak üzere pek çok alanda sıkça kullanılan istatistik tekniklerinden biridir (Kalaycı, 2005: 403-405). Faktör analizi, birbiriyle ilişkili p tane fadeyi bir araya getirerek az sayıda ilişkisiz ve kavramsal olarak anlamlı yeni ifadeler (faktörler, boyutlar) bulmayı, keşfetmeyi amaçlayan çok değişkenli bir istatistiktir (Çakmak vd., 2013: 7). Faktör analizinin iki temel amacı bulunmaktadır. Bunlar; ifade sayısını azaltmak ve ifadeler arası ilişkilerdeki yapıyı ortaya çıkarmak başka bir ifadeyle ifadeleri sınıflandırmaktır (Doğan ve Başokçu, 2010: 65-66). Faktör analizinin yapılacağı örneklemin yeterliliği Kaiser - Meyer - Olkin (KMO) yöntemiyle ölçülmüş ve elde edilen değerler aşağıdaki tablo 10'da belirtilmiştir.

Tablo 10. KMO ve Bartlett's Test Sonuçları

Kaiser-Meyer-Olkin Örnek Uygunluğu		,933
Bartlett's Küresellik Testi	Ki Kare Yaklaşık Değeri	10031,957
	Serbestlik Derecesi	1540
	Anlamlılık	,000

KMO değerleri faktör analizinin iyi olup olmadığı (90 ve üzeri çok iyi, 80 - 89 iyi, 70 - 79 orta, 60 - 69 kötü, 50 - 59 çok kötü, 50 altı kabul edilemez) hakkında bilgi vermektedir (Semerci, 2003: 230-231). Buradan hareketle yukarıdaki tablo 5.10 incelendiğinde, KMO uygunluk değerinin 0,933 olduğu ve veri grubuna faktör analizinin yapılmasının uygun olduğunu görülmektedir. Ayrıca Bartlett testi sonucu anlamlılık değeri 0,00 (0,05'den küçük) olduğu için araştırmada kullanılan ölçek anlamlı bulunmuştur. KMO ve Bartlett ölçümlerinden sonra, öğrencilerin eğitim hizmeti almak için ülke ve üniversite tercihinde etkili olan kriterleri belirlemek için anket sorularına faktör analizi uygulanmıştır. Faktör analizinde asal bileşenler tekniği kullanılmış ve varimax rotasyonu yapılmıştır. Aşağıdaki tablo 11 incelendiğinde, elde edilen 5 faktörün toplam varyansın %49,98'ini açıkladığı görülmektedir.

Tablo 11. Varyans Değerleri

Faktörler	Öz Değerler	Açıklanan Toplam Varyans Yüzdesi	Kümülatif Yüzde
1	17,742	24,511	24,511
2	3,605	7,458	31,969
3	2,540	6,211	38,181
4	2,134	6,036	44,217
5	1,968	5,765	49,982

Faktör analizi dahilinde yapılan varimax rotasyonu sonucu, analizde yer alan her bir ifadeye (değişken) ilişkin faktör yükleri bulunmuş ve bu aşağıdaki tablo 12'de gösterilmiştir.

Tablo 12. Döndürülmüş Faktör Analizi Sonuçları

	İfadeler	Faktörler ve Faktör Yükleri				
		1	2	3	4	5
22	Ders içeriğinin kalitesi	,815				
45	Eğitim sistemi	,808				
23	Akademik kadronun niteliği	,772				
24	Ders ve eğitim programlarının çeşitliliği	,768				
25	Üniversitenin öğrenci düşüncelerine önem vermesi	,745				
34	Burs imkânları	,741				
29	Mezuniyet sonrası iş bulma kolaylığı	,708				
35	Finansal yardım (burs ya da kredi) olanakları	,702				
14	Teknolojik altyapının yeterliliği	,695				
20	Prestijli bir üniversite olması	,694				
41	Üniversitenin bulunduğu bölgenin güvenilir olması	,682				
28	Staj imkânı sunması	,669				
38	Ülke imajı	,648				
13	Kütüphane hizmetlerinin yeterliliği	,647				
18	Üniversiteye toplu taşımayla ulaşımın kolay olması	,637				
19	Konaklama imkânı	,634				
16	Akademik gelişim faaliyetleri (konferans, seminer, kulüp vb.)	,628				
43	Vize koşulları (vize alma ve uzatma)	,622				
44	Öğrencilere çalışma izni sağlaması	,611				
30	Mezunların nitelikli işlerde çalışıyor olması	,606				
27	İş dünyasıyla bağlantılarının kuvvetli olması	,596				
37	Konaklama maliyetleri	,570				
21	Başvuru koşulları	,553				
26	Okuyan öğrenci profilinin niteliği	,539				
17	Sosyo-kültürel gelişim etkinlikleri (tiyatro, sergi, konser vb.)	,529				
36	Seyahat maliyetleri	,526				
33	Ödeme kolaylığı	,519				
47	Şehrin yaşam maliyeti	,511				
51	Farklı kültürleri tanıma isteği	,506				
8	Kampüsün güvenli olması					
15	Sunulan spor faaliyetleri					
55	Fuar tanıtımlarının yeterliliği		,681			
54	Tanıtıcı materyallerin (broşür, katalog, CD, vb.) yeterliliği		,623			
53	Üniversitenin web sitesinin çekiciliği ve bilgilendiriciliği		,576			
56	Üniversiteyle ilgili dergi/gazete/billboardlar reklamları		,567			
9	Kampüs alanının genişliği		,563			
52	Kampüsün önceden gezilmiş olması		,524			
12	Uluslararası öğrenci sayısı					
11	Şehir merkezine yakın olması					
49	Şehrin coğrafi alanı			,711		
40	İklim şartları			,670		
48	Heyecan verici bir şehir olması			,662		
50	Şehrin nüfus yoğunluğu			,657		
39	Kendi ülkesine yakınlığı			,596		
42	Devlet politikası					

Tablo 12. Döndürülmüş Faktör Analizi Sonuçları (Devamı)

	İfadeler	Faktörler ve Faktör Yükleri				
		1	2	3	4	5
31	Başvuru ücreti				,632	
32	Eğitime ödenecek bedel				,513	
10	Etkileyici bir kampüse sahip olması				,505	
46	Göçmenlik imkânı					
4	Arkadaşlar					,770
2	Yakın çevre ve akrabalar					,758
3	Mezunlar					,686
5	Öğretmenler					,662
1	Aile					,516
7	Dış ülkede yaşayan tanıdıklar					
6	Yurtdışı eğitim acenteleri/eğitim danışmanları					

Yukarıdaki tablo 12 incelendiğinde analizde yer alan ifadelerin hangi faktör altında gruplandırılacağını belirleyen faktör yükleri görülmektedir. Söz konusu gruplandırma, faktör yükü 0,50 ve altında kalan ifadelerin analiz dışında bırakılması kriteri dâhilinde yapılmıştır. Buradan hareketle, 56 ifade içerisinden 8 tanesi (6, 7, 8, 11, 12, 15, 42 ve 46 numaralı ifadeler) faktör yükü 0,50'ın altında kaldığı için analizden çıkarılmıştır. Analizden çıkarılan ifadeler şunlardır:
1. Yurtdışı eğitim acenteleri/eğitim danışmanları *(6 no.lu ifade)*
2. Dış ülkede yaşayan tanıdıklar *(7 no.lu ifade)*
3. Kampüsün güvenli olması *(8 no.lu ifade)*
4. Şehir merkezine yakın olması *(11 no.lu ifade)*
5. Uluslararası öğrenci sayısı *(12 no.lu ifade)*
6. Sunulan spor faaliyetleri *(15 no.lu ifade)*
7. Devlet politikası *(42 no.lu ifade)*
8. Göçmenlik imkânı *(46 no.lu ifade)*

Belirlenen kriter dahilinde yukarıda belirtilen 8 ifadenin analizden çıkarılması sonucu, kalan 48 ifade 5 faktör altında gruplandırılmış ve her bir faktör içerdiği ifadeleri (değişken) kapsayacak şekilde isimlendirilmiştir. İsimlendirilen faktör grupları aşağıda ayrıntılı olarak belirtilmektedir:

1. Faktör: Üniversitenin Fiziki ve Akademik Olarak Sağladığı İmkânlar: İlk faktör altına yüklenen 29 ifadenin faktör yükleri yüksek olduğundan dolayı bu faktörün altındaki maddelerin ölçeğin faktör yapısına önemli katkılar sağladığı saptanmıştır. Öğrencilerin eğitim hizmetlerini satın almalarında etkili olan üniversitenin hem fiziki hem de akademik olarak sağladığı imkânlara ilişkin 29 ifadeyi içermektedir. Öğrenciler eğitim hizmeti satın alırken üniversitenin tüm olanaklarından faydalanmak istemektedirler. Faktör 1 altında yer alan ifadelerin yüklenme değerleri 0.506 ile 0.815 arasında değişmektedir. Birinci faktörü oluşturan maddelerin içerdiği ifadelere bakılarak ve ilgili literatür dikkate alındığında Faktör 1 "Üniversitenin Fiziki ve Akademik Olarak Sağladığı İmkanlar" olarak isimlendirilmiştir. Buradan hareketle, bu faktör boyutunun teorik bilgiyi desteklediği görülmektedir.

2. Faktör: Üniversitenin Pazarlama Faaliyetleri: Üniversitelerin amaçlarına ulaşmasında pazarlama faaliyetlerinin biçimsel bir organizasyon yapısı içerisinde gerçekleştirilmesi yön belirleyici olmaktadır. Üniversitenin bilinirliğini arttıran faaliyetlerin başında gelen tanıtım hizmetlerinin, üniversite öğrencilerinin tercihlerini etkileme oranı, oldukça yüksektir. Aynı zamanda üniversiteler arasında farklılık yaratmak, hedef kitleye doğru ve hızlı bir şekilde ulaşabilmek, hem mevcut öğrencilerin hem de potansiyel öğrencilerin memnuniyetini arttırmak gibi üniversitenin gelişiminde pek çok fayda sağlamaktadır. Bu boyutta üniversitelerin kullanabileceği tutundurma araçları 6 ifadeyi içermektedir.

3. Faktör: Ülke ve Şehir Özellikleri: Eğitim hizmeti satın alacak öğrenciler aynı zamanda eğitim alacakları ülke ve şehri de incelemekte ve coğrafik özelliklerine dikkat etmektedir. Bu bağlamda, bu boyutta 5 ifade bulunmaktadır ve ifadelerde iklimin, şehrin kalabalığının ve heyecan verici bir şehir olması öğrenciler üzerinde etkisi bulunduğu görülmektedir. Dolayısıyla analiz sonuçları teorik bilgiyi desteklediği görülmektedir.

4. Faktör: Üniversitenin Fiyat-Kalite Algısı: Öğrenciler eğitim hizmeti satın alırken en çok dikkat ettiği konulardan birisi de alacağı eğitimin maliyetidir. Bu maliyetlerin başında başvuru ücreti ve okul harcı

gelmektedir. Bu boyutta 3 değişken bulunmakta ve değişkenlerde maliyetlerin öğrenciler üzerindeki etkisi görülmektedir. Analiz sonuçları teorik bilgiyi destekler niteliktedir.

5. Faktör: Üniversite Tercihinde Tavsiyeler: Bu faktör eğitim hizmeti satın alacak öğrencilerin tavsiyelerin önemini ortaya koymaya yönelik olarak 5 ifadeden oluşmaktadır. Öğrenciler üniversite tercihlerini yaparken ailenin, yakın çevre ve akrabaların, mezunların, arkadaşların ve öğretmenlerin tavsiyelerini dikkate aldıkları görülmektedir.

Sonuç

Birçok sektörde etkilerini gösteren küreselleşme ve yaşanan rekabet eğitim hizmetleri sektöründe de önemli değişimlere neden olmaktadır. Birçok ülkede olduğu gibi özellikle Türkiye'de açılan üniversite sayısındaki artış, yükseköğretim kurumlarını özel sektörün çeşitli uygulamalarını kullanmaya itmektedir. Bu uygulamaların başında ise pazarlama stratejisi ve uygulamaları gelmektedir. Sadece yurt içindeki rekabet değil, küreselleşmenin etkisiyle küresel rekabet de yükseköğretim kurumlarını bu rekabet içinde hedefledikleri yerlere gelmelerinde pazarlama anlayışından yararlanmaya yöneltmektedir. Öğrencilerin beklentilerinin yükselmesi, günümüzün yoğun rekabet ortamında bulunan yükseköğretim kurumlarının stratejik pazarlama planları yapmaları zorunlu kılmaktadır.

Öğrencilerin yükseköğretim kurumu tercihini etkileyen birçok faktör bulunmaktadır. Soutar ve Turner'in 2002 yılında Avusturalya'da yaptıkları bir çalışmada üniversite seçiminde belirleyici ve önemli olan dört unsur bulunmuştur. Bunlar; akademik prestij, mezuniyet sonrası iş beklentisi, eğitim kalitesi ve eğitim programlarının uygunluğudur. Uluslararası öğrenciler eğitim alacakları üniversiteyi seçerken birçok faktörden etkilenirler. Öğrencilerin seçimlerini etkileyen diğer faktörler; uluslararası ilişkiler, üniversitenin lokasyonu, okulun derecesi, aynı üniversiteye giden arkadaşlar, ailelerin tavsiyeleri ve maliyettir. Ming'in 2010 yılında yaptığı araştırmaya göre Malezya'daki öğrencilerin üniversite seçimini etkileyen faktörler ise lokasyon, akademik program, üniversitenin prestiji, eğitimsel özellikler, maliyet, finansal yardımlara ulaşılabilirlik, iş bulma olanakları, reklam, eğitim sistemi ve kampüs ziyaretleridir. İspanya'da 2006 yılında Cubillo, Sanchez ve Cervino tarafından yapılan araştırmaya göre öğrencilerin üniversite tercihini etkileyen beş faktör bulunmaktadır. Bunlar; kişisel nedenler, ülke imajının etkisi, şehir imajının etkisi, üniversite imajı ve programının uygunluğudur. Tüm bu faktörler, pazarlama stratejilerinin ve programlarının geliştirilmesi ve uygulanmasında oldukça önemlidir.

Araştırma sonucunda Uludağ Üniversitesi'nde (Bursa-Türkiye) öğrenim gören yabancı uyruklu öğrencilerin üniversite tercihleri 5 faktör altında toplanmıştır. İlk faktör öğrencilerin eğitim hizmetlerini satın almalarında etkili olan üniversitenin hem fiziki hem de akademik olarak sağladığı imkânlara ilişkindir. Bu faktöre göre öğrenciler eğitim hizmeti satın alırken özellikle üniversitenin sahip olduğu fiziki ve akademik olanaklarını oldukça önemsemekte (faktör yükü en yüksek olan bu faktördür) ve bu olanaklardan faydalanmak istemektedirler.

Üniversitelerin amaçlarına ulaşmasında pazarlama faaliyetlerinin kullanılması oldukça belirleyici olmaktadır. İkinci faktöre göre üniversitenin bilinirliğini arttıran faaliyetlerin başında gelen tanıtım hizmetlerinin, üniversite öğrencilerinin tercihlerini etkileme oranının oldukça yüksek olduğu görülmektedir. Pazarlama faaliyetleri; hedef kitleye hızlı bir şekilde ulaşabilmek, üniversiteler arasında farklılık yaratmak, mevcut ve potansiyel öğrencilerin memnuniyetini arttırmak gibi üniversitenin gelişiminde pek çok fayda sağlamaktadır. Üçüncü faktör öğrencilerin eğitim hizmetlerini satın almalarında etkili olan ülke ve şehir özelliklerine ilişkindir. Öğrenciler ülkenin iklim şartlarına, kendi ülkesine yakınlığına ve şehrin coğrafik özelliklerine de dikkat etmektedir.

Öğrencilerin eğitim hizmeti satın alırken en çok dikkat ettiği konulardan birisi de fiyat-kalite algısıdır. Öğrenciler aldığı hizmetin sağlayacağı faydayla maliyetini karşılaştırmaktadır. Dördüncü faktörde bu unsurları içeriğinde barındırmaktadır. Maliyet faktörleri, başvuru ücreti ve eğitime ödenecek bedelden oluşmaktadır. Etkileyici bir kampüse sahip üniversitelerin fiyat-kalite algısının yüksek olduğu görülmektedir. Beşinci faktör eğitim hizmeti satın alacak öğrencilerin tavsiyelerin önemini ortaya koymaktadır. Öğrenciler, üniversite tercihlerini yaparken başta arkadaşları olmak üzere yakın çevre ve akrabalarının, mezunların, öğretmenlerinin ve ailenin tavsiyelerini dikkate almaktadırlar.

Sonuç olarak, yükseköğretim çevresi giderek yarışmacı bir hal almaktadır. Bu noktada günümüzde öğrenci ve müşteri ikileminin yaşandığı bir ortamda yükseköğretime başvuran öğrenciler artık pasif değildirler. Öğrenciler yükseköğretim başvurusunu kariyerlerini hazırlamada bir yatırım kararı olarak görmektedirler. Yükseköğretime başvuranların tercihlerdeki davranışlarının değiştiği açık bir şekilde görülmektedir. Üniversiteler bu değişimden dolayı kendilerini yenileme çabası içine girmeli ve pazarlama stratejilerini öğrencilerin tercihlerine göre

geliştirmelidirler. Bu noktada pazarlama strateji ve uygulamalarının yükseköğretim kurumlarının yöneticileri tarafından da bilinmesi artık bir şart olmaktan çıkmış, zorunluluk haline gelmiştir. Ancak bu uygulamaların özellikle devlet üniversiteleri tarafından yerine getirilmesi de vakıf üniversitelerine göre bir parça daha zordur. Zaman içinde kanun ve yönetmeliklerde yapılacak çeşitli değişiklikler ve özellikle yöneticilerin anlayışlarının değişmesi ile Türk üniversiteleri de başta yurt içi olmak üzere küresel rekabette de daha rekabetçi olabileceklerdir.

Bu çalışmanın araştırma kısmında yer alan kısıtlar çalışmanın kapsamının geniş çaplı olma çabasını etkilemiştir. Bundan sonra yapılacak çalışmalarda kapsamın daha geniş tutulması, farklı ülke karşılaştırmalarının da yapılması konunun farklı boyutlarıyla araştırılabilmesine de olanak sağlayacaktır.

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ELEARNING COURSEWARE DEVELOPMENT WITH PROJECT-BASED BLENDED LEARNING FOR ENHANCING TEACHERS' ICT SKILLS IN 21st CENTURY

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ABSTRACT

The objectives of this research were to: 1) develop the eLearning Courseware with   Project-based and Blended Learning for learning achievement   and ICT skills   enhancing in 21st century   for secondary school teachers in Thailand following the ICT4T-C21 Model; 2) evaluate the eLearning Courseware   with Project-based and Blended Learning for   enhancing ICT skills; and 3) investigate the opinion of the learners in courseware learning. The research sample included of 30 teachers   in 8 schools in Nakornnayok Province in Thailand by using stratified sampling technique from 4 districts.   The research instruments of eLearning Courseware was developed following by   ICT for Teacher in 21st Century Model (ICT4T-C21),   pretest and posttest, ICT skills   assessment form and a questionnaire for teachers as well as an evaluation form for experts.   The eLearning Courseware had been developed following the ICT4T-21C Model, then was used by the sample and evaluation were conducted. This research revealed that learning results by achievement posttest was higher than pretest and the   courseware could enhance teachers' ICT skills in 21st century. These results could be confirmed that the ICT4T-C21 Model could be applying for eLearning Courseware design and development for teacher learners successfully.

INTRODUCTION

In the age of information and communication technology, the knowledge currently emerged and grew very fast, but the teachers and learners could not learn a huge of knowledge up to date. Then the teachers must have skills to learn the information technology faster, as well as the facilitators for managing the learning process to follow up the technology and innovation transferring (Sompong, 2016).   Blended learning are a great way to initiate an organization into e-learning. Using blended learning benefits the learner, the training staff and the organization's bottom line. However, we should thinking about how to achieve the appropriate learning objective and the availability of the organization infrastructure and supporting learning resources to serve this new idea . Blended learning allows organizations to gradually move learners from traditional classrooms to e-learning in small steps making change easier to accept. Working in a blended environment enabled instructors and instructional designers to develop the skills needed for e-learning in small increments (Driscoll 2003). Centeno and Sompong, (2015) give the suggestion   that Students recommended that effective learning experience would take place if an equal mix of individual and group activities depending on lesson objectives would be implemented both in F2F instruction and online learning. They preferred to have learning tools and technologies that would enable rich interaction among students, and between the teacher and students, and those that could facilitate collaborative learning in the delivery of learning content.

As well as the Project-based Learning (PBL) is an innovative approach to learning that teaches a multitude of strategies critical for success in the twenty-first century . Students generally work in small, collaborative groups in the project-based learning model. They find sources, conduct research, and hold each other responsible for learning and the completion of tasks. Essentially, students must be "self-managers" in this approach to instruction. (Mergendoller, J. & Thomas, J. 2000). The teacher training in ICT skills possibly integrated using both blended learning and project-based learning for enhancing the competence of teacher under the eLearning Courseware.

In Thailand, Office of Basic Education Commissions have a policy for in-service teacher training project on ICT Learning Enhancement for Teacher but a problem of teachers occurred when teacher were leaving their class to train outside their schools. So, they could not maintain full-time class teaching along the whole period. This problem brings about the idea of using blended learning for training teachers by using eLearning Courseware to enhance the teachers' ICT skills in 21st Century. The project-based learning process also could come to integrate the learning process, so that they could do the learning and teaching innovation practicing by group collaboration in school and home to match with their teaching current subject. Consequently, they could avoid for leaving their class presence.

This research in the first phrase, therefore would to develop the model to train teachers' ICT skill in 21st Century in Nakornnayok, a central Province in Thailand in the first phrase. Then at the second phrase, the appropriate model would be used for developing eLearning Courseware for training teachers and investigated the effectiveness of this eLearning Courseware with the teachers. So, this investigation would be insisted that the learning process in learning design with blended and project-based learning which following the ICT4T-C21 Model in the first phase would be applicable to the teachers' ICT skills development.

THE STUDY
The objectives of this research were to: 1) develop the e-Learning courseware with Project-based and blended learning model (ICT4T-C21) for development of ICT skills for teachers in 21st Century in Thailand, 2) evaluate the e-Learning Courseware with Project-based and Blended Learning for enhancing ICT skills, and 3) investigate the opinion of the learners in courseware learning.

The research sample included the total of 40 teachers who were drowned up from the Office of Basic Education Commission working at 8 schools in Nakornnayok Province in Thailand. They were selected for 5 teachers in each school using stratified sampling technique from 4 districts: Muang District, Banna District and Pakplee District. However, the sample size finally remained 30 teachers because some of them dropped out during the process of training, so the sample still be in active on 3-4 teachers in each school.

RESEARCH   INSTRUMENTS

The research instruments composed of the eLearning Courseware which was designed and developed by Moodle LMS Version 3.0 following the conceptual design of the **ICT for Teacher in 21st Century Model (ICT4TC21)** that had been developed in Phrase I (Sompong et. al, 2016), the learning achievement pretest and posttest, an evaluation form for the experts in the quality evaluation of the courseware, ICT skills assessment forms for instructors and learners as well as an evaluation form for experts toward eLearning Courseware were applied.

This research methodology composed of 3 steps. The first step, an eLearning Courseware had been designed and developed following the ICT4T-21C Model. After that, this courseware had been used for training 30 teachers who were the sample at the respective schools. Lastly, eLearning Courseware had evaluated after finishing the revision program under experts' recommendations. Development of eLearning courseware on ICT skills development had designed in Moodle learning management system (LMS). Then, one month training course had launched for teachers in April 2016.

ICT skills development training program had integrated cognitive leaning and practice on Web-based Instruction and face to face learning in the classroom. The learners could achieved for four ICT learning skills : Information Literacy, Media Literacy, ICT Literacy and Innovation. These learning methods were blended with two modes of learning. The first mode gave the sample study in Web-based Instruction and doing workshop some days in the classroom on the other hand. The pedagogical framework of Blended Learning in this study was applied by Venn diagram which face to face instruction was partly overlap by online learning with the proportion 40 by 60 percentage approximately.

Meanwhile, project-based learning (PBL) was implemented to 8 groups of teachers following the certain model. There were 8 stages to hand-on practices in PBL: 1) Defined the problem, 2) Planning the project, 3) Searching and Sharing, 4) Collaborating, 5) Presentation, 6) Reflection, 7) Application, and 8) Evaluation. The learners was guided to use social networks to communicate each other in the groups.

The participants also participated eLearn courseware through face to face and offline learning which composed of fives components. They learned circumstance on **live event** environment with their **self-paced learning** and study together in their group by using the **collaborative learning** technique. Learning **offline resources and Materials** had been used for active learning. The Learning outcome was assessed and evaluated by evaluation form during

the learning process and used achievement test at the end of learning.

DATA COLLECTION
The eLearning Courseware had been used for training 40   participants who were the sample of the teachers at conference room of the District Office of Basic Education Commission, however, 10 of the participants   dropped out, so there were 30 teachers   to continuing participation until the end of training with 3 stages. There were Orientation the course, online learning with Web-based Instruction and Hand-on Practices in the classroom,   and learning assessment and evaluation   respectively.

Online Learning through Moodle LMS   Moodle Version 3.0 was used for Learning Management Systems (LMS)   design on new department website (http://course.edu.ku.ac.th/training/). The courseware module composed of 7 Units including **pretest** at the beginning of first unit and **posttest** at the end of seventh unit.

> Unit 1 ICT Learning in 21st Century
> Unit 2 Communication Literacy
> Unit 3 IT Literacy
> Unit 4 Media Literacy
> Unit 5 Innovation Literacy
> Unit 6 ICT Skills by Project-based Learning
> Unit 7 Project Presentation and Evaluation

Figure 1   Website: first page of the eLearning Courseware http://course.edu.ku.ac.th/training/

The designed components of eLearning Courseware on **Web-based Instruction** were Learning information and message, learning module with 7 Units. The first page in each unit was held in consequence of the investigation which composed of the learning objectives, pretest, subject contents, video of the presentation, the learning resources, exercises, and posttest. **Supportive components**   showed on the main page with Login System, Web links, QR code, social network links, such as Facebook, YouTube, Google applications and Gmail address of the project as well as a group of existing **evaluation buttons** for learning evaluation by experts, peer to peer and learners . Moreover, the first page windows also showed calendar, online user, counter of hit number and survey application form (poll) were created by the Moodle module.

Table 1   Using   tools to practice in Learning ICT skills development in the eLearning Courseware

ICT Skills	Purpose	Tools
Communication	- Search and Sharing information practice	Gmail Facebook Hangout Line
Information Literacy	- Workshop on how to use and point setup on Map - Workshop on how to download and upload the	Google Maps Google Drive
Media Literacy	- Workshop on photographic and video production - Workshop on how to loading and sharing the video on YouTube - How to use QR Code and Infographic to media distribution	Mobile camera taking YouTube Viva video QR Code Infographic
Innovation in Education	- How to create and organize the media and contents mapping	Mind Mapping

In Table 1, the research result showed the various tools that could be used for practice ICT skills in class workshop. The learners could use these application to create the instructional innovation for their projects-based learning. The ICT skills could using tools for searching, sharing and restore data and information in their project.

FINDINGS

1. The result of the qualities of the eLearning Courseware by the experts.

   Table 2: The Quality of eLearning Courseware evaluated by the experts

Evaluation Items of eLearning courseware	$\overline{x}$	S.D.	Level of Suitability
1. Learning activities	4.75	0.29	Highest
2. Collaborative learning	4.70	0.29	Highest
3. Assessment and evaluation	4.67	0.33	Highest
4 .Contents	4.46	0.37	Highest
5. Image and Sound	4.17	0.33	High
6. Media design and techniques	4.00	0.33	High
7. Interaction design	3.74	0.42	high

In Table 2 showed the opinion of the experts toward the qualities of the eLearning Courseware in the various items. The research result revealed that almost   highest quality was foundin the learning activities

2. Learning achievement of the learners compare   by pretest and posttest.

Table 3: The testing hypothesis of pretest and posttest score

Acheivement Tests	Total No. of Learner	$\overline{x}$	S.D.	t
-Pretest	30	57.97	10.36	
				9.89*
-Posttest	30	75.30	12.69	

* Significant level at .05

In Table 3, showed   the research result which revealed that learning achievement of posttest score was higher than pretest score at the significant level 0.5. It could refered that the learning courseware on ICT skill development could enhance learners' ICT skills in 21st century significantly. .

3. The opinion of the learners toward the eLearning Courseware

Table 4: The opinion of the learners toward the eLearning Courseware

Evaluation Items	$\overline{x}$	S.D.	Level of Suitability
1 .Contents of the courseware	4.53	0.03	Highest
2. Clear, precise and utilization	4.52	0.06	Highest
3. Project-based Learning process	4.48	0.07	High
4. Learning Objective	4.40	0.06	High
5. Blended learning	4.31	0.04	High

In Table 4, the research found   that the learners gave the opinion that eLearning Courseware was evaluated at the highest level in Contents of the courseware and Clear, precise and utilization. The project-based learning, Learning objective and blended learning   were at the high level.

4. The result of ICT learning skills for teachers in 21st Century, evaluating by the instructors.

Table 5: The result of ICT learning skills for teacher in 21st Century by the instructors

Name of the Group Learners in School	$\overline{x}$	S.D.	Level
1. Pothitan	4.00	0	Very High
2. Ban Klong 14	3.60	0.55	High
3. Ban Prik	3.60	0.55	High
4. Wat Prome Pet	3.40	0.55	High
5. Wat Yotee Ratsattatam	3.40	0.55	High
6. Wat Santayaram	3.20	0.84	High
7. Ban Koksawang	3.00	0	High
8. Wat Nongree	2.80	0.45	High
Total	3.37	0.43	High

In Table 5, the research results revealed that blendeded and project-based learning were applied in the process of learning with eLearning Courseware was high achievement skills in the 21st Century. This table showed the mean score which came from the project output evaluation of the instructors by using Rubric Score technique.

CONCLUSIONS

This research results could be confirmed that the ICT4T-C21 Model with project based and blended Learning instruction could be applying for eLearning Courseware design successfully. The ICT4T-C21 that composed of 3 components, ICT skills for teacher in 21st Century, Blended Learning and Projected-based Lerning in the eLearning Courseware integration were acceptable by the experts to use for eLearning Courseware design in the

second phrase.

The researchers gave the recommendation that designer of eLearning courseware should understanding about how to use the instructional tools for supporting the instruction systems in developing ICT skills of the teachers and learners. The instructional technology would   concern in the theory of design in terms of contents, objectives, the media presentation and the interaction among the learners and teachers and the learner and learners. Assessments and evaluation have to   applied in the systems.

The result of this study could be confirmed that the teachers in secondary schools should use the blended leaning for ICT development for learners by using the innovative devices such as the smart phone and tablet with applications to learn and practice both modes, online and offline in and out of the class. Moodle LMS could used for create the learning online program in the various purposes, and connection with social media utilizing for learning integration with LMS.

Project-based Learning (PBL) is the best activities to the real practice in real situation so that the teachers could try to create the innovation with ICT skills by using this teaching methods. The result reveal that this methods can help the teacher to learn ICT actively. However, the basic supports in the network accessibility and the network stablility is very high significant factor to facilitate teachers and students in the prosess of learning ICT skills, so the administrators have to support the facilities as the hardware and software for sustain the network providing to the learners continuingly. PBL could be implement better under this factors.

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ELECTRONIC WASTE: THE SOCIAL AND ENVIRONMENTAL IMPORTANCE OF THAI TEENAGER CONSUMER AWARENESS

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ABSTRACT

According to the United Nations 42 million metric tonnes of e-waste were generated around the globe in 2014 which represented some US$52 billion of potentially reusable resources referred to as the 'urban mine', little of which however was collected for recovery. The importance of the proper disposal of e-waste and its hazardous effects to the environment and humans is little understood as well. Electronic Waste which represented seven percent of the world's e-waste is different from general waste as there are many diverse and complex parts including heavy metals and hazardous substances such as lead, mercury, and cadmium. Improper handling and disposal can cause significant harm to the environment as well as pose a health hazard to humans. Solid waste management is a complex task which requires the use of advanced technology and specialized process controls. Most e-waste facilities are using aged equipment and techniques which must be upgraded to international standards. Over the years many countries have embraced an Extended Producer Responsibility but today more is needed as the problem has reached unsustainable levels. Stronger legislation in the form of Thailand's WEEE Management Act unfortunately is tied up in a bureaucratic process with many levels of approval necessary before it can be enacted. One possible solution is the education of the consumer segment most likely to be using these devices, teenagers. Reaching out to teenagers to understand the environmental and human health effects of the improper disposal of discarded, toxic e-waste is a possible solution for the future. Governmental regulation alone will not be adequate to curb the mindless disposal but instead must be supplemented with an education campaign at the earliest stages of consumption, the teenager. This therefore is the reasons for the proposed study.

INTRODUCTION

Electronic Waste or e-waste is the toxic legacy of our digital age with electronic waste creating 42 million tons of e-waste each year around the globe, with this 'urban mine' of electrical and electronic equipment waste estimated to have a value of $52 billion, an amount that would fill 1.15 million 18-wheel trucks, which if lined up would stretch from New York to Tokyo and back ("Global E-Waste Volume," 2015; Baldé, Wang, Kuehr, & Huisman, 2015). According to a 2014 report from the ITU (International Telecommunications Union), mobile-cellular subscriptions will reach almost 7 billion at the end of 2014, with 3.6 billion of these in the Asia-Pacific region (ITU, 2014), The increase is mostly due to growth in the developing world where mobile-cellular subscriptions will account for 78 per cent of the world's total, but at some point, most purchase a new phone and discard their old one as 'e-waste'.

E-waste is one of the largest known sources of heavy metals and organic pollutants with hazardous or toxic materials like lead, mercury, cadmium, chromium, brominated and chlorinated compounds posing a threat to humans and the environment, if they are improperly disposed of (Deccan Chronicle, 2016). E-waste is a term used to cover all items of electrical and electronic equipment (EEE) and its parts that have been discarded by its owner as waste without intent of re-use (Baldé et al, 2015). In Asia, the total e-waste generation was 16.0 million tons (Mt) in 2014 with China, India, Japan, Hong Kong, South Korea, Vietnam, Bhutan, Cyprus and Turkey having national e-waste related laws (Baldé et al, 2015). In China, national e-waste legislation manages the collection and treatment of TVs, refrigerators, washing machines, air conditioners and computers (desktop and laptops) and in 2013, it officially collected and treated around 1.3 Mt. of these five types of e-waste, which was 28 per cent of the total e-waste generated for all categories (Wang, Kuehr, Ahlquist & Li, 2013).

According to a fourth quarter 2015 study by Telenor of Norway on what it referred to as 'digital frontrunners', young smartphone users between 16-35 in Asia are pushing the popularity of new mobile services ("Survey: Smartphone usage," 2016). In Thailand, teenagers, also called 'Teen Genz' were found to have the most frequent screen use of the estimated 44 million Thai smartphones ("Line, Facebook top smartphone use," 2015), from which

in 2016, nearly 25 percent, or 11 million phones will be discarded (Chareonsong, 2014).

It is this huge 'Teen Genz' consumer group that must be brought into the discussion about the safe and healthy disposal of their electronic devices when they upgrade. Survey apps track usage, why not 'e-waste' apps to make users more aware of their social and environmental obligations of the safe disposal of their devices when they are no longer needed?

In Table 1 we can see statistics for ASEAN (plus Timor-Leste) domestic e-waste generated for each country in 2014. ASEAN, the Association of Southeast Asian Nations, is a powerhouse in the production and use of consumer electronics and appliances as well.

Name	kg/inh.	kt	National Regulation in force till 2013	population (1000)
Brunei Darus-salam	18.1	7	no	411
Cambodia	1.0	16	no	15561
Indonesia	3.0	745	no	251490
Lao People's Democratic Republic	1.2	8	no	6557
Malaysia	7.6	232	no	30467
Myanmar	0.4	29	no	66257
Philippines	1.3	127	no	99434
Singapore	19.6	110	no	5595
Thailand	6.4	419	no	64945
Timor-Leste	4.1	5	no	1172
Viet Nam	1.3	116	yes	92571

Table 1. Domestic E-Waste Generated per Country in 2014

In Vietnam alone, in the first six months of 2015, Vietnam produced 107.3 million mobile phones which was a massive 68.8 percent increase compared to the same period in 2014. The export value of cellphones and components in the six-month period topped US$14.7 billion, up 27 percent from the first half of 2014 (Tuoi Tre News, 2015). Additionally, there were 2.16 million televisions produced, all of which eventually ends of being disposed of somewhere.

In Thailand, the electronic waste disposal problem has also risen dramatically in recent years with the ever quickening development of consumer products and their subsequent demand and eventual disuse. In 2009 there was an estimated 80,000 tons of e-waste including more than 2.5 million units of e-waste (How Lead Affects the Way We Live & Breathe, 2006). This however had increased to an estimated 400,000 tons according to a survey conducted by Thailand's Pollution Control Department in 2012 with another report in 2013 by the Thai Industrial Works Department showing 20.88 electrical and electronic devices being disposed including 9.14 million landline telephones, 2.43 million television sets, 3.3 million portable audio and video players, 1.99 million personal computers, 1.5 million fax machines, 710,000 air-conditioners and 872,000 refrigerators (Vipoosanapat, 2014).

Figure 1: Thailand's E-Waste and Trends Source: HHW & WEEE Inventories, Thailand's HHW-Hazardous Household Waste/WEEE- Waste, Electrical and Electronic Equipment Pollution Control department (PCD) 2008, Waste Management in Thailand (2014)

As can be seen from these statistics and figure 1, the problem is large and growing ever quicker. Thailand from 2005 has made multiple efforts to draft legislation to deal with electrical and electronic waste. In its most recent incarnation, a 2014 draft was mirrored from the "extended producer responsibility" concept that allows goods producers to take responsibility for the products throughout the products' entire life chain, including the recycling or disposal (The State of Play on Extended Producer Responsibility, 2014).

Making the disposal process more complex and dangerous is the nature of the components and materials in the products themselves. Often times, these materials include hazardous substances such as heavy and toxic metals with many recyclers unaware or uncaring about their effects on the environment or people.

In Thailand today, there is no national waste disposal system or process to deal with what is potentially a highly toxic and hazardous environment posing health risks to the citizens of the nation. As stated, legislation has been drafted but as yet, no final action of the draft law has been taken including the fines and penalties necessary to help enforce the law. Along with the law, actions must be studied to reduce the risk of pollution to the environment allowing for an industry that is healthy, sustainable and competitive.

In a special report by the Bangkok Post, the headlines boldly heralded 'Thailand Government Reviews Electronic Waste Management Bill' on December 16, 2014 (Wipatayotin, 2014). In the following year on May 19th, a draft resolution entitled 'Draft Waste Electrical and Electronics Equipment (WEEE) Management Act, B.E. …. 'was submitted to the Thai cabinet. By the end of the day the government had resolved to approve in principle the draft Waste Electrical and Electronics Equipment (WEEE) Management Act, B.E. …. as proposed by the Ministry of Natural Resources and Environment. The draft act would then be submitted to the Office of the Council of State for consideration, and later to the coordinating committee of the National Legislative Assembly before proposing to the National Legislative Assembly. Ministry of Natural Resources and Environment would then proceed with the establishment of the waste equipment information center under the Department of Pollution Control (Royal Thai Government, 2015). As can be seen, there are many involved in the regulatory process of e-waste and related consumer product recycling and destruction in Thailand.

Thailand's Department of Pollution Control (DPC) has drafted a new law to address electronic waste dumping in public landfills and recycling of hazardous waste throughout the Kingdom which includes "provision for a hazardous waste tax, recycling, and a compulsory take-back scheme where manufacturers have to take back old products when consumers turn up to buy new ones" (Thailand Lawyer Blog, 2014). The WEEE draft law would make dumping electronic or electrical equipment in a public space illegal.

The DPC has also reported that in 2013 Thailand created 368,314 tons of waste from electric and electronic equipment, up from 359,070 tons in 2012. This is consistent with e-waste growth projections which state that by 2017, the volume of discarded e-products worldwide is expected to be 33 percent higher than in 2012 and weigh the equivalent of eight Great Pyramids of Egypt. In an IISD (International Institute for Sustainable Development) conference in 2015 in the Maldives, it was stated that 41.8 million metric tons of e-waste were generated in the world in 2014, 38% of this e-waste was produced in Asia (IISD, 2015). The worldwide smartphone market is also growing 13.0% year over year and in quarter two of 2015, there were 341.5 million shipments of smartphones globally (IDC, 2015). Another report from ABI Research predicts that the market for recovering and recycling used electronics will reach $14.7 billion by 2015 (ABI Research, 2010).

As we can see the problem is massive and is not going away and international bodies, conferences and individual countries and communities are trying to tackle the global problem. An example can be found in the United Nations Environmental Programme (UNEP) through its International Environmental Technology Centre (IETC) which is focusing on WEEE/E-waste management under its waste management programme.

Other experts such as Australia's Sunil Herat (IISD, 2015) highlights the business opportunities for recovering valuable materials from e-waste, and recommended a four-step approach for environmentally sound management of e-waste, including to: strengthen collection systems; understand the current financial, policy, and institutional set-up; examine policy measures implemented similar to EPR (extended producer responsibility); and incorporate expertise from an EPR panel on the technological, policy and financing aspects of e-waste management.

The Ministry of Natural Resources and Environment in Thailand, has also introduced an emerging WEEE legal framework based on the EPR principles and a national integrated WEEE management strategy in Thailand at the international Malé, Maldives IISD conference in 2015 (IISD, 2015).

Extended Producer Responsibility (EPR) is increasingly recognized worldwide as an efficient waste management policy to help improve recycling and reduce landfilling of products and materials. The basic feature of EPR is that producers assume responsibility for managing the waste generated by their products put on the market (OECD, 2014). In 2001 OECD defined EPR as "an environmental policy approach in which a producer's responsibility for a product is extended to the post-consumer stage of a product's life cycle".

Going back as far as 1990, one can find the origination of Thailand's present EPR strategies as articulated by Lindhqvist (2000) who first formulated the first definition of the extended producer responsibility (EPR) concept. Today, almost all OECD countries have formulated EPR policies and it is now possible to get a clearer understanding of the way the EPR principle can work under various conditions. In particular, the concept of EPR is as a policy principle to promote environmental improvements of products and product systems, and identifies possible approaches to key concerns in the implementation of EPR which builds on the preventive environmental strategies.

The current landscape of EPR in Asia varies significantly across countries and between OECD and non-OECD members. Industrialized OECD economies like Japan and the Republic of Korea have already well-established EPR schemes and regulations in place on the key waste streams, supported by a solid monitoring and enforcement framework. Some rapidly emerging economies, such as the People's Republic of China (PRC), India and Indonesia have started to develop EPR programmes even though these are generally not yet fully implemented and functioning. Malaysia and Thailand are also embarking the path towards EPR for e-waste, although these initiatives generally rely on voluntary participation of producers (OECD, 2014).

In Indonesian as in most places across Asia, there is a 2008 law on waste management but a regulation to elaborate on the law has still not been made. The law required that producers handle their own waste (like in Thailand) but in Indonesia that has been interpreted to mean only the packaging (Elyda, 2016).

In 2010, National Statistics Office of Thailand has done a survey of the usage of IT and communication showing that there were 38.2 million people obtained mobile phones, within this group, the majority was teenagers. They have been cultivated to have more responsibility to society and environment insufficiently. Yet, they have been lack of the knowledge about E-waste laws and regulations. However, Thailand is in the process of releasing legal aspects in E-waste and it is a mandatory for teenagers who are the biggest electronic and electrical product consumers to understand and have an understanding in the coming up laws related to E-waste laws. Therefore, this research is to focus on the study of the teenager's awareness on environmental impact from electronic waste.

THE STUDY

Electronic waste isn't just waste; it contains some very toxic substances, such as mercury, lead, cadmium, arsenic, beryllium and brominated flame retardants. This toxic mix is now being referred to by UN studies as the 'toxic mine' (Baldé et al, 2015). When the latter are burned at low temperatures they create additional toxins, such as halogenated dioxins and furans – some of the most toxic substances known to humankind. The toxic materials in electronics can cause cancer, reproductive disorders, endocrine disruption, and many other health problems if this waste stream is not properly managed (Wang, Cai, Jiang, Leuang, Wong, & Wong, 2005).

Yu, Gao, Wu, Zhang, Cheung, and Wong (2006) studied soil contamination from e-waste recycling center in Southeast China using 'primitive technology' and analyzed the concentration, distribution, profile and possible

source of polycyclic aromatic hydrocarbons (PAHs) in the soil. Researched discovered sixteen USEPA priority PAHs in 49 soil samples. The dominant PAHs were naphthalene, phenanthrene and fluoranthene, which were mainly derived from incomplete combustion of E-waste (e.g. wire insulations and PVC materials), and partly from coal combustion and motorcycle exhausts.

Gullett, Linak, Touati, Wasson, & King (2007), researched air emissions and residual ash samples from experiments of open, uncontrolled combustion of electronic waste (e-waste), simulating practices associated with rudimentary e-waste recycling operations. It was found that the value for the insulated wire is about 100 times higher than that for backyard barrel burning of domestic waste. Fly ash samples from both types of e-waste contained considerable amounts of several metallic elements and halogens; lead concentrations which were more than 200 times the United States regulatory limits for municipal waste combustors and 20 times those for secondary lead smelters. Leaching tests of the residual bottom ash showed that lead concentrations exceeded U. S. Environmental Protection Agency landfill limits, designating this ash as a hazardous waste.

Bi et al. (2007) analyzed e-waste from across the world where in Guiyu, South China, the e-waste is dismantled and discarded. Concentrations of polybrominated diphenyl ethers (PBDEs), polychlorinated biphenyls (PCBs), and organochlorine pesticides (OCPs) were measured in serum from residents of the e-waste dismantling region, where 80% of families work in e-waste recycling, and compared to a matching cohort from a nearby region where the fishing industry dominates (Haojiang). The median BDE-209 concentration in Guiyu was 50-200 times higher than previously reported in occupationally exposed populations.

Zheng et al. (2008) also studied local children under the age of 8 years old in China's e-waste recycling region of Guiyu and stated that from the primitive electronic waste (e-waste) recycling process that the toxic heavy metals may keep on threatening to the health of local children. Children living in Guiyu had significantly higher BLLs (blood lead levels) and BCLs (blood cadmium levels) as compared with those living in Chendian. It was also stated that there was a significant increasing trend in BLLs with increasing age in Guiyu. The risk factors related to children's BLLs and BCLs mainly included father's engagement in the work related to e-waste, children's residence in Guiyu and the amount of time that children played outside near the road every day.

The management of e-waste is a major challenge in developing and transition countries (Mmereki, Li, & Li'ao, 2015). Obsolete electrical and electronic equipment (EEE) are a complex waste category containing both hazardous and valuable substances. In developing countries and regions, infrastructure, pre-processing, and end-processing facilities and innovative technologies for end-of-life management of e-waste are noticeably absent due to lack of investment and high costs of its management.

Although it has been established that e-waste is toxic and both dangerous and toxic to the environment and humans, e-waste also contains many valuable, recoverable materials such as aluminum, copper, gold, silver, plastics, and ferrous metals (Baldé et al, 2015). In order to conserve natural resources and the energy needed to produce new electronic equipment from virgin resources, electronic equipment can be refurbished, reused, and recycled instead of being landfilled (Kansas Department of Health and Environment, 2015).

In many places however e-waste recycling falls onto the backs of enterprises such as junk dealers who have no knowledge of the toxic nature of their 'junk' nor the technology necessary to extract the precious metals. Most of these firms are unregulated and unregistered as well further complicating the process of regulation and prevention of pollution caused by hazardous substances and heavy metals in the product waste.

In Indonesian as in most places across Asia, there is 2008 law on waste management but a regulation to elaborate on the law has still not been made. The law required that producers handle their own waste (like in Thailand) but in Indonesia that has been interpreted to mean only the packaging (Elyda, 2016). In Thailand there is no specific law or regulation regarding e-waste other than the Hazardous Substance Act B.E. 2535 (1992) and its amendment B.E. 2556 (2013) (Chareonsong, 2014) which covers chemical waste which must require a permit. Used electrical and electronic and appliance enterprises are currently exempted for the need of a permit or to register but importing conditions for used electrical and electronic equipment is required by DIW (Department of Industrial Works)

(Chareonsong, 2014). Thailand also participates in the International E-Waste Management Network (IEMN) to obtain and exchange information on e-waste issues.

Table 2 shows an estimation of Thailand's current and projected domestic e-waste generation. In 2016 it is expected that nearly 11 million phones will be discarded along with 2.8 million TVs and over 1.5 million refrigerators and washing machines, which at present times Thailand's disposal policies are mirrored after the OECD/European ideas of 'Extended Producer Responsibility' (EPR) (Lindhqvist, 2000). In Thailand however, there is no real enforcement ability and the program presently appears to be more voluntary than mandatory.

Product type	Waste generation (1,000 units) in year							
	2014	2015	2016	2017	2018	2019	2020	2021
TV	2,587	2,689	2,790	2,889	2,986	3,081	3,174	3,264
Digital camera/ VDO camcorder	875	983	1,059	1,065	1,055	1,106	1,192	1,289
Media player	3,476	3,537	3,571	3,588	3,598	3,611	3,630	3,653
Printer	1,520	1,532	1,542	1,546	1,547	1,545	1,543	1,540
Mobile phone/Land line	9,750	10,337	10,907	11,456	11,983	12,486	12,966	13,419
PC	2,210	2,421	2,630	2,834	3,032	3,222	3,402	3,572
A/C	740	766	796	832	871	911	949	983
Refrigerator	922	972	1,023	1,074	1,125	1,174	1,223	1,271
Microwave	313	346	382	419	456	492	527	559
Washing Machine	467	495	523	551	581	611	644	681
Fan	1,916	1,996	2,079	2,164	2,251	2,340	2,431	2,524

Table 2 Estimation of Thai e-waste generation 2014-2021 (Chareonsong, 2014)

Lindhqvist (2000) formulated the first definition of the extended producer responsibility (EPR) concept around 1990. Today, almost all OECD countries have formulated EPR policies and it is now possible to get a clearer understanding of the way the EPR principle can work under various conditions. In particular, the concept of EPR is as a policy principle to promote environmental improvements of products and product systems, and identifies possible approaches to key concerns in the implementation of EPR which builds on the preventive environmental strategies as promoted by, for instance, UNEP in the Cleaner Production Programme. In the United Kingdom, the letters ERP became the 'European Recycling Platform' and since 2007 the UK has reported to have recycled half a million tonnes of e-waste.

In ASEAN (Association of Southeast Asian Nations) however, we find Thai Generation-Y/Z consumers to be some of the most connected users in the world. Thai Generation-Y (or millennials) alone have become the largest consumer segment in the country with a lifetime spending potential of over USD $5 trillion (Siam Commercial Bank Economic Intelligence Center, 2015). Additionally, these same Generation-Y consumers are also the largest owners of smartphones within the population and some of the most connected youth on earth. With researchers from Thailand currently reporting 97 million mobile connections representing 149 percent of the population, it is easy to understand why (eMarketer, 2013; Kemp, 2015). It is therefore not unreasonable to project that the next generation (Generation Z) of Thai teenagers will mirror and exceed the above statistics concerning smartphones and consumer habits. It is these generations that education and knowledge of the importance of proper e-waste disposal must be targeted. This is consistent with a US study which indicated that adolescents and children now influence over $600 billion a year in consumer spending (Linn, 2004).

It therefore becomes socially and environmentally responsible for this same electronics consumer segment to be informed about the environmental and human health impact from the disposal of the millions of legacy phones, new generation smartphones, tablets, and other electronic devices. Although EPR places much of the burden of disposal on the manufacturer, with 7.1 billion mobile subscriptions worldwide, a consumer disposal approach that is socially and environmentally friendly might be warranted. Also, since Thailand's largest segment of mobile users

is Thai teenagers and young adults, with an average of 1.94 mobile subscriptions per unique user, a new investigation towards e-waste disposal that is environmentally sound and focused on the consumer is warranted.

Additionally, within Asean's 628 million consumer community, there are 233 million active mobile social media users (Line, WhatsApp, Facebook, etc.) which have a 776 million mobile connections, representing 124 percent of the region's total population (representing subscriptions, not unique users) (Kemp, 2015). Also, as a subset of this, the Thai Office the National Broadcasting and Telecommunication Commission (NBTC, 2015) reported that there were three major mobile operators at the end of 2015, which accounted for a total of 82.99 million subscriber lines. Any way you look at it, there are a lot of teenagers and young adults (Generation Y/Z) who are electronic device consumers who at some point will be disposing of their phones for a more modern one.

From the above, the researchers have developed the following 3 hypotheses for the study (Figure 2 below):
Proposed Research Hypotheses
H1: E-waste environmental impact has a direct effect on e-waste teenager awareness.
H2: E-waste environmental impact has a direct effect on e-waste disposal management.
H3: E-waste disposal management has a direct effect on e-waste teenager awareness.

Figure 2: Proposed Conceptual Framework

FINDINGS

Methodology
This research aims to model the structure of Thai teenager e-waste environmental awareness, so the researchers wish to determine the details from the methods below:

The approach used in the study.
For this study the researchers will use both quantitative and qualitative research from both primary and secondary data. The researchers have thus far determined the following steps for this study:

Secondary Data Research.
Thus far, research has been comprised of published research, textbooks, internet materials, media reports, and data which has been cleaned, analyzed and collected to develop a conceptual model for the variables that affect Thai teenager environmental awareness and their decision to dispose of their electronics and mobile devices in an environmentally safe and healthy way.

Quantitative Research Methods.
Quantitative research will be performed from the primary data by collecting a questionnaire from the target sample. The questionnaire to be used to collect data will be structured and written in a realistic, easy-to-understand format

which is deemed to be reliable and reasonable. Further reliability validation will be undertaken as follows:

1. Questionnaire review will be conducted by academic scholars to validate the investigation questions and the use of rhetoric and the simplicity and comprehension of the questions.

2. During the questionnaire trial stage, questions and responses will be monitored so better clarity can be achieved. Questions will be updated as needed.

3. Perform data collection statistical analysis.

Qualitative Research Methods.

Qualitative research will involve confirming the model of the quantitative research. As there are three latent variables and 12 observed variables anticipated for the study, using a ratio of 20:1 (Schumacker & Lomax, 2010), it is anticipated that a total of 240 Thai teenagers who are smartphone users will be queried. The criteria for the selection of the sample population will be teenagers living and going to school within the Bangkok metropolitan area sampled by Simple random sampling.

Population and sampling.

The populations in this study are Bangkok metropolitan teenagers who are technological savvy and use smartphones.

Quantitative research.

Schumacker and Lomax (2010) stated that Structural Equation Modeling (SEM) uses a variety of models to show the relationships between observed variables with the same basic goal of providing a quantitative test of a theoretical model hypothesized by a researcher. Meldrum (2010) further stated that a sample size smaller than 100 should not be used in SEM as it is unreliable. This is consistent with other research on the 'Rule of 100' including Gorsuch (1983), Kline (1979), and MacCallum, Widaman, Zhang and Hong (1999). No sample should be less than 100 even though the number of variables is less than 20. Therefore, using a factor of 20 for each of the 12 variables from the research survey, it is anticipated that a total of 240 samples are adequate to assure a reliable sample size (Schumacker & Lomax, 2010).

Self-administered questionnaire (SAQ).

For this research, the measurement instrument or questionnaires utilized will be prepared from the literature. A self-administered questionnaire (SAQ) is being used as it is exploratory in nature and serves as a starting point for other methodologies.

Qualitative Research

Berk (1984) stated that an evaluation of the congruence between items and objectives is the most important assessment during the content validation stage. If there is insufficient evidence that the items are measuring what they are intended to measure, the remaining item analyses are useless. An efficient measure for numerically assessing content expert's evaluations of items is the index of item-objective congruence (Rovinelli & Hambleton, 1977), in which ratings from content specialists are obtained in order to evaluate the match between test items and the table of specifications (Berk, 1984). For this study, 5 experts in their related fields will be chosen with questionnaire tems having an Item-Objective Congruence (IOC) index higher than 0.5 being considered acceptable. Additionally, the IOC index developed by Rovinelli and Hambleton (1977) will be employed to carry out the screening of questions to a pilot group of ten individuals. The research will then proceed to select items that have an IOC index higher than 0.5, which will be considered acceptable.

Research quality inspection tools.

The research will be conducted to determine the quality and reliability of the instruments used in the research. Tools used to measure quality include content validity and construct reliability (Hale & Astolfi, 2014).

Questionnaires will be constructed as a tool to measure concept definition and practice and will use a 5-Point Likert Scale (Likert, 1970). This research will conduct Confirmatory Factor Analysis (CFA) and subsequently reliability analysis to measure Cronbach's alphas (Cronbach, 1951) to ensure internal consistency. Multi-item measures will be developed based on Cronbach's alpha >0.68. This study will then calculate Cronbach's alphas for each construct.

If the value is below 0.50, the research question will be cut off. This is considered highly reliable. The responses to the questions capturing focal constructs will use a five-point Likert scale (rating statements 1-5; 1 = strongly disagree and 5= strongly agree) (Likert, 1970).

There will also be an inspection by 5 experts including:
Thai academic scholars   3 members
Industry e-waste experts   2 members

Data Collection
Primary data.
Primary data is a collection of factors that influence environmental impact from e-waste, teenager's awareness on e-waste and e-waste disposal management.

Secondary data.
Secondary Data consists of studying the theories related to the research from various sources; including books, manuals, tutorials, articles, research papers, etc., to define the concepts and theories used in the study.

Quantitative Data Analysis
Quantitative research is currently envisioned using the partial least squares (PLS) statistical method and hypotheses testing with PLS-Graph software (Chin, 2001), which analyses the display and model structure associated with the observed manifest variables with latent variables.

Analysis of quantitative data.
The analysis of quantitative data will be conducted using statistical analysis as follows:
        1. An analysis will be conducted by descriptive statistics by characterizing the frequency, percentage, mean, and standard deviation.
        2. An analysis will be conducted using structural equation modeling (SEM) to determine the relationship of the factors influencing environmental impact from e-waste, teenager's awareness on e-waste and e-waste disposal management.

Analysis of qualitative data.
To confirm the results of the quantitative analysis are credible and the findings reliable, the researchers will conduct interviews with those concerned with teenager awareness of the environmental impact from electronic waste. Afterwards, the researchers will proceed to interpret qualitative information including classified information.

CONCLUSIONS
According to the United Nations, nearly 42 million metric tonnes of e-waste were generated around the globe in 2014 ("Global E-Waste Volume," 2015). Which according to some, has a large environmental burden which if continued, is unsustainable. The global e-waste recycling and reuse services market however, which stood at US$9.84 billion in 2012, is expected to reach US$41.36 billion by the end of 2019 which the United Nations has referred to as the 'urban mine'. Part of the solution is the realization of this vast recycling market and by so doing, the development of a model that is sustainable. Experts concur on the role of the informal e-waste recycling sector; the need for data-driven policy and resources; and the possible costing impact of EPR. It has also been noted the importance of formalizing and incorporating the informal sector into WEEE management systems to create "win-win" situations. The need for occupational safety and health training also must be accessed. It is a known fact that proper and safe e-waste management and disposal is not an inexpensive proposition so therefore constraints must be overcome for investing in WEEE recovery and recycling facilities. In order to set up a market-based waste management system, data inventory and enabling regulations are needed while being sensitive to the cost of EPR being passed through to end-consumers. Under the concept of "product stewardship," cost increases are inevitable and all stakeholders involved in the electronics market have to become responsible.

EPR is effective and working but it is not enough and consumer education must be part of the mix, especially in places where regulatory control and government oversight is minimal. A viable option however is a direct approach to the consumers using and disposing of e-waste products. Teenagers are a key element in the purchasing, use and eventual disposal of electronic devices and it is this group therefore that methods need to be explored that will

create a greater awareness of the toxic nature of their devices and how improper disposal represents a toxic and health threat to both humans and the environment.

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ELEMENTARY SCHOOL STUDENTS' OPINIONS ABOUT MUSIC LESSONS AND THE SONGS IN THE MUSIC BOOKS

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ABSTRACT

In this study, it is aimed to acquire opinions of the students about music lessons and school book songs used which are the basic constituents of a music curriculum. Furthermore, effects of class variable which is an important factor about formation of opinions of students are also studied on. A total of 78 students of 4th, 5th and 6th classes who receive training at Emekevler Elementary School participated in the study. The data collection tool used in the study is developed by the researcher and consists of two parts. First part consists of 13 questions and it is aimed to reveal opinions and expectations of students about the music lessons. Second part consists of 7 questions. In this part, the aim is to acquire opinions of the students about the songs in the music lesson book. It is observed that answers of students to some questionnaire items vary by the classes. Besides, the literature about the findings of the study has been associatively discussed.

INTRODUCTION

Musical experiences gained during the primary education are of particular importance since it embodies basic skills, ability and behaviours in terms of musical development of the individual. In this sense, requirements, function of the primary school music education program and teaching is a subject that we need to deal with. Music education curriculum implemented during the period of primary education in Turkey was developed in 2006. Vision of the program is to make the music an integral part of lives of students by experiencing it via activities and raise happy, self-confident individuals with personality, open to any kinds of fine arts, being at peace with himself and people around, recognizing national and international cultures, loving the nation and homeland, sensitive to events, changes and developments around it. This curriculum is based on constructivist and student- -centered learning approach. According to constructivism theory, knowledge is not something received by our senses or various communication channels and existing in the outside world. On the contrary, the knowledge is constructed by the person knowing it, is produced for this reason constructions are unique to the person (Acikgoz, 2003;61). The constructivist perception in music education in 2006 music curriculum created from this point forth places emphasis on learning not teaching. It accepts the variety of individuals. It supports the researcher aspect of students. It attaches importance to earlier experiences during the learning process. It focuses on performance and activities in learning. It takes how the student learns into consideration. It adopts the perception that student learns in a social environment. It supports realism and functionality in teaching. It gives the opportunity of creating knowledge and inference by experiences. It is aimed with this learning approach adopted that students will not be passive at class but will attend the lesson more actively. Students attend the lesson via various musical activities, projects and narratives and control their own learning processes. Various activities are used for ensuring efficient participations of students at classes starting from the target of raising students with the skill in the areas of listening, singing, playing, musical perception and being informed, creativeness and with music culture. In Turkey elementary music education is implemented using different methods and approaches. And there is an increase in music education research about teaching music by different methods and approaches (Nuray, 2004; Bilen, 2010; Kuşçu, 2010; Eren, 2012). In addition, students may wish to spend music classes with different and various activities. Or it may be seen that students with negative attitude towards music classes usually love music very much, they like being interested in music in their daily lives and play an instrument. It is possible to correlate between the negative opinions of students about music lesson and teacher's characteristics, deficiency of physical facilities and characteristics of the curriculum. In addition to this, students usually think that the reason of failure of music lesson is that they don't like way of teaching music, material used and songs (Ozmentes, 2011). It is very significant and essential that opinions of students should be asked to create a curriculum and for good functioning. It was aimed to learn the opinions of students about material used (school book songs) and teaching the key elements of a curriculum in this study. Moreover, it was tried to reveal the effects of class variant considered as having an important effect on opinions of students.

THE STUDY

The study was conducted at Emekevler Primary School in Kepez county of Antalya. Total 78 students of 4th, 5th and 6th classes who received education at this school participated in the study. Opinions of students about teaching

of music lessons and about music lesson book were interpreted by their classes. The distributions of students by classes are as follows in this sense: 28 of students attend to grade 4 (35.9%), 26 of them attend to grade 5 (33,3%), 24 of them attend to grade 6 (30,8%).   Data collection tool used in this study was developed by the researcher. It was aimed to obtain opinions of students about teaching the lesson and songs in the music course book. For this purpose, 132 students attending to Maresal Fevzi Cakmak elementary school were asked to write essays about opinions about teaching the lesson and music course book. 64 items were selected from these essays. These items were evaluated in terms of whether they expressed the same meaning for everyone, there were analogous items or not, whether there were items divided into two different items or not, whether it reflected the possible conditions of students or not. Necessary changes and amendments were made as a result of evaluation, items were selected and the number was reduced to 20 items. The questionnaire comprises of two parts. The first part comprises of 13 questions and it was aimed o reveal the opinions and expectations of students about teaching the music lessons. The second part comprises of 7 questions. It was aimed to learn the opinions of students about songs in music course book. Opinions of students were presented in the section of findings as I agree, I slightly agree, I don't agree and descriptive analysis techniques were used for analyzing the answers of questionnaire. One-way Anova was used to reveal opinion differences of students. Scheffe and Dunnet C tests was used for the purpose of identifying the origin of differences as a result of variance analysis. The universe of study being students of grade 4, 5, and 6 and from low socio-economic level is one of limitations of the study.

FINDINGS

Answers of questionnaire were analyzed for the purpose of revealing opinions and expectations of students about teaching the music lesson first of all and then frequency and percentage was calculated. Relevant findings are presented in Table 1.

Table 1. Frequency and percentage values of opinions and expectations of teaching music lesson of students

	I agree		I slightly agree		I don't agree	
	%	F	%	F	%	F
I want to watch concert records at music lessons.	87,2	68	9	7	3,8	3
I want to listen to songs at music lessons	88,5	69	6,4	5	5,1	4
In my opinion music lessons are useful	79,5	62	12,8	10	7,7	6
I find teaching notes as boring.	21,8	17	20,5	16	57,7	45
I prefer playing melodica to flute at music lessons.	51,3	40	9	7	39,7	31
I want to learn notes with their names not with the shapes on staff.	46,2	36	6,4	5	47,4	37
I want the increase of music lesson hour.	66,7	52	7,7	6	25,6	20
I want to learn different kinds of music at the lessons.	89,7	70	3,8	3	6,4	5
I want to sing a song at the music lessons.	69,2	54	15,4	12	15,4	12
I don't find songs taught at music lessons entertaining.	41	32	17,9	14	41	32
I want to sing popular songs at music lessons.	57,7	45	19,2	15	23,1	18
I want to play different music instruments at music lessons.	79,5	62	10,3	8	10,3	8
I want to be taught songs we listen outside the lessons	78,2	61	10,3	8	11,5	9

It is seen in Table 1 that 89,7% of students want to listen to different sorts of music at music lessons, 87.2% of them want to watch concert records at music lessons, 88,5% of them want to listen to the songs at music

lessons, 79,5% of them want to play different instruments at music lessons and find music lessons useful, 78,2% of them want to be taught songs they listen outside the lessons. Moreover, it was understood that 69,2% of students want to sing songs at music lessons, 66,7% of them want the increase of music lesson hour. In addition to this, 57,7% of students expressed that they did not think that teaching notes at music lesson was boring. Also it was understood that 57,7% of students stated that they wanted to sing popular songs, 51,3% of them preferred playing melodica to flute. 46,2% of students gave the answer of "I agree" to the expression of "I want to learn notes with their names not with the shapes on staff at the class", 47,4% of them gave the answer of "I don't agree". It was seen that 41% of students gave the answer of "I agree" to the expression of "I don't find songs taught at music lessons entertaining" 41% of them gave the answer of "I don't agree".

Table2.   Frequency and percentage of opinions of students about songs in music course book

	I agree		I slighlty agree		I don't agree	
	%	F	%	F	%	F
I find songs in the music course book simple comparing to our level.	57,7	45	15,4	12	26,9	21
I think that there are not sufficient songs in music course book.	52,6	41	15,4	12	32,1	25
I want to see popular songs in music course book.	71,8	56	11,5	9	16,7	13
All songs in the music course book are similar to each other	41	32	16,7	13	42,3	33
I like songs in the music course book	64,1	50	17,9	14	17,9	14
Songs in the music course book are not irrelevant with the subjects.	25,6	20	15,4	12	59	46

It is seen in Table 2 that a large extent such 71,8% of students want popular songs in music course book, 64,1% of them love the songs in the music course book, 59% of them found songs in the music course book are relevant with the subjects. Moreover, 57,7% of students stated that songs were simple comparing to their levels. The rate of students thinking that there are not sufficient songs in music course book is 52,6%. It is understood that 41% of students agree with the expression of "All songs in the music course book are similar to each other" and 42,3% of them don't agree. Items of questionnaire were subjected to variance analysis for the purpose of understanding whether opinions and expectations about music lessons of students are significantly different by the grades or not. Findings are presented in Table 3.

Table 3 Results of variance analysis for opinions of students about music lesson by the grades

	Grade 4		Grade 5		Grade 6		F	p
	X	S	X	S	X	S		
I want to learn notes with the names not with the shapes on the staff.	1,85	1,40	3,69	1,46	3,58	1,55	13,176	,000*
I don't find songs taught entertaining	2,14	1,58	3,57	1,39	3,37	1,52	7,217	,001**

*p<.001, **p<.005

Answers given to the expression of "I want to learn notes with the names not with the shapes on the staff show significant difference by the grades as it is seen in Table 3 (F=13.176, p<.001). As per the result of Scheffe test one of the post-hoc analysis conducted to understand from which group the difference arises, average of

answers to the same expression of grade 4 students (X=1,85) was calculated as significantly low comparing to students of grade 5. (X=3,69) and grade 6 (X=3,58). Moreover, expression of "I don't find songs taught at music lessons entertaining" shows significant difference by the grades of students (F=7,217,   p<.005). Score averages of grade 4 students for the same expression (X=2,14) were calculated as significantly low comparing to averages of grade 5 (X=3,57) and grade 6 (X=3,37) students. Significant differences were not found between the grades for other items of the questionnaire. Relevant questionnaire items were subjected to variance analysis for the purpose of understanding whether opinions about songs in music course book of students are significantly different by the grades or not. Findings are presented in Table 4.

Table 4. Results of variance analysis for opinions of students about songs in music course book by the grades

	Grade 4		Grade 5		grade 6		F	p
	X	S	X	S	X	S		
I want popular songs in music course book	3,42	1,59	4,26	1,04	4,45	1,10	4,847	,010***
All songs in the music course book are similar to each other	1,78	1,42	3,50	1,24	3,37	1,46	12,947	,000*
I like songs in music course book	4,39	1,06	3,84	1,15	3,16	1,55	6,105	,003**
Songs in music course book are irrelevant with the subjects.	1,53	,96	3,03	1,53	2,45	1,55	8,338	,001**

*p<.001, **p<.005,***p<.05

As it is seen in Table 4, it is understood that significant differences are in question for answers of some questionnaire items by their grades. Scheffe and Dunnet C tests were conducted to understand from which groups the difference arose. Answers of grade 6 students to the statement of "I want popular songs in music course book" (X=4,45) are significantly higher than answers of grade 4 students (X=3,42). Answers of grade 4 students to the statement of "All songs in the music course book are similar to each other" (X=1,78) show significant differences comparing to grade 5 students (X=3,50) and grade 6 (X=3,37). Answers of grade 4 students (X=4,39) for the statement of "I like songs in music course book" were calculated as significantly higher than grade 6 (X=3,16) students. Answers of grade 4 students (X=1,53) for the statement of "songs in music course book are irrelevant with the subjects taught" were calculated as significantly lower than grade 5 students (X=3,03) and grade 6 (X=2,45) students. Answers of other items do not show significant differences by the grades.

CONCLUSIONS
It was seen that 89,7% of students want to listen to different kinds of music at music lessons. The fact that students are interested in different kinds of music, want to have information about this subject can be considered as a positive situation in the sense of increase of their musical culture and tastes. Again the point that 87,2% of them want to watch concert records show that students are in need of accumulation of knowledge in terms of musical enculturation. It was understood that 78,2% of students want to be taught songs they listen to outside the music lessons. In this sense, desire to see the music they listen to and like outside the school as a natural requirement can be considered as a factor facilitating learning by means of music they know, love and like. Thus, it can be assumed that attitudes of students towards music lessons will be affected positively. In addition to this, 57,5% of students' indicating that they want to song popular songs at the lesson and the fact that 71,8% of them being a great ratio, want to see popular songs in the music course book support the above-mentioned assumptions. 66,7% of students want music class hours to be increase. This can be interpreted as students have positive attitudes towards the music lessons.   46,2% of students answers the statement of "I want to learn notes with their names not with the shapes on staff at the class." as "I agree" and   47,4% of them gave the answer of "I don't agree". Students may sometimes have difficulty in reading notes at music lessons. They consider music class as an entertainment tool by nature apart from other theoretical courses and they may desire to entertain and relax at lessons. In addition to this,

reading notes requires upper level cognitive skills and students may need to repeat more for reading notes easily. Non-presence of such programs and activities may make the students inadequate in this respect. Moreover, students' at the ratio of 47,4% giving the answer of "I don't agree" to the same statement can be interpreted as   a perception that activities required to develop above-mentioned skills are carried out satisfactorily is in question. According to the significance test conducted for the same item, answers of grade 4 students for this statement show significant difference comparing to grade 5 and 6 students. Accordingly considering the fact that cognitive skills required for reading notes and required to be developed are seen in grade 5 and 6 students more it can be assumed that students at these classes will not have difficulty in reading notes, these results are very interesting. The reason of such an opinion for these students may arise from their teachers or readiness.

Moreover, answers of students for the expression of "I don't find songs taught at music lessons entertaining" show significant difference by their grades. It is understood by the study findings that students attending to grade 4 find the songs taught more entertaining than students of grade 5 and 6. This requires examining characteristics of teachers of relevant classes, qualities of songs in curriculum or compatibility with level and skills of students.

Another finding of the study is the answer of "I agree" for the expression of "I don't find songs taught at music lesson entertaining" with the ratio of 41% and 41% of them gave the answer of "I don't agree". This finding supports the finding of Ozmentes (2011) concluding that students find music course book boring and they don't like songs taught. Moreover, the fact that rate of students thinking that there are not sufficient songs in music course book in terms of number is 52,6% and the rate of students expressing that they don't like songs in music course book is 44,9 supports the above-mentioned assumptions. 57,7% of students expressed that they found songs in the music course book simple by their levels. This may make students get bored at lessons and reduction of performance and attitude towards music and may be considered as a negative situation for the quality of education. According to the theory of flow to be addressed in this sense, to ensure that a person learns a subject efficiently and is motivated well, the balance should be achieved between the perception of him/her about the competence and difficulty of the work (Csikszentmihalyi, 1990). According to the theory, if the task is very easy and level of skill is very high, boredom starts. Student' having these opinions about the songs in music course book will lead to negative motivation for the music lesson.

It is understood that opinions of grade 4 students about songs in the music course book are more positive than students of grade 5 and 6 based on the results of significance tests. This result may be interpreted that as the age of students' increases, songs in the music course book do not meet their expectations and don't match up with their likes. In this case, songs in primary school course book should be analyzed. As the ages of students increase, they have negative opinons about songs and necessity of implementation of song program and curriculum appropriate for their likes and age arises. Its reasons should be investigated and songs appropriate for their level and likes more should be incorporated into curriculum and course book. Opinions of students about curriculum should be taken into consideration at every grade of education. In this sense, the study can be applied to students at different education steps. Also the questionnaire can be improved and different questions may be added.   The correlation of questionnaire questions with different variables such as age, sex, educational background of parent, musical background, etc. can be analyzed. Preference, opinion and expectation of students from different socio-economic levels about the music may be worked on. In this study, only opinions about teaching music and songs in the course book were asked. Studies may be conducted to reveal the opinions and expectations of students about characteristics of teacher, method, evaluation, etc. Such studies should be increased and current music curriculum should be regulated in line with the opinion and expectations of students or level, like, interest and readiness of students should be measured and taken into consideration for curriculums to be developed.

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ELİT BAYAN HENTBOLCULARIN FİZİKSEL VE FİZYOLOJİK UYGUNLUKLARININ ATIŞ HIZI VE İSABETİ İLE İLİŞKİLENDİRİLMESİ

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ÖZET

Bu çalışmada, Ulusal elit bayan hentbolcuların fiziksel ve fizyolojik uygunluklarının yönergeli atış hızı ve isabeti ile ilişkisi araştırılmıştır. Araştırmamıza; yaşları 19,76 ± 3,37 yıl, antrenman yaşları 10,09 ±3,19 yıl, milli olma sayıları 14,23 ±17,18 kez, Süperligde oynama süreleri 3,66 ± 3,71 yıl, boy uzunlukları 168,66 ±5,74 cm, vücut ağırlıkları 65,49 ±7,95 kg, vücut yağ oranları 28,50 ± 4,04 (%) olan 21 elit bayan hentbol oyuncusu gönüllü olarak katılmıştır. Çalışmamızda, Atış hızı ile fiziksel ve fizyolojik parametreler arasında ilişki bulunurken, Atış İsabeti ile fiziksel ve fizyolojik parametreler arasında bir ilişki bulunmamıştır. Yönergelerin atış hızı üzerinde etkisi bulunmuştur.

Anahtar kelimeler: Atış Hızı ve İsabeti, VO_2Max., Anaerobik Güç, Performans, İzometrik Kuvvet.

GİRİŞ VE GENEL BİLGİLER

Hentbol; karşılıklı iki takımın, belirli kurallar çerçevesinde oynadığı bir takım oyunudur. Hentbol oyun süresi ve yapısı itibariyle yüksek teknik, kondisyon ve sistematik bir taktik anlayış gerektirir. 30'ar dakikalık iki devreden oynanan hentbol müsabakası, üst düzey kuvvet, sürat ve dayanıklılık içermektedir. Bir takım oyunu olan hentbol, spor oyunları içerisinde komplike bir yapıya sahiptir, ki bu da oyuncular için gelişmiş bir aerobik ve anaerobik kapasite gerektirir (Delamarche et. all, 1987/ Gorostiaga et.all, 2006). Sprint, sıçrama, esneklik ve atış hızı gibi pek çok motor beceri takımın yüksek performansına katkı sağlamada çok önemli bir role sahiptir (Granados et.all, 2007/ Marquez et.all, 2006/ Marczinka 1993). Hentbol, voleybol ve basketbol gibi sporlar, anaerobik enerji sistemlerinin daha yoğun kullanıldığı interval sporlardır (Kalinski et al., 2002; Karahan ve ark., 2010). Enerji sistemlerinin benzer özelliklerde olmasına rağmen oyun içerisinde hareketlerin farklılığı, kullanılan enerji sistemlerinde de farklılık yaratmaktadır (Popadic et al., 2009; Karahan ve ark., 2010).

Hentbolda performans bir bütündür ve performans tüm hatlarıyla değerlendirmeye alınmaktadır. Kondisyonel değerler teknik-taktik özelliklerden ayırd edilemez. Her ikisi de birbirini tamamlayan çok önemli unsurlardır. Son derece hızlı oynanan hentbol oyunu içerisinde birebir fiziksel mücadele oldukça yoğundur. Oyuncuların hücum ve savunma esnasında birbirine olan temasları oldukça fazladır. Bu da, hentbolu bir nevi mücadele sporu haline getirmiştir. Bir hentbol oyuncusunun hücumda ve savunmada gerçekleştireceği ard arda gelen hareketler düşünüldüğünde, üst düzey teknik ve taktik anlayış yanında, tüm bunları yapabilecek düzeyde kondisyon seviyesine sahip olması gerektiği ortaya çıkmaktadır. Sonucu belirleyen tüm teknik parametreler, kondisyonel yetilerden etkilenmektedir. Sporcu, müsabakanın her anında istediği hızda ve isabetle atışını gerçekleştirebilmelidir. Erken yorulan bir sporcunun, mutlaka atış performansında da erken bir düşüş olduğunu söylenebilir. Hentbol oyunu için asıl istediğimiz şey; oyuncuların, müsabakanın başından sonuna kadar maçın her anında optimal yada üst düzey performans sergileyebilecek düzeyde teknik, taktik ve kondisyonel özelliklere sahip olmasıdır. Hentbol yüksek şiddette vücut teması gerektiren özelliği ile diğer takım sporlarından ayrılır.

Vücut temasının yanı sıra sıçrama, hız, reaksiyon hızı, kuvvet ve koordinasyon gibi çok gelişmiş motor becerileri de gerektirir. Oyunda kullanılan beceriler arasında sonuca dramatik etkisi nedeniyle atış hızı ya da yüksek kol atışı (yüksek temel atış) öne çıkmaktadır. Bu anlamda sporcuların vücut kütlelerinin fiziksel performanslarına etkisi çok iyi bilinmektedir. Birçok araştırma hentbolcuların fiziksel ve fizyolojik parametrelerini performansa etkileri açısından ayrı ayrı değerlendirmişlerdir. Özellikle uluslararası düzeydeki sporcuların bu konu ile ilgili verileri sınırlı düzeydedir. Dolayısı ile atış hızı ve sporcuların fiziksel ve fizyolojik parametreleri arasındaki ilişki önem kazanmaktadır. Sadece fiziksel parametrelerden değil, aerobik ve anaerobik dayanıklılığın ayrı ayrı değerlendirildiği fizyolojik parametrelerinde araştırma içerisine entegre edilmesi önemlidir. Buradan yola çıkarak hentbolde atış hızı ve isabeti ile fiziksel ve fizyolojik parametrelerin ilişkisi araştırmamızın ana hipotezi olmuştur.

GEREÇ VE YÖNTEM

Araştırma Gurubu; Araştırma grubu; en az 4 yıl lisanslı, en az 1 yıl süperligde oynamış ve düzenli antrenman geçmişine sahip 21 elit bayan hentbol oyuncusundan oluşmaktadır. Araştırmaya katılan sporcuların 16'sı A, Genç ve Yıldız Bayan Hentbol Milli Takımlarında yer almıştır. Bütün denekler kronik hastalıkları ve egzersiz testlerine kontrendike olacak ortopedik sakatlıkları olmayan bireylerdir.

Deneysel Dizayn; Araştırmada yapılan ölçümler 2 guruba ayrılmış ve araştırmaya katılan her bir deneğin ölçümü en az 2 gün sürmüştür. Testler birbirini etkilemeyecek şekilde dizayn edilmiş ve testler arasında yeterli dinlenme süresi verilmiştir. Deneklerin yeterli beslenme ve sıvı alımına özen gösterilmiştir. Deneklerin maksimal kuvvetleri Gazanfer Bilge Fitness Merkezinde alınmıştır. Deneklerin fiziksel, antropometrik ve izometrik kuvvet ölçümleri; Kocaeli Üniversitesi, Kinantropometri Laboratuarında alınmıştır. Deneklerin ilk test günlerinde; Spirometrik ölçümleri, ikinci test günlerinde ise anaerobik güç ölçümleri Kocaeli Üniversitesi Fizyoloji Laboratuarında yapılmıştır. Solunum ve Laktat eşik belirlemek için arttırmalı treadmill protokolü uygulanmış, test esnasında kapiller kan alınarak laktat tespiti yapılmıştır. Test öncesi ve sonrasında hemoglobin ve türevlerine kapiller kan alınarak bakılmıştır. Solunum ve laktat eşik açısından günün zamanının etkili olmadığı literatürde belirtilmiştir (Şekir ve ark. 2002). Motorsal Testler, Atış Hızı ve İsabeti ölçümleri Kocaeli Üniversitesi Gazanfer Bilge Spor Salonunda yapılmıştır. Denekler laboratuar çalışmasına gelmeden önceki 24 saat süresince antrenman yapmamışlar ve testten önceki 3 saat süresince bir şey yememiş ve kafein almamışlardır.

VO_2 max (ml/kg/dk) ve Anaerobik Eşik (AT) değerleri (ZAN 600 Ergospirometre), arttırmalı koşu bandı (RAM 720 İtaly) testinde RER yöntemiyle, Laktat ölçümü Accusport marka analizör ile, kol kuvvetleri 1 TM bench press ve izometrik kuvvet ölçer (transducer) ile, anaerobik güç ve kapasite "monark" bisiklet ergometresi ile, hemoglobin seviyesi kan analizörü AVL Co-Oxylite 912 ile, el kavrama kuvveti Takei marka handgrip ile, dikey sıçrama ölçümü "sport expert" marka dijital jump metre ile, fiziksel ölçümler antopometrik set ve skinfold ile, sprint ölçümleri "sport expert" marka dijital kronometre ile yapılmış, atış hızları ve isabetleri radar (Sports Radar Gun)ve hd kamera ile kaydedilmiştir.

İzometrik Kuvvet; "Huntleigh Tedea" marka "model 363-D3-0, Revere Transducers, USA" ile değişik açılarda izometrik kol kuvveti ölçümü yapılmıştır. Güç ölçer transducer, boyu omuz yüksekliğine ve boya göre ayarlanabilmektedir. Transducer'in kuvvet ölçer platformu ile top bir ip aracılığı ile bağlanabilmekte ve deneğin elinden top kaymaması için iple topun etrafında bir kafes oluşturmaktadır. İzometrik kuvvet, 4 farklı pozisyonda ve kolun 4 farklı oluşturduğu açı ile ölçülmüştür.

Şekil 1: İzometrik kuvvet ölçümü esnasında uygulanan 4 farklı pozisyon

Atış Hızı; 15 dakikalık genel ısınmadan sonra, atış performansı için hedefe yönelik yönergeli 7 atış denemesi yapmaları istendi. Kullanılan top 360 g ağırlığında ve çevresi 54 cm'dir. Denek kaleye yüzü dönük ve durarak (pivot ayağı sabit) atış kullandı. Amaç; kale direğine asılı bulunan 0.5 x 0.5 m olan hedefi, mümkün olduğu kadar hızlı atış kullanarak vurmaya çalışmaktır. Sadece 1. yönergede (hızlı at) hedefe değil kaleye atılması istendi, yani topun kaleye girip girmemesi, olumlu yada olumsuz olarak değerlendirildi. Diğer tüm yönergelerde kaleye asılan hedefe atış yapmaları istendi. Her oyuncu toplamda 5 farklı yönerge ile 7 kez atış kullandı. Her oyuncu kaleye toplam 35 kez atış yapmıştır. Atış yapmadan önce sporcuya yönerge ile ilgili bilgi verilmiş, sporcudan önce yönergeyi dinleyip daha sonra atışını gerçekleştirmesi gerektiği bildirilmiştir. Atış yönergesi sporcu atış kullanırken yüksek sesle ve karışık olarak verildi. Atışların sporcuda yorgunluk oluşturmaması ve bu nedenle atış hızı etkilenmemesi için; yönerge oyuncu atışa hazır olduğunda verildi. Atış hızı için; Ölçümler

"Sports Radar Gun" marka spor radarı ile yapıldı. Atışlar 7 metre çizgisi gerisinden, yüksek temel atış tekniği ile uygulandı. Sporcu atış yaparken; aynen 7 metre atışında olduğu gibi önde olan ayağının sabit olması istendi. Aksi gerçekleştiğinde ise atış tekrar edildi. Atış isabeti ise; 7m çizgisinin 12 m gerisine yerleştirilen Panasonic marka, sabit bir hd kamera ile yapılmış, tüm ölçümler kaydedilmiştir. Atışların isabete temas edip etmediği ayrıca gözlenmiş ve elle çeteleme tutularak kaydedilmiştir. Atış Yönergesi;

1. (V○) Topu mümkün olduğu kadar kaleye hızlı at,
2. (V_A) Mümkün olduğu kadar topu kaleye hızlı at ve hedefi vurmayı dene,
3. (VA) Hedefi vur ve kaleye topu mümkün olduğu kadar hızlı at,
4. (A_V) Hedefi vur ve kaleye topu mümkün olduğu kadar hızlı atmayı dene,
5. (A○) Hedefi vur.

Fig. 2.   Experimental set-up indicating target size and distance

Atış hızı ve isabetinin tüm fiziksel ve fizyolojik parametrelerle ilişkisine; Elde edilen veriler SPSS 19 paket programına aktarılmış ve istatistiksel anlamlılık düzeyi 0,01 ve 0,05 olarak belirlenmiştir. Tanımlayıcı istatistik, frekans, curve linear regresyon analizi, pearson ve spearmen correlation, tekrarlayan ölçümlerde varyans analizi (repeated measures variance analysis) testleri ve bonferroni düzeltmesi kullanılarak analizler yapılmıştır.

BULGULAR VE TARTIŞMA

Araştırmamıza katılan elit bayan hentbol oyuncularının yaşları 19,76 ± 3,37 yıl, antrenman yaşları 10,09 ±3,19 yıl, milli olma sayıları 14,23 ±17,18 kez, süperligde oynama süreleri 3,66 ±3,71 yıl, boy uzunlukları 168,66 ±5,74 cm, vücut ağırlıkları 65,49 ±7,95 kg, vücut yağ oranları 28,50 ± 4,04 (%), yağsız vücut ağırlıkları 46,63 ± 4,38 kg olarak belirlenmiştir. Sporcuların Somatotip Ortalaması: 4.9 – 3.3 – 2.1olup Mezomorfik Endomorf olarak nitelendirdiğimiz bir sınıfa girmektedir.

Tablo 1: Elit bayan hentbol oyuncuların 5 farklı yönergede gerçekleştirdikleri atışların isabetli ve isabetsiz olma durumlarına göre atış hızlarının tanımlayıcı istatistik sonucu değerleri.

1. ATIŞ YÖNERGESİ (147 ATIŞ)				
Değişken	Atış sayısı	Min.	Max.	Ortalama ± SS
Hız (İsabetsiz)	22	57,60	70,40	64,14±3,30
Hız (İsabetli)	125	52,80	81,60	66,04±6,28
2. ATIŞ YÖNERGESİ (147 ATIŞ)				
Değişken	Atış sayısı	Min.	Max.	Ortalama ± SS
Hız (İsabetsiz)	59	51,20	78,40	64,40±5,91
Hız (İsabetli)	88	51,20	81,60	65,29±6,30
3. ATIŞ YÖNERGESİ (147 ATIŞ)				
Değişken	Atış sayısı	Min.	Max.	Ortalama ± SS
Hız (İsabetsiz)	78	49,60	81,60	64,57±5,98
Hız (İsabetli)	69	51,20	78,40	65,02±5,54
4. ATIŞ YÖNERGESİ (147 ATIŞ)				
Değişken	Atış sayısı	Min.	Max.	Ortalama ± SS
Hız (İsabetsiz)	59	48,00	80,00	63,70±6,93
Hız (İsabetli)	88	54,40	80,00	65,85±5,15
5. ATIŞ YÖNERGESİ (147 ATIŞ)				
Değişken	Atış sayısı	Min.	Max.	Ortalama ± SS
Hız (İsabetsiz)	61	38,40	73,60	61,50±7,11

Hız (İsabetli)	86	36,80	76,80	63,68±5,94
TOPLAM (735 ATIŞ)				
Değişken	Atış sayısı	Min.	Max.	Ortalama ± SS
Hız (İsabetsiz)	279	38,40	81,60	63,62 ± 6,35
Hız (İsabetli)	456	36,80	83,20	65,29 ± 5,96

Tablo 2: Atış Hızı ve 5-10-20-30 m Sprint Testi Pearson Korelasyon Analiz Sonuçları

Değişken	n=21	ATIŞ HIZI (147 ATIŞ)	5 m	10 m	20 m	30 m
ATIŞ HIZI (147 ATIŞ) V0	r	1	-,496(**)	-,412(**)	-,594(**)	-,493(**)
	p	.	,000	,000	,000	,000

Tablo 3: Atış Hızı ve Dikey Sıç.-Max. Kuv.-Esneklik-Pençe Kuv. Testi Pearson Korelasyon Analiz Sonuçları

Değişken	n=21	ATIŞ HIZI	DİKEY SIÇ.	BENCH 1 TM	ESNEKLİK	PENÇE SAĞ	PENÇE SOL
ATIŞ HIZI (147 ATIŞ) V0	r	1	-,417(**)	**,217(**)**	**,356(**)**	**,338(**)**	**,331(**)**
	p	.	,000	,008	,000	,000	,000

Tablo 4: Atış Hızı ve Antropometrik Ölçümler ile Pearson Korelasyon Analiz Sonuçları

DEĞİŞKEN	n=21	ATIŞ HIZI	DİRSEK GEN.	DİZ GEN.	ÜST KOLSA.	ÜST KOLSO.	CALF G.	UYLUK Ç.	BEL Ç.	KALÇA Ç.	GÖĞÜS Ç.
ATIŞ HIZI (147 ATIŞ) V0	r	1	**,265(**)**	**,185(*)**	,001	,093	**,226(**)**	,080	**-,242(**)**	**,345(**)**	,139
	p	.	,001	,025	,988	,263	,006	,338	,003	,000	,094

Tablo 5: Atış Hızı ve Antropometrik Ölçümler ile Pearson Korelasyon Analiz Sonuçları

DEĞİŞKEN	n=21	ATIŞ HIZI	EL BİLEK (cm)	KOL UZUNLUĞU (cm)	OTURMAY ÜKSEKLİĞİ (cm)	EL UZUNLUGU (cm)	KULAÇ UZUNLUĞU (cm)	KARIŞ UZUNLUĞU (cm)
ATIŞ HIZI (147 ATIŞ) V0	r	1	**,191(*)**	,150	-,022	**,358(**)**	**,153**	,047
	p	.	,021	,070	,794	,000	,064	,568

Tablo 6: Atış Hızı ve Solunum Değerleri Pearson Korelasyon Analiz Sonuçları

DEĞİŞKEN	n=21	ATIŞ HIZI	hAnE km/h	KAAn Atım/dk	SFAnE Atım/dk	VO2AE l/dk	VO2Max AN	VO2Max ml/kg/dk
ATIŞ HIZI (147 ATIŞ) V0	r	1	**,193(*)**	-,042	,006	,048	,026	-,073
	p	.	,019	,610	,943	,563	,752	,381

Tablo 7: Atış Hızı ve Anaerobik Güç ve Kapasite Değerleri arasında Pearson Korelasyon Analiz Sonuçları

DEĞİŞKEN	n=21	ATIŞ HIZI	PEAKPO. W	PEAKPO. KGW	AVGPO. W	AVGPO. KGW	MİNPO. W	MİNPO. KGW	POW.DROP W	POW.DR KGW	POW.DROP %
ATIŞ HIZI (147 ATIŞ) V0	r	1	**,168(*)**	,116	,151	,066	**,244(**)**	**,210(*)**	,000	-,075	-,190(*)
	p		.	,042	,161	,068	,429	,003	,011	,996	,365	,021

Tablo 8: Atış Hızı ve Anaerobik Eşik LA Değeri arasında Pearson Korelasyon Analiz Sonuçları

DEĞİŞKEN	n=21	ATIŞ HIZI	AnE LA
ATIŞ HIZI (147 ATIŞ) V0	r	1	**,272(**)**
	p	.	,001

Tablo 9: Tüm yönergelerin atış hızları ve isabetleri arasında Spearman Korelasyon test sonuçları.

DE ĞİŞ KE N	n= 21	1-HIZ (147)	2-HIZ (147)	3-HIZ (147)	4-HIZ (147)	5-HIZ (147)	1-İSABET	2-İSABET	3-İSABET	4-İSABET	5-İSABET
1-HIZ (147 ATI Ş)	**r**	1,000	**,702(**)**	**,702(**)**	**,678(**)**	**,584(**)**	,113	-,039	-,041	,097	,070
	p	.	,000	,000	,000	,000	,172	,641	,625	,244	,396

Tablo 10: Tüm yönergelerin hızları arasında tekrarlayan ölçümlerde varyans analizi (repeated measures variance analysis) sonuçları.

	P DEĞERİ	ANLAMLILIK DÜZEYİ
HIZLAR	0,000	p<0,01

Tablo 11: Atış yönergeleri arasında post hoc test olarak Bonferroni düzeltmesi sonuçları.

YÖNERGELER	YÖNERGELER	P DEĞERİ	ANLAMLILIK DÜZEYİ
1	2	,101	p>0,05
	3	**,031**	**p<0,05**
	4	,303	p>0,05
	5	**,000**	**p<0,01**
2	1	,101	p>0,05
	3	1,000	p>0,05
	4	1,000	p>0,05
	5	**,000**	**p<0,01**
3	**1**	**,031**	**p<0,05**
	2	1,000	p>0,05
	4	1,000	p>0,05
	5	**,000**	**p<0,01**
4	1	,303	p>0,05
	2	1,000	p>0,05
	3	1,000	p>0,05
	5	**,000**	**p<0,01**
5	**1**	**,000**	**p<0,01****
	2	**,000**	**p<0,01****
	3	**,000**	**p<0,01****
	4	**,000**	**p<0,01****

* 0.05 düzeyinde anlamlı, ** 0,001 düzeyinde anlamlı

Araştırmamıza katılan elit bayan hentbol oyuncuların isabetli ve isabetsiz attıkları atışların; 1. yönergede (mümkün olduğunca hızlı at) ortalama atış hızı 64,14 km.sa-¹ isabetsiz, 66,04 km.sa-¹ isabetli; 2. yönergede (mümkün olduğunca hızlı at ve hedefi vurmayı dene) ortalama atış hızı 64,4 km.sa-¹ isabetsiz, 65,29 km/sa isabetli; 3. yönergede (mümkün olduğunca hızlı at ve hedefi vur) ortalama atış hızı 64,57 km.sa-¹ isabetsiz, 65,02 km.sa-¹ isabetli; 4. yönergede (hedefi vur ve mümkün olduğunca hızlı atmayı dene) ortalama atış hızı 63,7 km.sa-¹ isabetsiz, 65,85 km.sa-¹ isabetli; 5. yönergede (hedefi vur) ortalama atış hızı 61,5 km.sa-¹ isabetsiz, 63,68 km.sa-¹ isabetli olarak belirlenmiştir. Atış Hızları toplamında ise 735 atışın 279'u isabetsiz, 456'sı ise isabetli olarak kaydedilmiştir. İsabetli atışların ortalaması 65,29 ± 5,96 km.sa-¹, isabetsiz atışların ise ortalama hızları 63,62 ± 6,35 km.sa-¹ olarak kaydedilmiştir.

Araştırmamıza katılan 21 elit bayan hentbol oyuncusunun her bir yönerge için kullandığı 147 atış sonucuna göre isabet oranları; 1. Yönergede (mümkün olduğu kadar hızlı at) % 85'i isabetli; % 15'i isabetsiz, 2. yönergede

(Mümkün olduğu kadar topu kaleye hızlı at ve hedefi vurmayı dene) % 59,9'u isabetli; % 40,1'i isabetsiz, 3. yönergede (Hedefi vur ve kaleye topu mümkün olduğu kadar hızlı at) % 46,9'u isabetli; % 53,1'i isabetsiz, 4. yönergede (Hedefi vur ve kaleye topu mümkün olduğu kadar hızlı atmayı dene) % 59,9'u isabetli; % 40,1'i isabetsiz, 5. Yönergede ise (Hedefi vur) % 58,5'i isabetli; % 41,5'i isabetsiz olarak tespit edilmiştir. Toplamda 735 atışın % 37,95'i (279) isabetsiz, % 62,04'ü (456) ise isabetli olarak belirlenmiştir.

Bu çalışmada atış stratejisi ile ilgili olarak yönergenin etkisi incelenmiştir. Atış hızı beklenen şekilde yönergeden etkilenmiştir. İsabet vurgulandığında hız düştü (5. Yönerge için). Fakat yönergeler arasındaki hız çok büyük değildi. Bu da şunu gösteriyorki; isabeti ve hızı vurgulayan yönergeler benzer performanslara yol açıyor. A_o yönergesini diğerleri ile kıyasladığımızda hızı belirgin bir şekilde diğerlerine oranla daha düşük çıkmıştır. A_o yönergesinde öncelik isabet olarak söylenmiştir; ki burada farklı bir strateji kullandık. Bu yönergede deneklerden maksimum atış hızı üretmesini istemedik. Yani burada atış hızı hiçbir şekilde belirlenmedi. Bu da, bu yönergede oyuncunun doğal bir atış tekniği uyguladığının göstergesidir. A_o yönergesinde sporcu submaksimal atış hızı gerçekleştirmiştir. Tillaar ve Ettema'nın (2003) yaptığı çalışmada da buna benzer bir sonuç bulunmuştur. İsabet sözkonusu olduğunda oyuncular maksimum atış hızlarının % 85'ini kullanarak atış yapmışlar. Çok tecrübeli oyuncuların bu hızın altına inmediklerini de belirtmektedirler (Tillaar&Ettema, 2003). Cauraugh ve arkadaşları (1990) tenis oyuncularının maksimum servis hızlarını % 50-60 'ın altına inmediğini vurgulamaktadırlar (Cauraugh ve ark. 1990). Yine, çalışmamızda hız ve isabetin eşit vurgulandığı VA yönergesinde isabetli atışların hızları daha yüksek iken (isabetli= 65,02 km.sa⁻¹ isabetsiz=64,57 km.sa⁻¹) isabetsiz atış sayısı daha fazla (isabetli atış sayısı=69; isabetsiz=78) olduğunu söyleyebiliriz. Atış yönergesi ile isabet arasında anlamlı bir ilişki bulunmamıştır. Atış hızı ve isabet arasında da bir ilişki bulunmamıştır. Bu duruma göre yönerge verildiğinde, oyuncular hızlı attıklarında daha isabetli atmaya eğilimli oldukları söylenebilir. İsabetli at yönergesi bazen elit sporcuları da strese sokabilir. Antrenmanlarında ya da müsabakada çok açık olarak öğrendiği bir motor beceriyi test koşullarında "isabetli at" yönergesi verildiğinde, istenildiği gibi yapamayabilir.

Atış hızı ve 1 Tekrar Maksimum ile belirlenen Bench Press (r=0,217**, p<0,01), arasında pozitif orta ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ve esneklik değeri (r=0,356**, p<0,01), arasında pozitif orta ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ve el pençe kuvveti (sağ) (r=0,338**, p<0,01) ve el pençe kuvveti (sol) (r=0,331**, p<0,01) arasında pozitif orta ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile dirsek genişliği (r=0,265**, p<0,01), arasında pozitif orta ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile kalf genişliği (r=0,226**, p<0,01) arasında pozitif orta ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile bel çevresi (r=0,242**, p<0,01) arasında pozitif orta ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile kalça çevresi (r=0,345**, p<0,01) arasında pozitif orta ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile el bileği (cm) (r=0,191*, p<0,05) arasında pozitif düşük ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile el uzunluğu arasında (r=0,358**, p<0,01) pozitif orta ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile biacromial genişliği (cm) (r=0,340**, p<0,01) arasında pozitif orta ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile yağsız vücut ağırlığı (kg) (r=0,252**, p<0,01) arasında pozitif orta ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile biiliac genişliği (cm) ve vücut yağ yüzdesi (%) arasında bir ilişki tespit edilmemiştir (p>0,05). Atış hızı ile anaerobik eşikteki koşu hızı (km/sa) (r=0,193*, p<0,05) arasında pozitif düşük ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile peak power (w) (r=0,168*, p<0,05) arasında pozitif düşük ve anlamlı bir ilişki bulunmuştur. Atış hızı ile peak min. power (w) (r=0,244**, p<0,01) ile arsında pozitif orta ve anlamlı, min. power (kg/w) (r=0,210*, p<0,05) ile arasında pozitif düşük ve anlamlı bir ilişki bulunmuştur. Atış hızı ile İzometrik kuvvet ölçüm değerleri 4. Yönergesi arasında (r=0,185*, p<0,05) pozitif düşük ve anlamlı bir ilişki tespit edilmiştir. Atış hızı ile Anaerobik eşikteki LA değerleri arasında (r=0,272**, p<0,01) pozitif orta ve anlamlı bir ilişki tespit edilmiştir.

Tüm yönergelerin hızları arasında (p = 0,00, p < 0,01) istatistiksel olarak anlamlı farklılık bulunmuştur. Bu farkın hangi yönergeden kaynaklandığını bulmak için post hoc test olarak Bonferroni düzeltmesi (using bonferroni probability adjustments) sonuçları incelenmiştir. 1. ve 3. yönergelerin hızları arasında (p=0,031, p < 0,05), istatistiksel olarak anlamlı farklılık bulunurken, 5. yönergeyle tüm yönergeler arasında (p=0,000, p<0,01) istatistiksel olarak anlamlı farklılık bulunmuştur.

Tillaar ve arkadaşları (2004), yüksek temel atış performansında cinsiyet ve vücut büyüklüğünün etkisini başlıklı çalışmalarında; deneyimli erkek ve bayan hentbol oyuncularının yüksek kol atışındaki maksimum hızları ile maksimum izometrik kuvvet ve antropometri arasında ilişki olup olmadığını incelemeyi amaçlamışlardır. Yaptıkları bu çalışmada bayanların, maksimal izometrik kuvvet 189 ± 33,9 N, atış hızı 19,2 ± 1,5 m.s⁻¹ (69,12 km.sa⁻¹), total vücut kütlesinin kilogram başına maksimal izometrik kuvvetleri 2,8 ± 0,4 N kg⁻¹ ve yağsız vücut kütlesinin kilogramı başına maksimal izometrik kuvvetleri 3,8 ± 0,5 N kg⁻¹ olarak tespit etmişlerdir. Araştırmalarına 20 erkek ve 20 deneyimli bayan hentbol oyuncusu katılmıştır. Ortalama topun hızını erkekler için; 23,2 m.s⁻¹ (83,52 km.sa⁻¹) ve kadınlar için 19.2 m.s⁻¹ (69,12 km.sa⁻¹) olarak tespit etmişler. Erkek ve bayanlar için, maksimal izometrik kuvvet ve atış hızı arasında benzer korelasyonlar tespit etmişlerdir (erkek; r =

0,43, p = 0.056 / bayan; r =0,49, p = 0,027). Erkek ve bayanlar arasında maksimal izometrik kuvvet ve atış hızı arasında varyansların çoklu analizi yapılmış ve cinsiyetler arasında anlamlı bir ilişkiye rastlamamışlardır (F 2,36 = 0.116, p = 0.89). Tillaar ve arkadaşları (2004) aynı çalışmada; vücut büyüklüğü ile atış performansı ve izometrik kuvvet arasında güçlü ve pozitif bir ilişki bulmuşlar. Atış hızının cinsiyetler arasında, vücut ağırlığı ve kütlesinden etkilendiğinin açıkça görüldüğünü belirtmişlerdir (p<0.001). Ancak, bu bağımlılığın, bütünüyle; yağsız vücut kütlesini (FFM) esas alan büyüklük farklılığından olduğunu açıklamışlardır. Kuvvet açısından ise hiçbir cinsiyet farklılığı görülmemiştir; buradaki cinsiyet farklılıkları, bunun nasıl ortaya çıktığına bakılmaksızın, beden büyüklüğündeki farklılıklarla açıklamışlardır. Bu çalışmada elde ettikleri bulgular, hız ve kuvvetteki cinsiyet farklılıklarının, kas büyüklüğündeki farklılıklardan kaynaklandığı görüşünü desteklemektedir. İskelet kas kitlesinin tahmini olarak yağsız vücut ağırlığı (FFM), fiziksel performans en iyi şekilde vücut büyüklüğü ile ilişkilendirilerek açıklandığında; ölçülmektedir sonucuna varmışlardır (Tillaar, 2004). Çalışmamızın sonuçları FFM ve atış hızları ilişkisi bakımından benzerlik göstermektedir. Araştırmamıza katılan elit bayan hentbol oyuncularında; atış hızları ile yağsız vücut kütlesi (FFM) ve izometrik kuvvetleri arasında (4. Yönerge) benzer sonuçlar bulunmuştur. Ayrıca çalışmamızda atış hızı ile el uzunluğu, biacromial ve el bileği arasında pozitif orta ve anlamlı ilişki bulunmuştur.

Granados ve arkadaşları (2007), elit ve amatör bayan hentbol oyuncuların atış hızları ve fiziksel uygunluklarındaki farklılıkları inceledikleri çalışmalarında, elit bayan hentbolcuların durarak atış hızları ortalama olarak 19,5 ± 1,1 m.s⁻¹ (70,2 km.sa⁻¹), amatör bayan hentbol oyuncuların ise 17,4 ± 1,3 m.s⁻¹ (62,64 km.sa⁻¹) olduğu tespit edilmiş, elit bayan hentbolcuların amatör bayan hentbol oyuncularından %11 daha iyi olduğunu (p<0,001) belirtmişlerdir. 3 adım sonrası temel atış hızlarında ise; elit bayan hentbol oyuncuların atış hızı 21,1 ± 1,3 m.s⁻¹ (75,96 km.sa⁻¹), amatör bayan hentbol oyuncuların 18,8 ± 1,2 m.s⁻¹ (67,68 km/sa) olduğunu ve elit bayan hentbol oyuncuların atış hızlarının (%11), amatör bayan hentbol oyuncularına göre daha iyi (p<0,001) olduğunu tespit etmişlerdir. Bu çalışmada elit bayan hentbol oyuncuların 1 TM (BP) değeri 47,9 ± 6,2 kg, amatör hentbol oyuncuların ise 36,7 ± 4,6 kg olarak tespit etmişlerdir. Her iki grubun 1 TM (BP) değerleri ile durarak atış hızı değerleri arasında pozitif korelasyon tespit etmişlerdir (r=0,61 ve r=0,69, p<0,05). Elit bayan hentbol oyuncuları ile amatör oyuncular arasında çıkan bu farklılığın; genetik faktörlerden, farklı beslenme alışkanlıklarından, kullandıkları ergojenik yardımcılardan, antrenman metodunda uygulanan farklılıklardan ve medikal tekniklerden kaynaklanabileceğini belirtmişlerdir (Granados ve ark., 2007). Araştırmamıza katılan elit bayan hentbol oyuncularında; durarak atış hızları ile 1 TM bench press değerleri arasında pozitif korelasyon tespit edilmiştir. Bu çalışma ile bizim çalışmamız paralellik göstermektedir.

Akan (2006), "hentbolde isabetli kale atışlarında submaksimal atış hızı ve atış kuvvetinin biyomekanik analizi" başlıklı doktora tezinde kaleye üç adım ile dayanma adımlı submaksimal atış uygulaması yaptırmış, isabetli ve isabetsiz atışların hızlarını radar ile ölçüm yaparak incelemiştir. Atışları 9 metrenin gerisinden yaptırmış ve atış için 2 numaralı top kullandırmıştır. Her oyuncu kaleye 2 kez atış yapmış ve en hızlısını değerlendirmeye almıştır. Kaleye uygulanan isabetli atışların hız ortalaması 65,92 ± 11,11 km.sa⁻¹, isabetsiz atışların ortalaması 70,25 ± 11,46 km.sa⁻¹ olarak tespit etmiştir. Çalışmalarında elde ettikleri veriler ışığında hentbolde isabetli ve submaksimal hızda dayanma adımı ile yüksek temel atış yapabilmek için, hareket sırasında omuz ekleminde atış hızının yavaşlatılması, önkolda ani fleksiyon yapılması, bacak ve kavrama kuvvetinin çabuk kuvvet tarzında geliştirilmesi, gövdede aşırı rotasyondan kaçınılması, reaksiyon zamanının kısaltılması yönünde uygulamalara antrenmanlarda sıklıkla yer verilmesi gerektiğini önermektedirler (Akan, 2006). Araştırmamıza katılan elit bayan hentbol oyuncularında isabetli atış hızları bu çalışma ile paralellik göstermekte iken; isabetsiz atış hızları farklılık göstermektedir. Bunun oluşma nedenini ise; yaptığımız çalışmada deneklerin arka arkaya belirli aralıklarla 35 atış kullanması ve deneklere isabet odaklı bir yönerge verilmesi olduğunu söyleyebiliriz. Bu durumda deneklerin isabete odaklanması ve ard arda gelen atışlarda "isabete" vurmada alışkanlık kazanılması gibi durumlar sözkonusu olabilir.

Hoff ve Almasbakk'ın yaptığı (1995), "bayan takım hentbol oyuncularında, maksimum kuvvet antrenmanlarının atış hızı ve kas gücüne etkisi" başlıklı araştırmalarında video kamera analiz yöntemiyle, antrenmanlardan önce durarak atış yaptırmışlar; antrenman grubunda durarak atış hızı ortalaması 19,8 ± 2,3 m.s⁻¹ (71,28 km.sa⁻¹), kontrol grubunun ise 18,5 ± 1,3 m.s⁻¹ (66,6 km.sa⁻¹) olarak bulmuşlardır. Antrenman grubunun üç adım sonrası dayanma adımlı yüksek temel atış hızı ortalamalarını 23,1 ± 2,01 m.s⁻¹ (83,16 km.sa⁻¹), kontrol grubunun ise 22,6 ± 1,8 m.s⁻¹ (81,36 km.sa⁻¹ olarak tespit etmişlerdir. Çalışmalarında deney grubuna 9 hafta (sezon öncesi ve müsabaka sezonunda) maksimal kuvvet antrenmanları uygulamışlardır. Antrenman grubunun 9 hafta kuvvet antrenmanı sonrasında, hem durarak hemde üç adım dayanma adımlı atış hız skorları anlamlı ölçüde gelişme göstermiştir, aynı zamanda gelişme istatistiksel olarak anlamlıdır (p<0,05) sonucuna varmışlardır (Hoff&Almasbakk, 1995).

Granados ve arkadaşları (2007), elit bayan hentbol oyuncuların (n=16) fiziksel performanslarının bütün bir sezondaki etkilerini incelemeyi amaçladıkları çalışmalarında, sezonu 4 bölümde ele almışlar ve atış hızlarına bakmışlardır. Sezon başında yaptıkları ölçümde (T1) durarak atış hızını 19 ± 0,9 m.s⁻¹ (68,4 km.sa⁻¹), sezon sonunda (T4) ise 20,5 ± 1,3 m.s⁻¹ (73,8 km.sa⁻¹), olarak tespit etmişlerdir. Yaptıkları ölçümler sonucunda, atış hızının sezon boyunca gelişme gösterdiğini vurgulamaktadırlar (p<0,05). Aynı şekilde 3 adım dayanma adımlı yüksek temel atış hızlarına bakmışlar, sezon başında yaptıkları ölçümde (T1) 20 ± 1,3 m.s⁻¹ (72 km.sa⁻¹),sezon sonunda (T4) ise 21,8 ± 1,4 m.s⁻¹ (78,48 km.sa⁻¹), olarak tespit etmişlerdir. Benzer şekilde bir pozitif yönde bir gelişme de 3 adım dayanma adımlı yüksek temel atış hızında meydana gelmiştir (p<0,05). Granados ve arkadaşları, sezon boyunca bayan hentbol oyuncuların vücut yağ oranında önemli bir azalma olmasının yanı sıra, atış hızında, üst ve alt ekstremite maksimal kuvvetinde, alt ekstremite patlayıcı kuvvetinde ve yağsız vücut kütlesinde önemli artışlar tespit etmişlerdir. Buradan yola çıkarak elit bayan hentbol oyuncuların başarılı olabilmesi için, bench press ve paralel squatla yapılan patlayıcı kuvvet egzersizlerinin önemini vurgulamaktadırlar. Kuvvet kazanımlarını engellemeden, dayanıklılık kapasitesini arttırmak için vücut yağ oranı ve kilo kaybına daha fazla önem verilmesi gerektiğini belirtmektedirler (Granados ve ark., 2007).

Tillaar ve Ettema (2003), "yönergeli atış hızı ve isabetinin yüksek temel atışda etkisi" konulu çalışmalarına 9 deneyimli Norveç'li hentbol oyuncusu katılmış, yaş ortalaması 24 ± 2,2 yıl, boy ortalaması 183 ± 0,07 cm, ağırlık ortalaması 82,9 ± 9,3 kg olduğunu tespit etmişlerdir. Çalışmalarında atış yönergesi kullanmışlar, herbir oyuncu toplamda kaleye 7 metre çizgisinden, rasgele yönergeler vererek 35 atış kullanmalarını istemişlerdir. Oyuncular V₀ yönergesinde (kaleye hızlı at) % 88,9 unu, VA yönergesinde (mümkün olduğu kadar hızlı at ve hedefi vurmayı dene) % 54,7 sini, VA yönergesinde (hedefi vur ve mümkün olduğu kadar hızlı at) % 60,9 unu, AV yönergesinde (hedefi vur ve mümkün olduğu kadar hızlı at)% 58,7 sini ve A₀ yönergesinde (hedefi vur) % 57,1 ini kaledeki hedef alanına isabet ettirmişlerdir. Sonuçlara baktıklarında, yönergeler arasında atış hızı olarak anlamlı farklılık bulmuşlardır (F4,32= 20,1, p<0,001). Atış hızı "hızlı at" yönergesinden (V₀) itibaren "hedefi vur" yönergesine (A₀) doğru giderek düşmüştür. Özellikle Ao yönergesi (hedefi vur) ile diğer tüm yönergeler arasında, hem atış hızı hem de hedefi vurma konusunda açık bir fark bulmuşlardır (Tillaar&Ettema, 2003).

Ohnjec ve arkadaşları (2010), farklı yaşlardaki bayan hentbol oyuncuların, sıçrayarak atış performansının kinematik parametreleri ve karşılaştırılmasını amaçladıkları çalışmalarında hırvat milli takım kadrosuna aday 4 bayan hentbol oyuncusu katılmış. Oyuncular toplam 7 kez 9 metre üzerinden sıçrayarak atış kullanmış, kinematik analizleri hareket analizi programında (APAS, Ariel Dynamics inc. USA), top hızını ise radar ile ölçmüşlerdir. 1990 doğumlu 63 kg ağırlığında ve 182 cm boy uzunluğuna sahip olan bayan hentbol oyuncusu, 1. atış denemesinde 70,2 km.sa⁻¹, 3. atış denemesinde 78,2 km.sa⁻¹, 5. atış denemesinde 75,8 km.sa⁻¹ ve 7. atış denemesinde 85,6 km.sa⁻¹ hızla kaleye atış gerçekleştirmiş. 1993 doğumlu 61 kg ağırlığında ve 174 cm boy uzunluğuna sahip olan bayan hentbol oyuncusu, 1. atış denemesinde 73 km.sa⁻¹, 3. atış denemesinde 75,3 km.sa⁻¹, 6. atış denemesinde 78,4 km.sa⁻¹ ve 7. atış denemesinde 71 km.sa⁻¹ hızla kaleye atış gerçekleştirmiş. 1995 doğumlu 55 kg ağırlığında ve 171 cm boy uzunluğuna sahip olan bayan hentbol oyuncusu, 1. atış denemesinde 71,5 km.sa⁻¹, 3. atış denemesinde 73,7 km.sa⁻¹, 6. atış denemesinde 77,3 km.sa⁻¹ ve 7. atış denemesinde 71,8 km.sa⁻¹ hızla kaleye atış gerçekleştirmiş. 1996 doğumlu 55 kg ağırlığında ve 178 cm boy uzunluğuna sahip olan bayan hentbol oyuncusu, 1. atış denemesinde 73,8 km.sa⁻¹, 3. atış denemesinde 69,6 km.sa⁻¹, 5. atış denemesinde 76,5 km.sa⁻¹ ve 7. atış denemesinde 77,6 km.sa⁻¹ hızla kaleye atış gerçekleştirmiş. Tekrarlayan ölçümler sonucunda hızın giderek artış gösterdiği belirtilmektedir. Yaş kategorileride dikkate alındığında, hem yaşı hem de antrenman yaşı daha yüksek olan ve tecrübeli oyuncuların diğerlerine göre daha hızlı atış kullandıklarını belirtmişlerdir (Ohnjec ve ark., 2010).

Ziv ve Lidor (2009), "hentbol oyuncularının performansları, fizyolojik özellikleri ve fiziksel karakteristikleri" başlıklı çalışmalarında elit ve amatör oyuncuları (n=23) karşılaştırmışlar, elit hentbol oyuncuların daha az vücut ağırlığına sahip olduğunu fakat yağsız vücut kütlesinin amatör oyunculardan daha yüksek olduğunu tespit etmişlerdir. Elit hentbol oyuncuların atış hızları amatör sporculardan % 9 daha yüksek olarak bulmuşlar. Ziv ve Lidor sahada yapılan ölçümlerin fizyolojik ölçümlerin, deneysel ve manipulatif çalışmaların, atış hızı ve isabeti ile ilgili çalışmaların ve uzun süreli çalışmaların yetersiz olduğunu özellikle vurgulamışlardır. Sporcuların kondisyon ve kuvvet antrenmanları planlanırken, oyuncuların oynadıkları pozisyonlara bağlı olarak, özel antrenman ve kondisyon programları, hız ve çeviklik drilleri, kuvvet ve güç egzersizleri, atış hızı ve isabeti çalışmaları büyük önem taşır şeklinde görüş bildirmişlerdir (Ziv & Lidor, 2009).

Yaptığımız çalışmanın sonuçlarına göre; 1. yönergede en hızlı ve en isabetli atışlar yapılmıştır. Bunun nedeni 1. yönergede isabet alanı olarak kalenin bütünü dikkate alınmıştır. Diğer dört yönergede ise üst kale direğinin tam ortasına asılı bulunan 50 cm-50 cm lik kare bir alana isabet ettirmeleri istenmiştir. Yani isabet alanı sınırlanmıştır. Çalışmamızdan elde ettiğimiz sonuçlara göre isabetli atışların hızlarının daha yüksek olduğunu söyleyebiliriz. Burada Fitts yasası ile çelişkili bir durum oluşmaktadır. Fitts yasasına göre hız arttıkça isabet düşer. Akan'a göre de maksimal atışlardan ziyade submaksimal atışların isabet oranı daha yüksektir görüşünü

savunmaktadır (Akan, 2006). Oysa kinestetik yeti burada göz ardı edilmektedir. Oyuncular uzun yıllar antrenmanları ve müsabakaları esnasında pek çok atış alıştırması uygulamışlardır. Bu durum da atış isabetliliği için bir "alışkanlık" durumu ortaya çıkarmaktadır. Bu çelişkili durum, çalışmalar arasındaki yöntem farklılıklarından kaynaklanmaktadır. Bazı çalışmalarda oyunculardan sadece 3 atış yapması istenirken bizim çalışmamızda bayan oyunculara 35 atış yaptırılmıştır. Özellikle gerçek değerleri yansıtması açısından ve işi şansa bırakmamak için oyunculardan her bir yönergeden 7 kez olmak üzere toplamda 35 atış yapmasını istedik. Sonuçlarıda bu doğrultuda analizlerini yaptık. Özellikle lokal yorgunluk oluşturmaması açısından her yönergeyi rastgele verdik. Üst üste benzer atış yaptırmamamızın nedeni de "öğrenme'nin" meydana gelmemesini sağlamaktır. Fakat bir genelleme yapabilmek için daha fazla sayıda çalışmanın müsabaka koşullarında yapılması ve değerlendirmeye alınması gerekiyor. Çünki oyuncular test ortamında atış esnasında hiçbir zorluk yaşamadan ve engelsiz bir şekilde (kaleci olmadan) kaleye atış gerçekleştirmekteler. Oysa müsabakada şartları zorlaşmaktadır ve atış çeşitliliği artmaktadır. Ayrıca deneklerin elit olma durumları ve antrenman yaşları arttıkça isabete istedikleri hızda atış yapabildiklerini de gözlemledik. Tilaar ve Ettema (2003) ise atış hızı ve isabetleri arasında bir ilişki bulamamıştır (Tilaar&Ettema, 2003). Bizim çalışmamızda da hız ve isabet arasında istatistiksel anlamda bir ilişki bulunmamıştır. Fakat yönergelerin isabetli ve isabetsiz atışlarına baktığımızda; isabetli atışların hızlarının isabetsizlere oranla daha yüksek olduğunu söyleyebiliriz. Atış hızlarında, Türkiye Liglerine ve Türk bayan hentbol oyuncularına göre benzer değerler karşımıza çıkmakta iken, Avrupa takımlarına göre (özellikle Kuzey Avrupa Ülkeleri) daha düşük atış hızı değerlerine sahiptir (Tilaar&Ettema, 2003). Bunun nedeni Türkiye Liglerinin ve Milli Takımlarımızın, Avrupa ve Kuzey Avrupa Liglerine oranla daha alt sıralarda yer alıyor olması bir gösterge olarak kabul edilebilir. Bu durumun, ülkemizde daha az sayıda ve yetersiz kondisyonel çalışma yapılışından kaynaklandığını da söyleyebiliriz.

ÖNERİLER

Ülkemizde yapılan hentbol antrenman içeriğinde atış hızı ve isabetine yönelik programlı çalışmalar yapılmamaktadır. Hentbolde atış hızı ve isabetlerinin daha iyi konuma gelebilmesi için antrenmanlara ek olarak yönergeli atış çalışmaları yapılabilir. Atış hızını etkileyen motor yetilerden en önemlisi kuvvet özelliğidir. Atış hızını geliştirebilmek için maksimal kuvvet çalışmaları önerilebilir. Antrenmanlar esnasında kimi zaman normal hentbol topu yerine farklı ağırlıklarda sağlık topları kullanılabilir. Buna ek olarak farklı ağırlıklara sahip sağlık toplarıyla özel antrenmanlar yapılabilir. Atış isabeti antrenmanlarda genellikle pek üzerinde durulmayan bir unsur gibi görünmektedir. Atış isabetliliğinin tesadüflere bırakılmaması gerekir. Bunun için çok tekrarlı özel isabet antrenmanları yapılmalıdır. Müsabaka esnasında tekrarlı yapılan hareketlerin çokluğu dikkat çekmektedir. Tekrarlı yapılan bu hareketlerin maç koşullarındaki şiddeti oldukça yüksektir. Müsabakanın başlarında yapılan atışların hızları ve isabetlilikleri, müsabakanın sonlarına doğru aynı etkinlikte olmamaktadır. Bu periyotlarda yapılan atışların istenilen hızda ve isabette olabilmesi için tüm tüm kondisyonel yetilerin üst düzeyde olması ve bu durumun lig boyunca korunması gerekmektedir. Performans bir bütündür ve her bir motor yeti bir diğerini etkilemektedir. Sporcuların genel dayanıklılık özellikleri performansı belirleyen önemli etkenlerdendir. 60 dakika süren müsabaka boyunca enerji kaynaklarının sürekli çabuk yenilenebilmesi de aynı zamanda dayanıklılığın geliştirilmesiyle mümkündür.

Bu tür isabet ve atış testlerinin sadece test ortamlarında değil aynı zamanda gerçek koşullar olan müsabaka ortamında alınması önerilebilir. Bu testler esnasında, oyuncu istenilen çalışmaya fazla odakladığı için sakin ortamda yapılan çalışmalar net sonuç vermeyebilir. Ayrıca atışlar yapılır iken karşılarında savunma yada herhangi bir engel olmadığından zorlanma meydana gelmemektedir. Bu konuda tam olarak çözüm üretebilmek için müsabaka koşullarında yapılan ölçümlerin sonucuna göre hareket edip antrenmanları bu yönde modellemek gerekebilir. Atış hızı ve isabeti müsabakanın sonucunu etkileyen çok önemli iki unsurdur. Ülkemizde atış hızı ve isabeti ile ilgili yapılmış çalışma sayısı çok sınırlıdır. Hatta müsabaka koşullarında yapılan bir çalışmaya literatürde rastlanmamıştır. Bu konuda daha fazla ölçüm ve bilimsel araştırma yapılması önerilebilir. Ülkemizde bayan hentbolcuların fiziksel, fizyolojik, performans, atış hızları ve isabetleri ile ilgili ölçüm sonucu değerleri, dünya sıralamasında ön sıralarda yer alan takımların sporcuları ile karşılaştırılıp, benzer koşullar elde edilmesi için çalışmalar yapılmalıdır. Atış hızının üst ekstremite kuvvetinden etkilendiğini söyleyebiliriz. Bunun için bu tür izometrik kuvvet ölçümleri yapılabileceği gibi daha detaylı izokinetik kuvvet ölçümleride (alt ve üst ekstremite üyeleri için) yapılabilir.

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EMOTIONAL INTELLIGENCE, SOCIAL COMPETENCE, AND THE PARTICIPATION IN POP CULTURE OF POLISH STUDENTS DURING ADOLESCENCE

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ABSTRACT

The article presents the results of two studies conducted in the years 2015-2016 among students and teachers of secondary schools in Poland. The results of the first study include data focusing on the psychosocial functioning of Polish adolescents (N = 160), in particular, the relationship between emotional intelligence, social competence and participation in selected areas of pop culture, such as: social networking, new media and technologies, television programs, e.g. talent shows, popular literature etc. The results of the second study include data on the reflection of teachers (N = 140) on the opportunities and constraints arising from the inclusion of elements of pop culture in the process of education and therapy of students in adolescence, particularly in the process of developing internal resources, such as emotional intelligence and social competence.

CONCEPTUAL FRAMEWORK AND BACKGROUND

The development of social media, i.e. Facebook, YouTube, Myspace, Instagram, blogs, etc. (Sosnowski, 2012; cf. Feliciak, Danielewicz, Halawa et al., 2010), as well as new media and technologies, along with the ever-presence of the so-called temples of consumption (Ritzer, 2001), stimulate the research on the participation of adolescents in pop culture and the role of pop culture in shaping external and internal psychosocial resources of the youths as they grow up. More and more often, in the social literature, an emphasis is put on the pop culture, with its universality and openness, playing a crucial role in the identity building of the teenagers (Melosik, 2014) and the functioning of young adults (Zagórska, 2004). Many publications prove that using such products of the pop culture as social networking sites or new technologies, enhances the cognitive and social-emotional development of students with specific learning difficulties (A. Milani, M. L. Lorusso, M. Molteni, 2009; O. Barden, 2012; M. H. Schneps, J. M. Thomson, G. Sonnert et al, 2013). Because the pop culture is a natural development space of the adolescents, it seems especially important to explore the issue in the context of relations between participation in the space of pop culture, social competence and emotional intelligence, important for functioning at school, exhibited by the students. It is an area that has not been subjected yet to a complex, multifaceted research. In the empirical studies carried out so far, essential positive correlations have been demonstrated, between the emotional intelligence and school performance of adolescent students, especially with a regard to creative behavior (Przybylska, 2007), or between the social competence, educational achievements and risk taking (Zawisza-Masłyk, 2011). It seems, therefore, crucial to learn the opinions of teachers of the adolescents on the possibilities offered by the participation of the students in the pop culture space. It is them who, to a great extent, decide about including elements of pop culture into the educational space of the adolescents. Do the teachers see in the pop culture more opportunities or more threats to the development of the modern youths?

RESEARCH

The goal of the first phase of research was to study the level of emotional intelligence, social competence and the activity of Polish students during adolescence in selected areas of pop culture, as well as establishing relations between the aforementioned variables. With this set goal, the following research questions have been formulated: 1. What is the frequency of the adolescent students' participation in the selected areas of the pop culture? 2. Do any differences exist between the levels of emotional intelligence, social competence and activity in selected areas of the pop culture in Polish adolescent students, and if yes, then what are they? and 3. Are there any relations between emotional intelligence, social competence, and the participation in selected areas of the pop culture in the studied group of students, and if yes, then what kind of?

In the studies carried out through the diagnostic survey, three research tools were used: Social Competence Questionnaire A. Matczak (2007), Emotional Intelligence Questionnaire N.S. Schutte, J. M. Malouff, L. E. Hall, D. J. Haggerty, J. T. Cooper, Ch. J. Golden, L. Dornheim, in A. Jaworowska and A. Matczak's Polish adaptation (2008) and a questionnaire for the studies of the participation of adolescents in the areas of the pop culture, developed by K. Kuracki. The study group consisted of 160 students (80 boys and 80 girls) from secondary schools (Polish gymnasiums). The age of the students was between 13 and 15 years (M=14.33; SD=.640).

The subject of the second phase of the research was gathering opinions of the secondary school teachers on the possible influence of various areas of the pop culture on the development of the modern youths. The main goal of the project was to recognize which spheres of the pop culture are seen by the teaches in the category of the greatest opportunities and which - as the greatest threats to the development of students during adolescence. In the study, an original questionnaire prepared by K. Kuracki was used, regarding the evaluation of the possible influence of the regular use of social networking sites and new media and technologies, watching entertainment programs like the talent shows, and spending free time in shopping centers and malls on the development of the adolescents. Overall, 140 people participated in that phase of the study (40 men and 100 women), all of them working in Polish secondary schools as teachers or specialized teachers. The age of the studied group was between 25 to 56 years (M=36.92; SD=8.833).

RESULTS

In the studies, it was shown, that the students' participation in the pop culture relies mostly on using social networking sites like Facebook, Twitter, MySpace, Instagram, etc., and on using new media and technologies (tablets, smartphones, smartwatches). Frequent and very frequent activity in those fields was declared by 60% and over 70%, respectively. The areas in which the Polish students participation was much less frequent were: watching entertainment programs like the talent shows, spending free time in shopping malls, putting their own works on the Internet and blogging. In each of those fields, a frequent and very frequent activity was declared by no more than 23% of the study group (Table 1).

Table 1: Frequency of participation of secondary school students (N=160) in selected areas of the pop culture

Studied group	Frequency	Using social networking sites		Using new media and technologies		Watching entertainment programs like talent shows		Spending free time in shopping malls		Putting own work on the Internet / blogging	
		N	%	N	%	N	%	N	%	N	%
Secondary school students	never	7	4.4	0	0	39	24.4	16	10.0	112	70.0
	rarely	18	11.3	18	11.3	66	41.3	105	65.6	29	18.1
	quite often	37	23.1	21	13.1	19	11.9	17	10.6	11	6.9
	often	36	22.5	53	33.1	26	16.3	18	11.3	6	3.8
	very often	62	38.8	68	42.5	10	6.3	4	2.5	2	1.3
	Total	160	100	160	100	160	100	160	100	160	100

Analyzes carried out with the t-Student test did not show any statistically relevant differences in the levels of emotional intelligence of boys and girls, both in the general and factorial results (Table2).

Table 2: Differences in average levels of emotional intelligence- general result (INTE O), Factor I: ability to use the emotion to support the thinking and actions) and Factor II: ability to recognize emotions, in the group of boys (N=80) and girls (N=80)

Variables INTE	Boys		Girls		t	Df	P
	M	SD	M	SD			
O	121,33	14,345	120,31	20,704	,360	140,639	,720
Factor I	61,08	7,841	59,28	11,923	1,128	136,572	,261
Factor II	43,16	6,101	43,88	7,469	-,661	158	,510

*statistically relevant result   Source: Own work based on SPSS 23.0

No statistically relevant results have been obtained between the studied groups also in the case of the levels of social competence, both in general results, as well as in sub-scales of intimacy, social exposure, and assertiveness (Table 3.)

Table 3: Differences in average levels of social competences – general result (O), components: intimacy (I), social exposure (ES), assertiveness (A) in the group of boys (N=80) and girls (N=80)

Variables KKS	Boys		Girls		t	Df	P
	M	SD	M	SD			
O	170,95	24,478	171,60	22,434	-,175	158	,861
I	42,34	6,310	43,86	6,274	-1,533	158	,127
ES	49,55	9,385	50,23	7,402	-,505	149,862	,614
A	48,50	7,973	46,03	8,725	1,873	158	,063

*statistically relevant result; p<0.05   Source: Own work based on SPSS 23.0

There was a relevant difference, however, between adolescent boys and girls attending Polish secondary schools, in relation to the participation in the pop culture. As the analysis with the t-Student test indicated, the mean result in the area of electronic media and new technology usage obtained by the boys (M=4.34; SD=.871) was much higher than the mean result obtained by the girls (M=3.80; SD=1.060), $t_{(152.243)}$=3.504, p<0.01. Boys show a much higher activity in the area of usage of such devices as tablets, smartphones, and smartwatches. In other areas of participation in the pop culture, no significant differences between the groups have been observed (table 4).

Table 4: Differences in average frequency of participation of boys (N=80) and girls (N=80) in selected areas of the pop culture

Variables	Boys		Girls		t	Df	P
	M	SD	M	SD			
Using social networking sites	3.71	1.245	3.89	1.147	-.925	158	.357
Using new media and technologies	4.34	.871	3.80	1.060	3.504	152.243	**.001***
Watching entertainment programs	2.25	1.175	2.53	1.211	-1.458	158	.147
Spending free time in shopping malls	2.30	.892	2.31	.894	-.089	158	.930
Putting own work on the Internet / blogging	1.49	.827	1.48	.927	.090	158	.928

*statistically relevant result; p<0.05   Source: Own work based on SPSS 23.0

In the first part of the research, weak positive correlations have been demonstrated between using social networking and emotional intelligence - with the general result (r=0.22; p<0.01), factor 1, understood as the ability to use emotions to support thinking and actions (r=.22; p<0.01), and factor 2, understood as the ability to recognize emotions (r=.195; p<0.05), as well as moderate positive correlations between using social networking sites and social competences - with the general result (r=.39; p<0.01) and its components, i.e. social exposure (r=.42; p<0.01) and assertiveness (r=.37; p<0.01). Weak positive correlations have been demonstrated between using new media and technologies and emotional intelligence - with the general result (r=.27; p<0.01), factor 1 (r=.29; p<0.01) and factor 2 (r=.176; p<0.05), as well as between using new media and technologies and social competence - with the general result (r=.22; p<0.01), social exposure (r=.23; p<0.01) and assertiveness (r=.22; p<0.01). Analogically, weak positive correlations have been demonstrated between watching entertainment programs like talent shows and emotional intelligence - the general result (r=.21; p<0.01), factor 1 (r=.21; p<0.01) and factor 2 (r=.24; p<0.01), as well as between watching entertainment programs and social competences - the general result (r=.25; p<0.01), social exposure (r=.27; p<0.01) and assertiveness (r=.21; p<0.01). Weak and moderate positive correlations have also been demonstrated between spending free time in shopping malls and social competences - the general result (r=.24; p<0.01), social exposure (r=.31; p<0.01) and assertiveness (r=.19; p<0.05), whereas weak positive correlations have been demonstrated between putting own work on the Internet and the ability to recognize emotions (r=.18; p<0.05) and social exposure (r=.18; p<0.05) (Table 5). No statistically relevant relations have been found between the other variables.

Table 5: r-Pearson's correlations between participation in selected areas of the pop culture and variables: emotional intelligence – general result (INTE O), factor I (INTE 1), factor II (INTE 2) and social competences – general result (KKS O), components: intimacy (KKS I), social exposure (KKS ES), assertiveness (KKS A) in a group of secondary school students (N= 160)

Variables		INTE (O)	INTE 1	INTE 2	KKS O	KKS I	KKS ES	KKS A
Using social networking sites	r	.224**	.220**	.195*	.392**	.135	.424**	.370**
	p	.004	.005	.013	.000	.089	.000	.000
Using new media and technologies	r	.266**	.293**	.176*	.219**	.089	.234**	.222**
	p	.001	.000	.026	.005	.262	.003	.005
Watching programs like talent shows	r	.212**	.212**	.241**	.248**	.134	.267**	.209**
	p	.007	.007	.002	.002	.092	.001	.008
Spending free time in shopping galleries	r	.130	.120	.132	.235**	.130	.305**	.192*
	p	.102	.131	.095	.003	.102	.000	.015
Putting own work on the Internet / blogging	r	.138	.133	.183*	.141	.038	.178*	.131
	p	.081	.093	.021	.075	.635	.025	.098

** relevant correlation at the level p<0.01   * relevant correlation at the level p< 0.05

Source: Own work based on SPSS 23.0

The second part of the research was focused on gathering the opinions of the teachers, who work with students in secondary schools, on the possible results of active participation in the pop culture on the development of the adolescents. As the quantitative and qualitative analysis of the data demonstrated, the teachers in the study perceive the mentioned areas of adolescents' activity, both as opportunities and threats.

Chart 1: Areas of participation in the pop culture evaluated by the teachers (N=140) in the category of biggest opportunities and greatest threats to the development of adolescents

Teachers mostly see benefits in using new media and technologies by the adolescents (62 responses) and also in the students watching entertainment programs like talent shows (38 responses). The substantiation of those positive opinions are, among others, arguments such as ensuring a quick and easy access to knowledge and information through the pop culture products, better communication (in relation to the speed of contact), improvement of social skills of the students and easier adaptation to the social conditions, changing dynamically due to the civilizational progress. The teachers, however, also see threats due to a too active participation in the area of using new technologies in the form of weakened social and cognitive performance. Considering the

watching of the entertainment programs, on the one hand, the teachers indicate such aspects of watching programs like *talent show* as entertainment and motivation for the students to pursue their hobbies and work on their achievements, on the other hand, they emphasize that such programs can teach the adolescents to criticize, ridicule and manipulate, as well as that it is worth being controversial and provocative to achieve success. In the category of the greatest threats, the teachers have placed the active use of social networking sites (45 responses) and spending time in shopping centers and malls by the adolescents (48 responses). The teachers support their opinion on the active participation on the social networking sites, with arguments such as the negative consequences of a constant waste of time, lowering of the quality of relationships with other people and neglecting schoolwork, what stands in opposition to the results obtained in the first part. The majority of the 48% of teachers, who evaluated the using of the social networking sites negatively and very negatively, believes also that it is an activity that hinders the social development, often only helping the adolescents in creating an idealized and unreal image of themselves. In relation to the students often spending time in shopping centers and malls, in the group of the 65% of teachers who evaluated that activity negatively or very negatively, the majority emphasizes that it only serves the purpose of promoting consumerism and adopting a demanding attitude.

CONCLUSION

The study showed that the students of secondary school actively participate in the pop culture, especially in the areas connected to using social networking sites and new media and technologies. Apart from a more frequent use of new media by adolescent boys, the gender does not differentiate the frequency of using the products of pop culture by the adolescents. The study has demonstrated that there are positive correlations (from weak to moderate) between active participation in the pop culture and psychosocial performance of the adolescents in the context of presented social competences and emotional intelligence. Those relations are especially visible in the areas of using social networking sites, using new media and technologies, and watching entertainment programs. On the basis of the obtained results, it can be concluded that smart technologies and social media are an important space for social interactions in which young people can test their social competences and shape new ones, especially their assertiveness and the ability to handle situations requiring self-presentation and resilience to increased attention and interest from other people. Hence, it is also a space where they can develop selected aspects of emotional intelligence. On the other hand, the higher the level of social competence and emotional intelligence of adolescents with dyslexia, the more active their participation in the selected areas of the pop culture. Moreover, the activities in all areas of the pop culture mentioned in the study appear to be important elements of training of competences connected to social exposure. Positive aspects of active participation in the pop culture are also noticed by the teaches, who in their objective assessment see greatest opportunities for development of the youths in using new media and technologies and watching programs like talent shows. It is, however, important to remember that, according to the suggestions from the teachers, those activities also have their downsides that can negatively affect the psychosocial performance of the adolescents.

SUGGESTIONS FOR FUTURE RESEARCH

Obtained results can be a contribution to further, more in depth studies focused on searching for determinants of the attractiveness of selected areas of pop culture to the adolescents, and for the directions of indicated relations between adolescents' participation in the pop culture and discussed aspects of their functioning. In relation to the studied group of teachers, it would have been interesting to undertake research on the participation of that study group in the selected areas of pop culture, and on showing the practice of the teachers of including the elements of pop culture into their educational activities. Designated lines of research could contribute to the development of indications for educational work in school.

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ENDORSEMENT OF NEW ECOLOGICAL PARADIGM: A COMPARISON OF PROVINCIAL AND URBAN SAMPLES

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ABSTRACT

Despite awareness and concern regarding ecological problems raised, such problems are continued to shape in to crisis, because dominant life style of society is not sustainable. This situation can be explained in scope of people's worldview or paradigm regarding to nature, natural resources and ecological problems. One of the most known theory about worldview or paradigm related environmental issues is the New Ecological Paradigm(NEP) which describes the rising pro-environmental culture. It represents a paradigm shift from the Dominant Social Paradigm(DSP) which is resource exploitative, growth oriented and materialistic with little and utilitarian concern for nature. The present study is aimed to compare provincial and urban sample in scope of endorsement of pro-environmental worldview.

INTRODUCTION

Every person has their own attitudes, values, and beliefs shaped by their past experiences and the culture of the society they live in. People make sense of life through their values, beliefs, and attitudes (Ergün, 2007). The values, beliefs, and attitudes have influence on our evaluations of new situations, events, ideas, and information in relation to ecological problems, which influence our life, just like they are influential on all the other aspects of life (Xiao & Dunlap, 2007). These types of evaluations can be gathered under the concept of worldview.

Dunlap and Van Liere (1978) suggest that there is a tendency towards the environmental worldview in the societies. They labelled this tendency as the emergence of a new paradigm that is different from the current one explaining the worldview on the environment. The emerging new paradigm was situated on the opposite of the worldview titled Dominant Social Paradigm (DSP). DSP prioritizes development, growth, and economy, alienates the human from the nature, and represents the values, attitudes, and beliefs that are widely adopted in the society (Dunlap & Van Liere 1978; Manoli, johnson & Dunlap, 2007; Dunlap, 2008).

Considering from the aspect of ecological problems, it is believed that there is a need for a widely-accepted worldview to be more environment-oriented so that nature can be protected more holistically rather than looking only after human beings' profits (La Trobe,& Acott, 2000). It is necessary to determine the social tendency towards ecological problems in order to make educational policies or policies for raising a social awareness regarding this transformation. Many scales have been developed to reveal the views of the society concerning environmental problems. One of the most frequently used of them is New Environmental Paradigm scale (Howcroft & Milfont, 2010). This scale was developed by Dunlap and Van Liere in 1978 to reveal people's worldview on the relationship between environment and nature. It consists of twelve items. Taking into account the ecological problems and the social change occurring in time, the scope of the scale was extended, and controversial expressions in the wording of some items were changed. The revised scale was renamed as New Ecological Paradigm. It consists of 15 items and five theoretical dimensions, which are (1) the reality of limits to growth, (2) antianthropocentrism, (3) the fragility of nature's balance, (4) rejection of exemptionalism, and (5) the possibility of an eco-crisis (Dunlap et al, 2000).

The New Ecological Paradigm scale measures general views on biosphere and the human influence on biosphere in the environmental literature and is also used to measure the awareness regarding adverse environmental conditions (Stern et al., 1999). The scale results are assessed taking into account such demographic variables as gender, age, educational background, geographical regions, political views, and occupational group as well as psychological structures (Berenguer, Corraliza & Martín, 2005). The present study analyzes the levels of endorsement of nature-based worldview, known as new ecological paradigm, by high school and university students selected from Kastamonu, whose population is around a hundred thousand. The psychometric characteristics of the New Ecological Paradigm scale were analyzed through comparison of provincial and urban samples.

THE STUDY

Samples
The study was conducted with two different samples. One of the samples covered students living in a province while the other covered students living in metropolitans. The provincial sample included 231 students studying in high schools and universities of Kastamonu. Metropolitan sample included 176 high school and university students studying in Ankara and Istanbul. The data were collected during the 2014-15 academic year.

Measurement Tool

The measurement tool was 15-item New Ecological Paradigm, which was revised by Dunlap et al. (2000). The odd-numbered items support NEP while the even-numbered items oppose NEP or support DSP. Therefore, even-numbered items were reversely scored to calculate the total score.

Data Analysis
The data obtained from the measurement tools were described based on means and standard deviations. Cronbach's alpha internal consistency coefficients of the items in the New Ecological Paradigm and the corrected total-item correlations regarding them were separately calculated for provincial and urban samples to make a comparison between them. To explore construct validity, factor analysis was separately performed for both samples to make a comparison. Taking into account the NEP-DSP dualism assumed to exist in the structure of the scale, which was suggested by Aytaç & Öngen (2012) and Atav, Altunoğlu & Sönmez (2015), two-factor structure was tested through the explanatory factor analysis.

FINDINGS
Table 1 shows mean and standard deviation values regarding the test items obtained from the provincial and urban samples.

Table 1: Mean and Standard Deviation of NEP scales Items

Items	Provincial sample		Urban sample	
	M	SD	M	SD
1. We are approaching the limit of the number of people the earth can support	3.48	1.11	3.51	1.21
2. Humans have the right to modify the natural environment to suit their needs	3.69	1.13	4.14	1.06
3. When humans interfere with nature, it often produces disastrous consequences	3.66	1.14	3.86	1.14
4. Human ingenuity will insure that we do NOT make the earth unlivable	3.59	1.21	3.74	1.17
5. Humans are severely abusing the environment	3.82	1.21	3.97	1.21
6. The earth has plenty of natural resources if we just learn how to develop them	2.24	1.15	2.24	1.09
7. Plants and animals have as much right as humans to exist	4.11	1.36	4.31	1.10
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations	3.12	1.39	3.34	1.01

Table1: (Continued) Mean and Standard Deviation of NEP scales Items

	Provincial sample		Urban sample	
	M	SD	M	SD
10. The so-called "ecological crisis" facing humankind has been greatly exaggerated	3.47	1.24	3.69	1.22
11. The earth is like a spaceship with very limited room and resources	3.05	1.23	3.11	1.11
12. Humans were meant to rule over the rest of nature	3.56	1.21	3.80	1.08
13. The balance of nature is very delicate and easily upset	3.48	1.18	3.55	1.26
14. Humans will eventually learn enough about how nature works to be able to control it	2.75	1.03	3.15	1.14
15. If things continue on their present course, we will soon experience a major ecological catastrophe	3.84	1.27	4.16	1.24

M: Mean SD: Standard deviation

By even numbered items higher score signifies higher NEPS correspondence.

The students from both samples received low scores for the 6th, 8th, 11th, and 14th items compared to the scores obtained for other items.

The mean scores obtained from the items demonstrated differences between the provincial and urban samples. Hence, independent-samples t-test was performed to see whether there was a difference between these two samples (Table 2).

Table 2: Differences between NEPs scale items between provincial and urban samples

Items	Provincial	Urban	t	p
2. Humans have the right to modify the natural environment to suit their needs	3.69	4.14	4.110	.00
8. The balance of nature is strong enough to cope with the impacts of modern industrial nations	3.12	3.34	2,025	.04
9. Despite our special abilities, humans are still subject to the laws of nature	3.26	3.70	3.810	.00
12. Humans were meant to rule over the rest of nature	3.56	3.80	2.069	.04
14. Humans will eventually learn enough about how nature works to be able to control it	2.75	3.15	3.681	.00
15. If things continue on their present course, we will soon experience a major ecological catastrophe	3.84	4.16	2.582	.01

By even numbered items higher score signifies higher NEP correspondence

It was seen that there were differences between the provincial and urban samples in six items out of 15 NEP items. In all the items that involved a difference, the urban sample had higher mean score. Four of these items (i.e. the 2nd, 8th, 12th, and 14th items) were in favor of DSP.

Table 3: Item analysis results

	Provincial		Urban	
Items	Corrected Item-Total Correlation	Cronbach's alpha If item deleted	Corrected Item-Total Correlation	Cronbach's alpha If item deleted
1	-0.015	0.551	0.408	0.702
2	0.317	0.485	0.391	0.705
3	0.487	0.449	0.468	0.696
4	0.297	0.488	0.325	0.712

5	0.358	0.474	0.393	0.704
6	-0.377	0.615	-0.252	0.767
7	0.382	0.465	0.434	0.700
8	0.102	0.529	0.400	0.705
9	0.080	0.535	0.428	0.701
10	0.286	0.491	0.328	0.712
11	-0.004	0.553	0.242	0.720
12	0.281	0.492	0.471	0.697
13	0.233	0.503	0.376	0.706
14	0.029	0.540	0.166	0.728
15	0.431	0.454	0.386	0.705
Cronbach's Alpha	0.53		Cronbach's Alpha	0.73

Item analysis results for both samples were comparatively analyzed. The item-total correlation regarding the item six was seen to be negative in the both sample. Corrected item-total correlation coefficients showed that the provincial sample had a low correlation with the scale for six items (i.e. the 1st, 6th, 8th, 9th, 11th and 14th items) whereas in the urban sample two items have a low item total correlation coefficient (i.e. the 6th and 14th items).

Table 4: Factor analysis results of NEP Items-Provincial sample

	Items	Factors				
		1	2	3	4	5
Antianthropocentrism	7	**0,755**	0,1	0,225	-0,107	-0,013
Eco-crisis	15	**0,680**	0,126	0,106	0,160	0,256
Balance	3	**0,644**	0,375	0,13	-0,016	0,045
Eco-crisis	5	**0,585**	0,143	0,065	0,233	0,200
Antianthropocentrism	2	0,107	**0,759**	0,123	-0,071	0,034
Antianthropocentrism	12	0,172	**0,725**	-0,051	0,026	-0,189
Balance	8	0,089	**0,224**	0,09	0,042	-0,609
Rejection of exemptionalism	14	-0,522	**0,386**	0,41	0,181	0,201
Eco-crisis	10	0,137	0,126	**0,753**	-0,088	0,024
Rejection of exemptionalism	4	0,251	-0,052	**0,731**	0,018	-0,110
Limits to Growth	1	-0,142	-0,042	-0,024	**0,762**	0,054
Limits to Growth	11	0,067	-0,07	-0,142	**0,610**	-0,247
Balance	13	0,285	0,117	0,176	**0,396**	-0,049
Rejection of exemptionalism	9	0,192	0,085	0,027	-0,134	**0,741**
Limits to Growth	6	-0,686	0,036	-0,114	0,077	**0,221**

Table 5: Factor analysis results of NEP Items-Urban sample

	Items	Factors				
		1	2	3	4	5
Eco-crisis	5	**0,682**	0,01	0,022	0,218	-0,109
Limits to Growth	1	**0,622**	0,17	0,059	-0,011	0,164
Antianthropocentrism	7	**0,607**	0,102	-0,072	0,385	-0,125
Eco-crisis	15	**0,583**	-0,146	0,356	0,201	-0,146
Balance	3	**0,552**	0,255	0,385	-0,164	0,391
Antianthropocentrism	2	0,217	**0,734**	-0,013	0,122	-0,029
Rejection of exemptionalism	14	-0,265	**0,693**	0,051	0,186	-0,015
Antianthropocentrism	12	0,384	**0,552**	0,098	0,166	0,12

Limits to Growth	11	-0,097	-0,051	**0,867**	0,211	0,06
Balance	13	0,376	0,153	**0,633**	-0,097	-0,067
Eco-crisis	10	0,011	0,19	0,047	**0,713**	0,036
Rejection of exemptionalism	9	0,296	0,031	0,179	**0,642**	0,068
Rejection of exemptionalism	4	0,128	0,325	-0,062	**0,456**	0,105
Balance	8	0,145	0,26	0,221	0,252	**0,682**
Limits to Growth	6	-0,258	-0,273	-0,281	-0,007	**0,672**

To investigate dimensionality of NEP scale, Principal Component Analyses with Varimax rotation was used. The KMO coefficients of provincial and urban samples were determined as 0.765 and 0.798 respectively. For both samples five factors were detected which their Eigen-values higher than one. In the provincial and urban sample, the five factorial structure explained more than 55 % of variance. The distribution of the items in the above-mentioned factors showed that the factor loadings of the urban sample ranged from 0.867 to 0.456 while the factor loadings of the provincial sample ranged from 0.762 to 0.221 (Table 4 and 5). The factor analysis results of the samples were seen to be inconsistent with the theoretical dimensions of the scale

Table 6: Factor analysis according to NEP-DSP dualism (Varimax rotation)

| Items | Factors-Provincial | | Items | Factors-Urban | |
	NEP	DSP		NEP	DSP
7	**0.767**	-0.013	15	**0.713**	-0.015
3	**0.630**	0.182	13	**0.649**	0.026
15	**0.628**	0.003	5	**0.603**	0.155
6	**-0.606**	0.114	3	**0.600**	0.223
5	**0.510**	0.017	1	**0.520**	0.212
4	**0.299**	0.207	7	**0.499**	0.318
13	**0.253**	0.083	6	**-0.425**	-0.025
9	**0.167**	0.038	11	**0.404**	0.030
1	**-0.113**	0.000	2	0.148	**0.639**
14	-0.365	**0.525**	14	-0.211	**0.606**
2	0.164	**0.480**	12	0.343	**0.572**
10	0.230	**0.343**	10	0.073	**0.563**
12	0.191	**0.324**	4	0.078	**0.554**
8	0.093	**0.108**	8	0.173	**0.528**
11	0.015	**-0.069**	9	0.380	**0.423**

Factor analysis was repeated according to two factorial structure which based NEP-DSP dualism of NEP scale. The explained variance by two factorial structure for provincial and urban samples were determined as 30 % and 35 % respectively. When the Table 6 is examined it can be stated that provincial sample's factor loadings of seven items are problematic. In contrast to this, for urban sample only two item's factor loadings are questionable (gray painted loading values in Table 6).

Table 7: Item analysis results of NEP and DSP subscales

| | Provincial | Urban | | Provincial | Urban |
NEP Items	Corrected Item-Total Correlation	Corrected Item-Total Correlation	DSP Items	Corrected Item-Total Correlation	Corrected Item-Total Correlation
1	-0,024	0,411	2	0,255	0,382
3	0,467	0,484	4	0,166	0,333
5	0,415	0,458	6	-0,154	-0,119
7	0,428	0,425	8	0,087	0,364

9	0,105	0,350	10	0,219	0,307
11	0,023	0,258	12	0,229	0,337
13	0,229	0,453	14	0,241	0,314
15	0,526	0,512			
	Cronbach's Alpha:0.53-0.69[1]	Cronbach's Alpha:0.73		Cronbach's Alpha: 0.32-0.42[2]	Cronbach's Alpha: 0.54-0.64[3]
1: calculated without 1., 9. and 11. items			2: calculated without 4., 6. and 8. items		
			3: calculated without 6. items		

As the Table 7 shows that item total correlation coefficients of three NEP subscales' items in provincial sample are lower than .20, while in the urban samples there is no item that its item total correlation coefficient lower than .20. In accordance to item total correlation results internal consistency coefficient of NEP subscale (0.73) for the urban sample is acceptable.

CONCLUSIONS

An accurate determination of views, attitudes, or approaches regarding the environment requires strong theoretical foundations as well as reliable and valid tools with ensured construct validity. This study is an attempt to comparatively analyze the levels of endorsement of the NEP scale, its theoretical foundations were constructed based on American society, by the Turkish society based on provincial and urban samples. To this end, the data obtained from two samples were comparatively described via mean scores and standard deviation values. Factor analysis and item analysis were performed based on the data. It was observed that half of the respondents from both samples supported the NEP items; however, some DSP items were agreed especially by respondents from the provincial sample. Similar results are also reported by Erdoğan (2009), Denis and Pereria (2014), and Atav, Altunoğlu, and Sönmez (2015). The results of t-test, which was used to compare the samples, showed that the samples differed from each other in six items (i.e. the 2nd, 8th, 9th, 12th, 14th, and 15th items). Four of these six items were in favor of DSP. They were mostly adopted by the respondents in the provincial sample.

Construct validity of NEP scale and the relevant item analyses were explored for three different situations. Dunlap et al. (2000) state that the scale can be used with a single dimension. The analysis based on this assumption showed that the internal consistency coefficient of the urban sample was higher than that of the provincial sample. Consistently with this, the item-total correlation coefficients showed that the items of the NEP scale yielded problems for two items for the urban sample while the number of problematic items for the provincial sample was six. This makes it difficult to adopt a single-dimension construct of the NEP scale for the provincial sample. Furthermore, the exclusion of six items narrows the limits drawn by New Ecological Paradigm scale. In contrast to this, for urban sample by omitting of two item the psychometric parameters of scale are not violated the assumption that scale can be used as unidimensional in accordance with suggestion of Dunlap et al. (2000). Additionally, Yu (2001) noted that a low overall Alpha may point out the existence of latent constructs, but a high overall Alpha is no an evidence for the absence of multiple latent dimensions. To investigate multi dimensionality of the scale, two distinct factor extraction criteria were used. Firstly, with Kaiser criteria (Eigen-value ≥ 1) five factors were extracted for both samples. However theoretically the NEP scale has five factors, but distribution of the items to factors showed that extracted factor structure for the both samples were not compatible with the theoretically determined structure of the NEP-scale (see Tables 4 & 5). This results shows that five factorial structure of the NEP scale not suitable for Turkish society. To exploring of construct validity of the NEP scale the factor analysis was repeated with criteria based on the fixed two factors (NEP-DSP). However, the two factorial solution of the scale for the provincial and urban samples display appropriate distribution pattern, but in the provincial sample, the factor loading of half of the items for both NEP subscale and DSP subscale are inappropriate (see Tables 6). In urban sample, both the factor loadings and distribution pattern of items are meet the assumption that the scale consisted two subscales in accordance with NEP-DSP dualism. This difference between both samples portrayed that participants in urban sample make clear distinction between the acceptance of an ecological worldview and rejection of an anthropocentric worldview, while participants in provincial sample support simultaneously both worldviews relating to environmental conservation and using the nature to satisfy human needs. The results of item analysis and less internal consistency coefficient are supportive evidence that participants from provincial sample cannot distinguish the pro-environmental worldview from the anthropocentric worldview. Bechtel, Verdugo, and de Queriroz Pinheiro (1999) and Lie & Ernst (2015) have revealed similar difference between samples from separate societies and suggested the explanation that less industrialized societies tent to hold the belief that the protecting nature is necessary because it provide what human need.

First implication is about role of pro-environmental worldview in environmental education. Pro-environmental worldview portrays a value orientation which based on interdependence between human and nature rather than utilitarian view. In this scope, the environmental education programs may be re-developed in value orientation manner rather than knowledge delivery.

Second implication is regarding to the NEP scale as a measurement tool by its usage researchers have to be cautiously, since it is not always reliable and valid for al sample type in Turkish society.

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ENGAGING INTERACTIVE WORDS PRONUNCIATION RECOGNITION SYSTEM FOR LANGUAGE STUDIES

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ABSTRACT

The purpose of this research is to develop and design computer- assisted programs for teaching Malay language word pronunciation. To achieve the purpose of the study, a pre and post-test was constructed to measure students' level in Malay words pronunciation. "**Let's Pronounce It Correctly**" is a Malay Language speech recognizer designed and developed to assist foreigners or non-native speakers in learning Malay words pronunciation. Conventional means of learning speech involve one-way interaction requiring immediate feedback from the instructor to verify the pronunciation's correctness. This process delays and complicates the learning process of speech pronunciation. With "**Let's Pronounce It Correctly**", a person is able to learn the correct pronunciation of Malay Language words independently to his own convenience and pace. The system also provides an option for a person to record his pronounced word and test its correctness by displaying the spoken text. Learning is enhanced with audio and video presentation of the word pronunciation to allow a person to repeatedly practice his pronunciation until correctness is achieved. The interactive drill-and-practice method of the system provides an interesting and effective interaction for an individual learning or group practice. "**Let's Pronounce It Correctly**" can also be used as Malay Language teaching tool for foreign students in higher institutions, foreign visitors and conference participants in Malaysia. The speech engine utilized by "**Let's Pronounce It Correctly**" can also be customized for other application domains such as security, translations and teaching and learning of other languages.

INTRODUCTION

Language learning is a field which closely related to speech and communication. Thus, the aspect of pronunciation learning is partly considered as an important aspect in computer based language learning known as 'Computer-Aided Language Learning (CALL)', which also includes 'Computer-Aided Pronunciation Learning (CAPL)'. Both terms are referring to the achievements in the fields of computer aided learning system. Some of the related studies are on speech recognition, speech synthesis and dialogue systems, which permits the ability to produce efficient computer aided system. CAPL can present easier, enjoyable, effective learning tools than the traditional non-computerized learning system.

Automatic speech processing have been allowed be incorporated into pronunciation teaching by developments in technology (Hua, 2006). Advantages of computer assisted pronunciation training (CAPT) software for enhancing English learners' pronunciation have been investigated by a number of researchers (e.g. Neri, Strik and Boves 2002; Butler-Pascoe and Wiburg, 2003; Kim, 2006). Students were provided by the untiring work of the computer with unlimited opportunities to review any part of the materials and get further assistance offered by the system. Computer assisted pronunciation training software helps students in selecting what function to employ and how often they utilize it and also it helps them to study independently. However, deploying CAPT language teachers also benefit from software in their pronunciation classes since it can give students drilling practice, which language instructors' view as monotonous and time-wasting. Finally, computer assisted pronunciation training systems present an interactive learning context in a range of modes: whole class, small group or pair, and teacher to student (Pennington, 1999). This software has some drawbacks, although it has a lot of advantages. Most researchers criticize the CAPT software because it was developed without a foundation in any pedagogical theory (Hua, 2006). Some researchers such as Pennington (1999) indicated that most computer assisted pronunciation training software placed emphasis on the mechanics of articulation which are not contextualized. Seferoğlu (2003) stated that —one of the main limitations of many of the computer assisted pronunciation software packages is that they are limited to presenting and practicing of segmental aspects (i.e. individual sounds) of the language rather than suprasegmental aspects and connected speech. The development of much of the computer assisted pronunciation training software has also been found to concentrate on the powerful multimedia facilities of computers and to lack content that is linguistically and pedagogically complete (Derwing & Munro, 2005; Neri et al., 2002; Reeser, 2001).

The implementation of speech recognition technology for recognizing the Malay language started since early year of twentieth century. Computer Aided Pronunciation Learning (CAPL) has been introduced, where it received a considerable attention in recent years. Many research efforts have been done for improvement of such systems, especially in the field of non-native second language teaching (Franco, Neumeyer and Bratt, 1999; Hiller et al., 1994; Witt, 1999). The basic stages of speech processing involves 5 main stages, which includes; pre-processing, feature extraction, training, identification and verification. In pre-processing stage, the recording speech input is filtered to get rid of the noise, before next process of feature extraction. Based on the research conducted by Ahmad, Ismail and Samaon (2004) and Noor Jamaliah et al. (2008), Mel Frequency Cepstral Coefficient (MFCC) algorithm has been used for feature extraction process. The survey provides recognition rates and description of test data for the approaches considered between another feature extraction algorithm known as Linear Predictive Cepstral Coefficient (LPCC) and MFCC (Ahmad, Ismail, & Samaon, 2004; N. Jamaliah, I. Zaidi, R., Zulkifli, M.Y., M. Yamani I., Emran, M.T., 2008). From the results obtained from Ahmad et al. (2004), LPCC is the best algorithm for recognizing the Arabic alphabets of Quran, with the percentage of 99.3%, more efficient compared to MFCC. However, MFCC is still the most popular feature set with 98.6% efficient, in which computed on a warped frequency scale based on known human auditory perception.

ACOUSTIC MODELING IN SPEECH RECOGNITION SYSTEM

At the level of signal representation the researcher have developed representation and emphasize of the perceptually speaker independent features and deemphasize speaker independent character. At acoustic phonetic level the speaker variability is modeled by different adoption algorithm that will adopt speakers' independent system the speaker variability is handled by statistical modeling which will operate on large number of data the effect of linguistics context on phoneme at acoustic phonetic level is handled by training separate model for phoneme in different acoustic modeling. The word level variability is modeled by different pronunciation n/w which will handled common   pronunciation of words through speech algorithm different statically technique are used to find most probable words sequence depending upon the frequency of accuracy of the words. The most dominate model used Hidden Markov Models (HMMs) which is statically given by the rule of probability mode in which underling phoneme and frame by frame acoustic realization is probability representative as mark or process. The speech segment are identify during the search process rather than identity explicitly alternative approach is to the first find speech segment then classify   speech according to segment score recognize words. This approached produced competitive approach in several task in the speech segments and modeled according there means, variance and shape it reduces error rate up to 34 %. Different technologies are appropriate for different task. When vocabulary is mall the word can be considered as single unit search as approached is not appropriate when vocabulary are large in search case words must be modeled by sub word units. Thus, our aim for this study is to develop speech recognizer that can recognized Malay words pronunciation spoken by user known as "**Let's Pronounce It Correctly**" system.

"LET'S PRONOUNCE IT CORRECTLY" SYSTEM ARCHITECTURE

Our system is divided into the three modules as shown in Figure 1, which include Graphical User Interface (GUI), Voice to Text Converter and Code Generator.
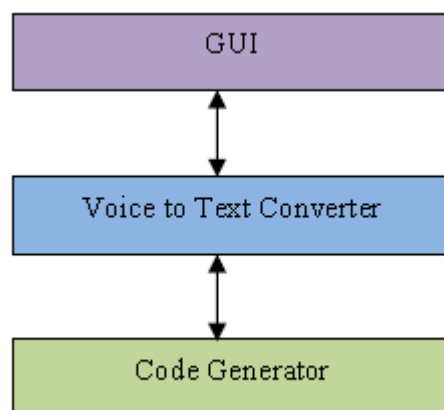

Figure 1: System Architecture

Before getting into the details of the system, let's have a brief overview of the high level working of our system. GUI module provides an interface for users to interact with the system. Voice to text converter is responsible for converting each listened word to text. A user will speak code using microphone and text converter will convert

this spoken code to text. For this converted text syntax and semantics codes are applied to this text to generate standardized source code using Matlab software.

The right articulator states are very important in right pronunciation. But it is easy to be influenced by the pronunciation way of the mother language when learning English. For example, Chinese is getting used to pronunciation the /n/ without raise the tongue to the upper teeth and pronounces /æ/ as /e/. Those kinds of improper utterance are not easy to be detected by the learner while repeating the pronunciation. Our system aims to provide an automatic assessment system to instruct the oral Malay language learning. The principle of our pronunciation evaluation algorithm is to calculate the similarity of standard and non-native speakers' speeches at the phoneme level. The audio and visual speeches are evaluated separately and the results are fused to determine the pronunciation level of learners. In the paper, the similarity is calculated with the Euclidean distance between standard and under-evaluating speeches. Considering the speaking speed varies and the phoneme length is not same among the different utterances of the same phoneme, the alignment is done between under-comparing speeches with dynamic timing warping algorithm (DTW). The block diagram of our system is illustrated in Figure 2. Input videos of same Malay words from native and non-native speakers are segmented into the phonemes and the relative end- point information is generated. The audio and visual sequences are processed separately to extract the corresponding features. After that, the alignment process of standard and test speeches is done on the audio and visual speech series separately as basis for calculating the similarity. The evaluation score is derived from the similarity and the scores from two channels are fused to grade the learner's pronunciation.

Figure 2: Block Diagram of Bimodal Fusion Pronunciation

GRAPHICAL USER INTERFACE (GUI)
GUI gives the visual appearance of the virtual file system to the end user. GUI color schemes, layout, working and behavior are creating from Matlab GUI toolbox provided. GUI style task pane provides easy access to common operations and gives appealing look. Standard Toolbars, popup menus and shortcut keys make operation of software easy for all type of users. Easy to Use, Easy accessibility to functions and Appealing appearance are the

main features of GUI. The front page to the system to start on is represented as in Figure 3 below.

Figure 3: Front Page of System Architecture

VOICE TO TEXT CONVERTER

The core part of our system is voice to text conversion. We used Windows Speech Recognition (WSR), which is built on top of SAPI, for capturing voice and Microsoft Speechlib API for converting this voice to text. SAPI version 5.4 is shipped with windows 7 and supports two distinct types of speech recognition; dictation and command and control. In our research we used dictation type of speech recognition. In this type of speech recognition machine listens to what we say and attempts to translate it into text. The accuracy of dictation ties directly to the CPU's speed and the system's available memory. The more resources, the more contexts that can be considered in a reasonable amount of time the more likely the resulting recognition will be accurate.

SAPI 5.4 supports two types of recognizers inprocess recognizer (SpInprocRecognizer) and shared process recognizer (SpSharedRecognizer). The inprocess recognizer claims resources for the application, so, for example, once an inprocess recognizer claims the system's microphone, no other application can use it. A shared recognizer runs in a separate process from the application and, as a result, it can be shared with other applications. This allows multiple applications to share system resources (like microphone). In our application we are using shared process recognizer because shared recognizer allows an application to play nicely with other speech enabled applications on system. A recognition context is an object that manages the relationship between the recognition engine object (the recognizer) and the application. A single recognizer can be used by many contexts. For example, a speech enabled application with 3 forms will likely have a single engine instance with a separate context of each form. When one form gets the focus its context becomes active and the other two forms contexts are disabled. In this way, only the commands relevant to the one form are recognized by the engine. A single recognizer can be used by many contexts. For example, a speech enabled application with 3 forms will likely have a single engine instance with a separate context of each form. When one form gets the focus its context becomes active and the other two forms contexts are disabled. In this way, only the commands relevant to the one form are recognized by the engine. SAPI is smart enough to create the shared recognizer object for us automatically when the SpSharedRecoContext is created. In our scenario we are using dictation type of speech recognition. For this purpose we created a grammar object and load the grammar with SLO Static value to set the dictation top of grammar as static. To set this grammar object to use dictation type of speech recognition we initialize SpeechRuleState state property of grammar object to SGDSActive.

In recognition event handler the ISpRecoResult interface is used by our application to retrieve information about the SR engine's hypotheses, recognitions, and false recognitions. The most common use of the ISpRecoResult

interface is retrieval of text recognized by the Speech Recognizer. The ISpRecoResult interface also supports the retrieval of the original audio that the SR engine recognized. An application can set interest in the SR engine's failed recognitions by calling ISpEventSource::SetInterest with SPEI_FALSE_RECOGNITION. If a false recognition occurs, the application can examine the audio (or even a partial recognition result) to reprocess the recognition or attempt to process the partially recognized text. SAPI does not require that an SR engine send a phrase with the false recognition event. ISpPhrase::GetText retrieves elements from a text phrase. All words recognized is then will be visualized in images and product corrected text as shown in Figure 4 below.

Figure 4: User Interface – Visualization of Image and Corrected Word Pronounce (in step 3)

CODE GENERATOR

Code generator is the module that actually generates source code from listened words. As a first step, we lists out 1000 of words to be pronounced by the user. All listed words are taken from Malay Dictionary (Dewan Bahasa dan Pustaka, 2012) accordingly to the alphabetical order and words that frequently used by users. Words selected will be pronounced in syllable structures which consists of vowel and consonants as presented in Table 1.

Table 1: Example of Word and It Structure

Word	Structure
Abang (brother)	V + CVCC
Baca (read)	CV + CV
Cincin (ring)	CVC + CVC
Emas (gold)	V + CVC
Ibu (mum/mother)	V + CV

Then, for each word we developed a separate list structure or grammar of words with similar sound as it pronounced in C#. When a user speaks a word that word will be converted to text and this text will be matched to the elements of list structure. If a match is found converted text is replaced with that word. If no match is found text is written as it is. Now if this text is wrong and user wants to remove that word user will speak "incorrect". A list structure is also maintained for same utterances of "incorrect". If spoken word is matched with that same utterance then that word is removed. At the same time if a match is found and that word has special program construct then that program construct is also generated simultaneously.

DTW-BASED SPEECH SEQUENCE ALIGNMENT AND SIMILARITY CALCULATION

Considering speaking speed varies among different utterances, the duration of the same phoneme sequence is not equal, even subjects try to keep the similar way. So it is not feasible to calculate the similarity of phoneme sequences directly. The time alignment must be done before comparison. Dynamic timing warping (DTW) is a dynamic programming technique to realize the alignment based on the local optimization. The procedure of the alignment is described as follows:

The features of standard and under-test phonemes are written as formula(1) and (2) , where R(m) is feature of mth frame of the phoneme in a standard speech as the referencing template and T(n) is feature of nth frame of the same phoneme in under-test speech. The duration of phoneme is M and N separately.

$$\{R(1), R(2), \cdot\, , R(m), \cdot\, , R(M\,)\} \tag{1}$$
$$\{T\,(1), T\,(2), \cdot\, , T\,(n), \cdot\, , T\,(N\,)\} \tag{2}$$

All counterparts (m, n) between frames of the reference and the under-test sequence are combined into a lattice shown in Figure 5(a). The distance of each counterpart, called the frame distortion, is calculated as in formula (3), where t_i , r_i are the feature components of each speech frame and p is the dimension of the feature. The final sequence of counterparts (n_k , m_l) is determined with the minimum accumulating frame distortion $D[n_i , m_i]$ (shown in formula (4) and formula (5)). Searching is only allowed from bottom-left to top-right because of the time unidirectionality. The endpoints are the starting and ending frames of sequences. To avoid the computing cost, the searching area is restricted in the region shown in Figure 5(b) with the slope ranging in 1/2~ 2.

$$d\,[T\,(n), R(m)] = \Sigma\,(t_i - r_i\,)2 \tag{3}$$
$$D[n_i , m_i] = d\,[T\,(n_i\,), R(m_i\,)] + D[n_i - 1, m_i - 1] \tag{4}$$
$$(n_k , m_l) = \arg\min(D[n_i , m_j]) \tag{5}$$

Figure 5: Illustration of DTW algorithm

Using the DTW algorithm, the speech sequence of audio and vision between standard and under-test phonemes are aligned separately into the same length and the each corresponding accumulating sum of the frame distortion, the similarity we want, are obtained meanwhile.

FUTURE DIRECTIONS
There are many challenges in the area at human language technology although there have been significant recent gains in spoken language understanding, current technology is far from human like. Only system in limited domains can be envisioned in the near term and portability at existing tech is rather limited there are many challenges like Robustness – In a robust system performance degrades gracefully rather than catastrophically as conditions become more different from those under which it is trained. Portability – Portability to goal of rapidly designing, developing and deploying system for new application. At present system tend to suffer significant degradation when moved to a new task. Adaption – How can system adapt to changing conditions (new speakers, phone, tasks etc) and improve through use? Such adaption can occur at many levels in systems, sub word models, pronunciation, language models etc.   Language Modeling – Current systems use a satisfied language models to help reduce the search space and resolve acoustic ambiguity. As vocabulary size grows and other constraints are relaxed to create more habitation system it will be increasingly imp to set as much constraint as possible from language models. Perhaps incorporating syntactic and semantic constraints that cannot be captured by purely statistical models. Confidence Measures-- Most speech recognition systems assign scores to hypotheses for the purpose the range ordering them. These scores do not provide a good identification of whether a hypothesis is correct or not just that it is better than other hypotheses. Out of vocabulary words: System are designed for use with   a particular set of words but system users may not know exactly which words are in the system vocabulary. This leads to a certain percentage of out of vocabulary words in natural conditions. System must have some methods of detecting such out of vocabulary words, or they will end up mapping a word from the vocabulary onto the unknown word causing an error.   Spontaneous speech -- Systems that are deployed for real use deal with a variety of spontaneous speech phenomena such as filled pause, hesitation ungrammatical construction so development in this area is require. Prosody-- Prosody reference to acoustic structure that extends over several segments of the word stress, irritation and rhythm convey important information for word recognition and the user's intentions (e.g. anger). Current system does not capture prosodic structure. Modeling dynamics-- System assume a sequence of frames which are treated as if they were independent, but it is known that perceptual clues for words and phenomena require the integration of features that reflect the movement of articulators which are dynamic in nature and incorporate this information into recognition systems is an unsolved problem. Prosody can

be defined as the information that cannot be localized by a specific sound segment ass lexical stress; rythms conveys imp information about speaker line anger speaker's intention current system does not capture this structure.

CONCLUSIONS

Speech recognition performance systems are now being deployed within telephone and cellular network. Within next few years speech recognization will be pervasive in telephone network around the world telephone needs completely different acoustic model   it need to be able to interface with telephony system because there is no GUI it needs to manage a spoken dialogue with user.

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ENGINEERING EDUCATION - STATUS QUO IN AUSTRIA IN COMPARISON WITH THE ACADEMIC FIELD OF BUSINESS EDUCATION

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ABSTRACT
Focusing on the engineering field, there is a specific challenge education has to face. The massive technical progress of the last decades including the current trend industry 4.0 has led to a highly complex field which often keeps young people from starting a professional career. To face those challenges educators have to work with interactive and interdisciplinary didactic and educational models. However engineering education is still not established as an independent academic field in Austria. This article deals with the status quo of teaching engineering in Austria and the potentials of being an independent academic research field. Therefore the research field was analyzed to define the framework required when teaching engineering. Those parameters where compared to the autonomous academic field of business education to deduce similarities and differences. The objectives are mainly obtaining a differentiated view of teaching technical content and showing similarities with business education models. This to underline the significance and importance of taking actions towards establishing engineering education as a part of the scientific world.

INTRODUCTION
Technical progress and the consequential economic and social changes are characterizing the 21st century. Thus the importance of Industry increases significantly, which means an amassment of digitalization in all parts of factories (Spath et al., 2013; Kuhlang et al., 2014; Ramsauer, 2013). As a result of this development, a highly complex field has arisen. Fulfilling all occupational requirements, being flexible and able to work under pressure is not sufficient any more. Nowadays these are more or less basic demands. To be successful in the long run employees have to exhibit multidimensional competences that enable them to use all their gathered knowledge for finding creative, holistic and therefore innovative solutions for their daily work tasks (Sonntag, 2009; de Vries, 2006). Apparently this reality often keeps young people from starting a professional career in the technical field (Sachs, 2001; Bloemen/Schlömer, 2012; Oberösterreichische Zukunftsakademie, 2013). The educational system has to face those challenges, prepare young people and show them the opportunities the technical field provides. Nevertheless engineering education is still not established as an independent academic field in Austria. This leads to the question if the required framework for engineering education is appropriate to assemble an autonomous field of research in Austria.

THE STUDY
Therefore, as a first step, the required framework for engineering education will be defined using a literature review. Those results are then compared to the framework of business education, which also deals with vocational training but in the business field. Business education is successfully established as an autonomous field of study in Austria and can be seen as a best practice example.

FINDINGS
Competence orientation: A continuous changing process in Austria started a few years ago due to the aforementioned developments in industry and society. Teaching and learning were refocused and innovative didactic models were implemented. Teaching and learning is more practically oriented now than it ever was. This is due to a change from a lecturer-centered to a skills-centered perspective. Quality of education is not measured by the input given by the teacher, but by the trained abilities employees show in their work place. The so-called outcome is the practical result of education and answers the question of what students are able to do after attending specific educational programs (Slepcevic-Zach/Tafner/Klausner, 2013; Schedler/Proeller, 2013; Slepcevic-Zach/Tafner, 2012). Using this description, it is clear, that there are higher performance requirements than simply expressing knowledge. "Students are able to do" leads to competence-orientation which requires necessity of different skill-levels based on the desired outcome (Weinert, 2002). Current research has defined a wide range of competences starting with simple reproducible knowledge and ending with the ability of analyzing, evaluating and further developing economic situations (Bloom et al., 1956; Weinert 2002). Keeping this in mind, educational settings have to be created in such a way that all of the primarily formulated targets can be reached. The key issue is defining adequate teaching methods for those demands.

The following matrix shows some possible methods linked to different competence levels based on the taxonomy first defined by Bloom as well as the level of student activation (Peterßen, 2009; Dubs, 2009; Helmke, 2010; Bloom et al., 1956; Riebenbauer/Sorko, 2013).

competence level	level of activation		
	listening	experiencing	performing
reproduce **understand**	• lecture • presentation (listen) • educational film • speech of an expert • fish bowl (monitoring)	• excursion (speech) • fish bowl (discussing) • ball bearing method • presentation (present) • mind mapping • brainstorming • discussion • learning exhibition	• presentation (showing an experiment) • excursion (workshop) • learning exhibition • 4 step method • cooperative open learning • simulation game • role play • case study
apply			
analyze			
synthesize			
evaluate			

Table 1: Adequate teaching methods within the competence taxonomy by Bloom.

It is evident that not every method is efficient in delivering high-level (up to analyze, synthesize or evaluate) competence oriented education. There must be a valued balance between theoretical input and active performance to provide a holistic and student-centered learning environment. Those requirements are centralized in the concept of task-based-learning (Jank/Meyer, 1994; Dubs, 2009). Summing up education generally has to follow a hands-on-approach if complex skills such as problem solving or continuous improvement are targeted.

Multidimensional approach of engineering education: Concerning technical subjects there is a strong demand for interdisciplinary skills in engineering which primarily affects economic and social development. One basic scientific concept developed in German speaking countries is the multi-perspective engineering education model established in Germany. It deals with different aspects of learning outcomes which are particularly relevant in the industry (Bienhaus, 2008; Schlagenhauf, 2005; Sachs, 1979). The concept is based on four core objectives which have to be considered when planning engineering classes. Those are the
  • action perspective,
  • knowledge perspective,
  • impact and evaluation perspective as well as the
  • pre-professional (vocational) orientation.

The action perspective mainly represents the task-based-learning approach and therefore emphasizes the hands-on approach. Thus there is the need to use teaching methods where students have to perform technical tasks occurring in the industry. Focusing on the content, the knowledge perspective describes the competences of students to identify, understand and combine the various technical fields as well as their integration. Those two angles affect the content dimension of engineering education and are inherently linked to the different technical subjects that are taught.

Once they are prepared with the previously gathered knowledge in class, the impact and evaluation perspective enables the learners to analyze technical situations and prepare effective, targeted solutions. In comparison to the first two views, this perspective mainly focuses on the social-human dimension of technical topics. The students have to be aware that their actions have a direct impact on society. (Sachs, 2001; Bienhaus, 2008; Schlagenhauf, 2005)

Being engaged with those characteristics of learning, pre-professional (vocational) orientation occurs more or less automatically. Students gain a deeper insight into various technical fields of work, their job descriptions and employment skills respectively which are necessary. The practical use of the topics should be continuously pointed out, for which this last corner stone can be seen as general teaching principle. Students have to realize the relevance of the content and get a clear overview of the various possibilities they have after finishing their education.

(Dewey, 1997; Sachs, 2001; Bienhaus, 2008)

A concept for task-based learning in engineering programmes can be adopted after consolidating these briefly described models (Jank/Meyer, 1994; Slepcevic-Zach/Tafner/Klausner, 2013).

Figure 1: Concept for task-based-engineering education.

The technical content is the initial point of the educational setting and can therefore be seen as a cognitive basis of the task-based engineering lecture. Within this context, the different settings focus on the individual learners, their competences and ability to perform autonomously. The lecture is embedded in the learners' environment and forces active interaction among students during class. Looking at single tasks, the teacher has to combine the experiences of learners with real life practice in the economy, considering their holistic and complex nature. Not only does the didactic design of task-based lectures counter established traditions in tertiary education; the role of the educator also has to change. There must be a change from classical teaching to coaching in order to support individual learners in continuous reflection. If this can be provided, a multidimensional, broad and practically oriented competence-development-process can be offered. This intensive, active examination of engineering topics raises the awareness of technical action and subsequently leads to a clearer cognition of possible fields of work.

Academic education system for engineering education in Austria: Taking all requirements of engineering education into account, it is evident that broad educational training is necessary in order to prepare the lecturers of technical subjects with the didactic skills needed. All the more it is astonishing that in Austria there is more or less no standardized academic training program for engineering education.

Currently, different forms of teaching engineering exist, they differ at higher secondary education level. Teaching subjects with a mainly theoretical focus requires specific technical knowledge at university level as well as, on average, four years of work experience in a particular field; however, individually divergent cases are not uncommon. Educational competences are not compulsory but have to be gathered within the first few years of teaching as part time courses. (Bundesministerium für Bildung und Frauen, Abteilung II/2, 2014)

For applied classes, more practical competences are needed. According to the requirements, lecturers have to verify an appropriate training and have at least six years of relevant work experience. In addition there is an advanced training course at university level that is to be completed. Prospective teachers gain didactic competences as well as deeper knowledge about school laws over three years. Only the second year is organized as a full time program, whereas the other semesters can be attended part time. A higher education entrance qualification has to be provided as a requirement for access, given that the advanced training completes with the degree 'Bachelor of Education'. Although there are quite detailed requirements, individual agreements are often

possible. (Bundesministerium für Bildung und Frauen, Abteilung II/2, 2014 online)

In summary, there is some form of pedagogical training for prospective engineering teachers, but it is rather unstructured as a whole. Furthermore, the question is if general teaching competences are adequate in order to face didactic challenges lecturers have to face nowadays.

CONCLUSIONS

Looking at the field of business education as a comparison, the need for a holistic training in technical didactic methods (as opposed to a merely general module) was recognized some time ago. Based on the increasing importance of the economy there was a need to provide society with profound knowledge. As a result general pedagogical concepts were applied to business topics. Those concepts were integrated and business education was and is still developed constantly. Specific classes for business education occur in Austrian schools. Affected by political and social changes it took some decades until business education was approved not only as educational system but also as an academic profession. (Pleiss, 1973; Zabeck, 2009) This leads to the current educational model of bachelor and master in business education, in Austria.

The didactic challenges which are described for teaching engineering are equal to the field of business education due to socio-economic and environmental upheaval. Competence orientation, outcome and task-based-learning are key factors also in the business field because they provide an effective, relevant educational concept for prospective employees.

This brief description of the initial situation of business education in Austria compared to the input given beforehand hypothesizes similarities but also differences to engineering education. Both 'sciences' have to deal with the setting: fast pace, technical progress, high demands on employees. This lead to the outlined didactic development and the intense competence orientation in both fields which are mostly comparable. Although there are many similarities regarding didactic requirements, engineering education is just at the beginning of getting an autonomous field of research. The central point of discussion in Austria is that there is, compared to an entrepreneur, no general engineering profession and therefore it is mostly seen as an impossible endeavor to define general engineering competences. Engineering contains various professions which separately are all highly complex and require individual competence portfolios. So how would it be possible to come up with only one engineering education model? Nevertheless the discussion has to go on in order to provide employees efficiently. There have to be attempts to realize an educational system in the field of engineering to provide engineering lecturer with relevant technical didactic methods. Concepts like general didactic training combined with technical specialization modules should be discussed, enhanced and evaluated

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ENGLISH LESSON BASED ON CONSTRUCTIVE LEARNING

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XXI century demands very high standards on people. We know that education system must prepare students who are ready to meet these standards. Taking into account all these a new question arises: Do the methods that we use give this opportunity for teachers to bring up critical thinkers or innovators?

As we know, traditional method of teaching doesn't consider all students' levels and abilities. It doesn't take into account student's thinking abilities and doesn't differentiate them at all. If student's thinking ability becomes the main part of teaching methods, we believe that learning will be more natural and more successful. Many scientists have researched this question and they have different points of view about this topic. Applying constructive learning to a lesson has become very actual in the world recently. This popularity is related to its main goal which is to let children create and develop their own knowledge with teachers' guidance.

Based on F. Bunyatova's constructive learning methods, a lesson consists of 7 steps and a teacher should plan a lesson beforehand based on these steps. Here are 7 steps of constructive learning which must be taken into account.

1. **Research**
2. **Structure**
3. **Logical thinking**
4. **Connection**
5. **Questions**
6. **Additions and outcomes**
7. **Presentation**

We would like to show one example of an English lesson to make it more clear for a reader.

As soon as a lesson theme chosen, a teacher should set a lesson objective taking into account the aim of constructive learning. Azerbaijani researcher, Fatma khanum Bunyatova has shown 2 main aims for constructive learning[2]:

1. Teaching manners and improving behavior factors.
2. Gaining knowledge through self-development

Here we are going to plan a lesson on "Adjectives". This lesson can have several goals. Choosing the appropriate lesson objective is the key to succeed in every lesson as it is thought that teaching pastoral, spiritual, emotional and patriotic care is the main part of each constructive lesson. Therefore, first of all let's set a goal which will be related to the first main aim of constructive learning.

- Children learn adjectives that describe a well-behaved person. It could be done in various ways: such as description of pastoral behavior between the kids to improve behavior issues in the class or read a story about the topic;
- On the other hand, the topic can be extended to introduce heroism and love and set citizenship. Children use appropriate adjectives to describe heroes using the facts from their timeline.

By choosing these lesson objectives we introduce them with historical facts and phenomena. Plus, they learn what means hero and real citizen and they widen their vocabulary with adjectives.

According to the second aim of constructive learning, a child should learn, conclude and gain knowledge by himself. A teacher should plan a lesson in such way that each student should connect previous learned topics with new topic. Bearing this in mind, we can set following lesson objectives related to second aim.

- Children learn what adjectives are and use them to describe nouns (connection to previous topic)

- Children learn to use adjectives in context and make more interesting sentences.

As we clarified the topic and set the main goals for the lesson, we can start planning a lesson according to each step.

Research		Word. Group of words. Sentences
Structure	**Logical structure**	Connections and associations
	Activities	Discussions, pair work and group work
Logical thinking		Extended knowledge
Connection		Connection between group of words
Questions		What are these words? What is similarity and differences between these words? Can we connect these words? How can we connect them? Is it a sentence? What is a difference between a word and a sentence? How can we make it more interesting?
Additions and outcome		Adjectives to describe feelings, using more adjectives within a sentence, using a comma between adjectives in a list.
Presentation		Group work

A teacher should follow each step in order to get a better outcome. Children are asked questions to make conclusion and learn by themselves. As you have already noticed, a teacher doesn't tell what adjectives are; instead children are asked such kind of questions that they understand it on their own. Choosing appropriate questions and putting them in developing structure is the main part of "Research". Children in group or as a class look at the words which are written on the board and try to find similarities or differences among them. Here another step of constructive learning is also used by connecting previous knowledge about nouns to a new topic.

We should not forget that a child can make a mistake, the role of a teacher is to listen to all students and correct misunderstandings with a help of other kids. Another issue that must be reminded to the group member is participation of all group members in discussion. Constructive learning demands all children's activeness and participation in all tasks. If a member of a group doesn't answer correctly, that group work would be considered not so effective one.

Briefly saying, combination of 3 important branches of life through the English lesson makes this lesson more productive. By working on behavior issues, by improving moral qualities and by creating knowledge at the same time students will be ready for a life. After reading some books and searching on the Internet related to the topic, we came to conclusion that constructive learning can open many "thinking" doors in front of young generation. After passing through these doors each student changes the gained and created knowledge into a new level.

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ENTREPRENEURSHIP EDUCATION AND LEARNING AS A MODEL FOR REGIONAL AND INTERNATIONAL COOPERATION ON YOUTH EMPLOYMENT IN THE MENA REGION

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ABSTRACT

Entrepreneurship Education (EPE) in the Arab States is a joint project between UNESCO Regional Bureau for Education in the Arab States-Beirut, UNESCO-UNEVOC International Centre for TVET-Bonn, and the StratREAL Foundation, United Kingdom, which includes two main components:

Component one: The collection, systematization and dissemination of innovative and successful experiences of EPE from different countries of the region (2009–2010); and
Component two: Providing technical support for the development of strategic plans to facilitate the incorporation of the concept of EPE in the education systems of the Arab region (2010–2012).

As part of the outcomes of Component One, four country case studies of Egypt, Jordan, Oman and Tunisia had been prepared and published on the current situation of entrepreneurship education in these countries. Based on the four case studies, as well as international and regional experiences in this field, a regional synthesis report was prepared by the team of experts to highlight the national and regional contexts and expectations of EPE in the Arab region.
UNESCO and other concerned International Organizations (i.e. ILO, UNIDO, and ETF) will continue this joint effort and partnership in order to provide countries of the region with necessary technical support and mobilization of resources to enhance the adaptation of EPE in the education and training systems. The focus will be on developing national and regional strategies and plans of action for EPE, which include the following priority areas: Policy and Coordination; Curriculum Development; Teacher Education and Training; Equipment, atories and Infrastructure; and Networking and Connectivity. Four countries in the region (Jordan, Lebanon, Morocco, and Tunisia) have been selected for Comonent two of the project. Moreover, a fifth country (Oman) is expected to join the group at the end of 2011.

The outcomes of the project will reflect on new teaching and learning strategies, mainly at secondary and and TVET programs to enhance youth cababilities, in self emplyment and initiation of small and medium enterprises (SMEs). Entrepnuership Education strategies will facilitate more partnership on the generation of knoweldge and skills on business and industry in the education system.

'The spirit of entrepreneurship is one of the principal factors in whether communities can successfully overcome the difficulties that global changes have generated.'[1]

I.   INTRODUCTION

All over the world, young people face highly uncertain futures when slow growth in the economy is coupled with very fast growth in the youth population. With burgeoning youth populations, demographic pressure alone means that the relative size of many markets across the Middle East and North Africa is shrinking. In essence, economies

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[1] UNESCO/ILO, Towards an Entrepreneurial Culture for the Twenty-first Century, 2006

have no hope of growing fast enough to absorb the numbers of young people entering the labor market. The impact of the 'youth bulge' is significant. Unemployment, informality and inactivity are threatening the labor market prospects of youth across the Arab region, and limit the region's potential to stimulate economic growth. Lack of opportunities and recurring frustration can put youth at risk, increasing feelings of social exclusion and reducing social cohesion.

In the context of economic environments where there are no guarantees for life-long, stable and salaried employment, for financial security or for professional development, self-employment and entrepreneurship become particularly viable options. From the point of view of the individual, entrepreneurship can foster financial independence and give a person more control over his or her work situation. For the community, entrepreneurship is a tool that can stimulate local economic development, contribute to the diversification and promotion of local industry and promotion, and strengthen the local input to national economic processes.

Consequently, entrepreneurship education is considered as a useful strategy for diminishing youth unemployment and precariousness in the Arab region, since it provides the youth with knowledge and competencies that empower them to face socio-economic challenges and changes throughout their lives.

II. ENTREPRENEURSHIP EDUCATION AND LEARNING

Entrepreneurship education is about creating an entrepreneurial mindset/culture that fosters innovation, problem-solving and active citizenship and where individuals have the self-confidence and belief in their ability to succeed in whatever they choose. The objective of entrepreneurship education is to assist young people become innovators and active participants in the labor market. Entrepreneurship education is made up of all kinds of experiences that give students the ability and vision to access and transform opportunities of different kinds. It is about increasing individuals' ability to anticipate and respond to societal changes and encourages individuals to develop and take initiative, responsibility and risks. Not every person who undertakes entrepreneurship education will become an entrepreneur and be self-employed, but the skills acquired, especially when linked with practical skills in demand, will surely make a contribution to personal empowerment and increase individual capacities for employability and citizenship. Indeed, the European Commission calls entrepreneurship a "new basic skill"[2].

III. REGIONAL AND INTERNATIONAL COOPERATION ON EPE

Many programs on Entrepreneurship Education and Learning are implemented in the Arab States at the non-formal level by NGOs, local communities and associations, aid agencies, or by the private sector. The joint project *"Entrepreneurship Education in the Arab States"* between UNESCO and the StratREAL Foundation, UK complements these existing initiatives and programs. Through UNESCO's programs in the Arab region, interested countries are supported in the development of educational policies that aim to include the concept of "entrepreneurship" in their national development plans, as well as in their formal education systems.

In order to trigger change in public policy, it is important to raise issues and start debates in a coordinated and systematic way, through the education and training systems. In the area of entrepreneurship education, it is important to highlight examples of good practice that already exist, but whose outcomes are not widely known. *Component one* of the project (2009-2010) identifies such examples and assesses the status of entrepreneurship education in the educational systems of *Egypt, Jordan, Oman and Tunisia*. Based on the four case studies, a regional synthesis report has been arranged to guide future work and actions in other countries of the region. The outcomes of component one is an important input for countries that aim to develop strategic plans for the incorporation of entrepreneurship education into their educational systems.

In *Component two* of the project (2010-2012), UNESCO is providing technical and financial support to four countries/institutions that sent proposals to integrate EPE in the education system during the next 2-3 years. The identified institutions are mainly Research and Development (R&D) Centers, within the Ministry of Education or departments/authorities responsible of Technical and Vocational Education and Training (TVET). The countries

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[2] European Commission, Presidency Conclusions of the Lisbon European Council, 2000

include *Jordan, Lebanon, Morocco, and Tunisia*. A Fifth country *(Oman)* is expected to join the group at the end of 2011.

The budget of the project is US $ 275,000 covering four years (2009-2012). The UNESCO-UNEVOC International Centre for TVET-Bonn is the lead Unit in the project, with technical support from UNESCO Regional Bureau for Education in the Arab States-Beirut and the TVET Section at UNESCO HQ-Paris.

IV. CHALLENGES IN YOUTH EMPLOYMENT IN THE ARAB REGION
The problem of unemployment in the Arab region is first and foremost the problem of youth unemployment. Unemployment amongst Arab youth is the highest in the world. According to ILO statistics for 2007, the rates stand for 21%, while it is 12% for the world. It is more among female than male (29% vs. 19%), while the world percentages are 12% female and 11% male. Youth unemployment represents 50% on average of all unemployed, it is higher amongst female. What makes the situation more intriguing is the high rate of unemployment amongst educated youth who have completed secondary and/or tertiary education.
In order to better understand and analyze the underlying factors explaining youth unemployment, the ILO applied its " School to Work Transition Survey" to three countries including Egypt, Jordan, and Syria amongst countries in the region. The survey aims to capture the experience of young men and women from five target groups: in -school-youth, job seekers, young employees, young self-employed, and own account workers (youth who are neither in school nor in the labor market). The results of these surveys show, that the lowest percentage of youth had successfully transited from school to work. These include those who are working either in a job with a permanent contact or that they are satified with and do not wish to change. These results are indicative of the major obstacles faced by Arab youth. The young generation of today is the most educated the region have ever seen. However, finding decent work is particularly hard. The sheer size of youth in the working age population and their aspirations present a particular challenge to policy makers and some of the national policies and regional initiatives are examined in greater depth by the thematic paper on youth employment (ILO Issue Paper, Arab Forum on Development and Employment, Doha, Qatar, 15-16 November 2008).

According to recent report issued by ETF on Education and Business in Syria, youth unemployment is high, standing at 23.1% in 2008. The education system compounds the situation by failing to provide the skills and competences demanded by the labor market (Huifeld and Kabbani, 2006). Syria has a young population with 60% below the age of 25 (around 12 million). Educational attainment levels are low and have little relevance to work, especially at the basic level. The qualifications acquired in school only match the requirements of employers to a limited extent, and personal networks are far more important in finding a job than qualifications (ETF/CBS, 2010). The Government thus faces a two-pronged challenge of increasing levels of qualification in the labor force and the population in general and fostering dialogue between education and the world of work for improved school to work transition. (ETF, Education and Business Report: Syria, 2011)

V.   EPE PROGRAM FOCUS AREAS

UNESCO/ILO publication "Towards and entrepreneural culture for the twenty-first century"-2006 identified the precise focus for entreprenururship education programs in the different school settings and environment. Some programs adopt a sectoral focus (i.e. agricultural entreprenurship, new technologies, e-commerce, enviromental sustainability, developing innovative social framewors). Some programs also specifically target different population groups, such as minority groups, young girls and women, or have a gepgraphic focus (i.e. rural vs. urban areas).
A broader model has recently evolved around the concept of *life skills*, which encompasses the psycho-social aspects of dealing with issues related to vulnerability and poverty, as well as education for citizenship, community welfare and health. But most interventions try to integrate the natural learning processes and assests of youth living in different circumstances and help them to become self reliant by developing their own simulation projects, sharpining their academic skills, forming positive attitudes about themselves and their communities, as well as the skills required in the workplace.

Young people benefit from teachers' and mentor's knowledge, resources and community connections. They are based on the adoption of appropriate local technologies and are often built around and respectful of existing community social structures and resources. Training providers may include govermental and non-govermental organizations (NGOs), community leaders, small and medium enterprises (SMEs). The fields of entrepneurship education can cover the following areas:

- Economic and ecological literacy;
- Entrepreneurship skills (knoweldge, starting a business, and running a business);
- Social entrepreneurship skills; and
- Employability skills.

For curriculum content, teaching and learning strategies, entrepreneurship knowledge and skills (cometencies) are usually influnced by personal and external factors illustrated in Figure 1.

FIGURE 1: The personal and external factors that influence entrepreneurship competence and performance.

PERSONAL FACTORS Abilities and competences	EXTERNAL FACTORS Framework and influence
• Knowledge • Skills • Attitudes • Self-learning • Initiative • Creativity • Innovation • Problem-solving • Critical-thinking • Risk-taking • Self-confidence	• Education system • Social factors • Cultural factors • Economic factors • Political factors • Community involvement • Work environment

VI. Major Achievements of the EPE Project

Entrepreneurship competence and performance

Four case studies of Egypt, Jordan, Oman, and Tunisia had been prepared and publishes, as part of Component one (2009-2010).

The *case study of Egypt* measures to anchoring entrepreneurship education (EPE) in its national education system, including past and present difficulties. After decades of policies that favored a centrally-planned economy, which impacted negatively on the entrepreneurial spirit of the population, Egypt has been liberalizing its economy and has been adapting it to the constantly changing developments in society, technology and the labor market over the past 30 years. From the beginning, establishing and developing small and medium enterprises (SMEs) played a major role in this reform process in 2004, the Egyptian government passed a new law on small enterprise promotion,

which contains a strong EPE component. Since then, many diverse EPE training centres and programs have been established. As a next step, these programs, being national or donor-supported, they should be better coordinated to increase effectiveness.Entrepreneurship education at all education levels would raise awareness among young pupils and students on entrepreneurship and would lead to increased creation of enterprises once they have reached the age of adults.

The *case study of Jordan* focuses on the extent to which several aspects of EPE are conducted in the different areas of the Jordanian educational system. Such EPE characteristics can start in basic education, and then continue in secondary education programs (academic or vocational education). Moreover, higher education and technical education in community colleges were surveyed for teaching and learning experiences related to EPE. The reform plan for the educational sector (2003) emphasized that entrepreneurial life skills and mindsets such as innovation, initiative, problem solving, and critical thinking are major goals of education in Jordan. Other possibilities to enhance EPE in Jordan are the projects financed by the Educational Innovation Fund to improve efficiency, innovation, sustainability and competition in education (i.e. the knowledge-economy project). In addition to the government initiatives, there are several NGOs or non-profit organizations programs and initiatives with international and donor organizations that focus on EPE. Awards and incentives such as the Queen Rania Al-Abdullah Award for Excellence aim to enhance the culture of innovation and entrepreneurship through spreading awareness about distinguished performance concepts.

The *case study of Oman* analyses how entrepreneurship education (EPE) is integrated within the Omani educational system. Between 2003 and 2006, a major review of the education system in Oman was undertaken carried out. Various approaches were outlined to prepare students for the labor market, including through teaching entrepreneurial skills such as decision making, problem-oriented thinking and discipline. Several pilot projects and private-sector programs have been implemented to promote entrepreneurship and to provide entrepreneurship education. They include business simulation classes at Nizwa College of Technology and the SANAD program, which promotes the launch of youth business ventures through the provision of loans and expertise to recent graduates.

The *case study of Tunisia* addresses the challenges that the country education system faces due to recent demographic and economic developments, as well as the ways in which entrepreneurship education can be an important factor in overcoming these challenges. Currently, 62% of the Tunisian population is of working age, and this number is increasing. The number of enrolled students is also rising in all levels of education (basic, secondary, and higher education). Statistics indicate that 80,000 new jobs need to be created each year to meet this rising demand for jobs. The case study also presents several other entrepreneurial education projects that aim to promote self employment and training, such as the Tunisian Bank of Solidarity's loan scheme for SMEs or entrepreneurship education and business administration programs such as INJAZ Al-Arab or ILO's Know About Business (KAB) program.

The regional synthesis report adopted a broad concept of EPE that includes economic, social and cultural dimensions, with special emphasis on both the higher mental skills of the individual and the preparation for the world of work. The scope of EPE comprises all aspects and dimensions of the education system, including the relevant inputs, processes and practices, and the possible educational disciplines (courses) in formal and non-formal education.

EPE (in general), can be influenced by two groups of factors within the education system: personal and external factors. Personal factors include professional competences, communication skills, and higher mental skills. External factors include social, cultural, economic and political conditions that prevail in society, with direct effects on EPE or the education system.

More information on the case studies and the regional synthesis report (in Arabic and English) can be found at the following link: http://www.unesco.org/ulis/cgi-bin/ulis.pl?catno=191732&set=4E311967_1_273&gp=1&lin=1&ll=1

Component two of the Entrepreneurship Education in the Arab States project (2010-2012) is focusing on the following priority areas:

- Policy and coordination;
- Curriculum Development;
- Teacher Education and Training;

- Equipment, atories and Infrastructure; and
- Networking and Connectivity.

Such priority areas will be formulated into national strategies and frameworks for entrepreneurship education covering short and mid terms planning (3-5 years). Four countries (Jordan, Lebanon, Morocco, and Tunisia) are currently receiving financial and technical support, while a fifth country (Oman) will join the group by the end of 2011. The work plan for 2012 interventions is under consideration by the UNESCO-UNEVOC International Centre for TVET-Bonn and UNESCO Regional Bureau-Beirut.

UNESCO, ILO, and ETF have agreed to formulate a joint working group for EPE in Lebanon, in order to coordinate with national authorites on the implementation of joint activities: policy advice, curriculum revision and development, and capacity development/training of teachers.

VI.   THE ROLE OF NGOS AND THE PRIVATE SECTOR

The four case studies of the Arab countries highlighted technical and financial cooperation between schools, NGOs, and the private sector. An example of such cooperation at the international, regional, and national levels is the INJAZ Al-Arab model of cooperation in several Arab countries, supported by local and international business and industry.
Within the framework of Global Debvelopment Alliance, Junior Achievment International (JAI) has partnered with Exxon Mobil Corporation, Citigroup, MEPE, USAID, INJJAZ Jordan (part of INZAJ Al-Arab), and other private companies throughout the Middle East and Noth Africa to develop seven self-sustaning Junior Achievment Organizations (NGOs) in the Middle East.

Through US$ 1,000,000 grant, more than 100,000 secondary school students and youth in Bahrain, Egypt, Lebanon, Oman, Qatar, Tunisia, and UAE completed at least one of twenty Junior Achievment programs (adopted to local communities) to gain a fundimital understanding of business, economics, and entrepreneurship.
In Jordan, INJAZ is a national initiative launched in 2003 with funding from Save the Children/USA. 62% of Jordan's population bellow 25 years of age, and 25% between age 14-24, it was felt that a program framework on entrepneuership will promote economic opportunities for jordanian youth. The INJAZ programs focus on personal and business economics, entrepreneurship, leadership and community service courses that serve to foster creative thinking and critial problem solving among the learners. The EPE learning and training opportunities are offered through volunteers from business, industry, and community through several public and private schools, as well as Vocational Training Corporation (VTC) Centres in many cities of Jordan.
For more information: http://www.injaz.org.jo

VII.   CONCLUSION

The concept of entrepreneurship education in the Arab education systems is fairly new. It includes classroom-based learning more explicitly connected to the real life applications, as well as competences to develop knoweldge and skills in the initiation and management of small and medium enterprises (SMEs).
International experiences on entrepreneurship education objectives and applications have been shared with policy-makers and professional in the Arab countries, through UNESCO, ILO, ETF, and WEF publications and resource materials. The regional Entrepreneurship Education (EPE) project between UNESCO and the StratREAL Foundation explored how can government authorities, NGOs, and the private sector can work together for the enhancment of such programs and initiatives.
During the coming 2-3 yreas, a set of national strategies/frameworks on EPE will be developed in the Arab countries, with technical and financial support from concerned UN/International Organizations, such as UNESCO, ILO, and ETF.

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EUROPEAN HIGHER EDUCATION AREA WITH THE EYES OF STUDENTS OF URAL FEDERAL UNIVERSITY

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ABSTRACT
European Higher Education Area represents the highest level of regional integration in higher education. In the Process of EHEA development, external dimension strategy has emerged, which underlines the importance of its implementation on all levels with a special focus on students. This paper analyses the perception of EHEA by Russian students. The research is based on analysis of international and national documents, as well as a student survey. The article examines the main forms of youth engagement on European Higher Education and its implementation in the Ural region of Russia. The authors discuss the challenges, analyse their origins and make recommendations for the enhancement of cooperation between Russian and European universities.

Keywords:
Higher education, Bologna Process, European Higher Education, student mobility, Russian Federation

INTRODUCTION
The harmonisation and convergence are one of the main trends in higher education in the modern world. And in many respects their dissemination is linked with the European Higher Education Area, which is the highest level of regional integration in higher education. One of its main goals is to increase the attractiveness and competitiveness of European higher education. To this end, a system understandable for the European countries and outside Europe should be created. The process of harmonisation of higher education is at the core of the Bologna process. Its key areas are: the creation of a three-tier system (Bachelor-Master-Doctorate), included in the qualification framework of the European Higher Education Area; a system of credits (ECTS); mutual recognition of degrees and study periods in other universities; development of academic mobility; cooperation in quality assurance; social dimension of higher education; lifelong learning and fair access, as well as the internationalisation and promotion of the European dimension of higher education. The strategy for reforms implementation stresses the importance of active participation of all stakeholders, especially students, because they are the main consumers of educational services. Therefore, they must have the possibility to influence the reform process and take active part in the educational process - a principle known as student-centered education. Driven by the aim to break away from isolation in education and to be included in the European and international educational space, in 2003 Russia joined the Bologna Process. Since that time, significant changes occurred in Russian higher education, resulting from the reforms in all major areas of the Bologna process. They included the introduction of a two-tier system instead of specialist degree, reform of the quality assurance system, the introduction of the credit system, the creation of favorable conditions for the internationalisation of universities and many others (Artamonova, 2015).

Implementation of these reforms generated a lot of discussion of their advantages and disadvantages. In 2006-2007 students surveys "Bologna with Student Eyes" were carried out (Larionova, 2007), but after that similar polls were not conducted. 13 years after Russia's accession to the Bologna process, we decided to ask students of International Relations Department of Ural Federal University, what they know about the Bologna process and how they perceive European higher education. The Department was one of the first to move to a two-tier bachelor-master system and is one of the leaders in the internationalisation at the University, as already in the 1990s it began to actively participate in the student exchange programs. Its first international partner became Florence University, with which the universities worked on European project TEMPUS (Mikhailenko, 2010).

METHODOLOGY
This research is descriptive, combining both qualitative data analysis and a quantitative survey. The authors analyse strategic Bologna documents and research made by Russian scientists on the implementation of Bologna process in Russia.

A student survey was undertaken in order to identify students' perceptions of the features of European higher education system and main Bologna process action lines. Survey results are presented in table and diagram form

and interpreted. The target group of the survey was made up of students enrolled in Bachelor's programme at Ural Federal University in Ekaterinburg, Russia.

THE STUDY
Research group
The survey of Bachelor's students in International Relations was carried out at Ural Federal University in Ekaterinburg, Russia during the 2014/2015 academic year. The group included 76 students in their second year.

Data analysis
Answers to the first question showed that, despite the extensive international links of the department, students have little understanding of the Bologna Process as well as the standards and values of European education. First of all, we asked the respondents what they knew about the Bologna process and its content. In 46 questionnaires (60.5% of all respondents), the corresponding columns were left blank. Answers of 16 students (21%) have in common the idea that the Bologna Process is a system to create European Higher Education Area. Respondents mentioned that it is "process of unification of European education systems'; "convergence of European education systems to create a new and better system of education"; "unification of educational space" and "harmonization of European education systems". Six respondents (7.8%) associated Bologna process with the spread of European education systems in non-European countries and, in particular, in Russia. Five respondents narrowed down the Bologna process to the levels of education - bachelor, master and PhD. By and large, these data witness low awareness of students about the Bologna process. There were even curious assumptions of the Bologna process as one of the major trials.

Then, respondents were asked to give a definition of the European Higher Education Area. Only 24 students were able to do it. 68.4% of the respondents (52 students) left blank the corresponding columns. The answers can be summed up as follows: "this is the space of all the countries participating in the Bologna Process"; "the system of higher education in the EU"; "a common space of European Universities"; "higher education institutions in the EU"; "network of universities, meeting Bologna Process standards"; "single European educational space of all countries involved in the Bologna process since 2010"; "area, including European countries, with a special form of higher education in line with EU standards"; "space where Bologna system functions".

The next question asked students to rate the attractiveness of higher education in foreign countries on a 5-point scale. 54 respondents (71%) assessed the EU countries' higher education as the most attractive, US universities being in the second place. Despite the fact that EU countries are the most attractive study destination [Figure 1], 63.3% of respondents could not name the features of the European education [Table 1]. Only 28 students (36.8%) were able to comment on them. It should be noted that aggregated groups are presented in the table. The group titled "individual learning paths" is comprised of the following answers: "students are free to choose and combine modules"; "free choice of subjects"; "students make their personal schedule"; "it is possible to vary the training period"; "it is possible to choose the language of instruction." It should be mentioned that almost all respondents indicated freedom of choice.

Figure 1. Attractiveness of higher education

21 respondents indicated the high quality of education, which was associated mainly with high demands on students, a complex system of performance evaluation, and a high degree of computerization. One respondent noted "freedom of thought" as a characteristic of European education. In addition, respondents commented on

the wide international connections of European universities and high mobility rates among EU countries. Six students highlighted accessibility of European education which is often free, and three of their peers focused on high qualification of university teachers.

Table 1: Students' answers to the question "Features of European education"

	Generalized groups of answers	Number of respondents (n)
Features of European education in comparison with other countries	Individual learning paths, chosen by students themselves	19
	Practice-oriented learning	10
	Mobility and international links	3
	Quality of education	22
	Qualification of teachers	3
	Accessible and free education	6
Columns were left blank		48

The students were asked to comment on the European higher education values. In this case, the answer was not given by 61 students or 80.2% of respondents. The others indicated the freedom of research and choice, creativity, stability, accessibility, equality, fairness, integrity, openness, diligence, non-discrimination, humanization, internationalisation. This question was open, and students could name several values.

Despite the fact that vast majority of the respondents were able to name the European standards and values of higher education, 66 students (87% of all respondents) agreed that the Russian higher education must be integrated with the European Higher Education Area [Figure 2]. Respondents stressed that "certainly", and "definitely" they wished this goal would be achieved, and "it would be a great opportunity for Russian students to become part of European education". Meanwhile, in four (5.2%) questionnaires a concern was expressed that Russian education would be absorbed by the European one and, therefore, the integration should be moderate and partial and to be conducted as an experiment for the beginning. A negative answer was given by six students (7.8%), emphasizing that "Bachelors, Masters, ratings and scores for performance, borrowed from Europe, are not effective in Russia".

Figure 2. Do you want Russian higher education to continue integration with EHEA?

The hierarchy of the most common responses to the question about the advantages of studying in European universities is presented in Table 2. The largest number of respondents mentioned the high quality of education and unique programmes. The second advantage of European universities, in the opinion of Russian students, is guaranteed employment and good conditions for career progress. They noted that the "European Diploma" gives "more competitive advantages in employment", "the opportunity to find decent work in different countries and in Russia", "the ability to get a job abroad". One respondent pointed to "large bright future" with European diploma". 18 respondents indicated extremely "high value" of European diploma, 17 respondents expressed the view that the advantage of European universities was wide opportunities for the language learning and intercultural communication.

Table 2. Students' answers to the question "What are the strengths of European higher education?"

Generalized groups of answers	Number of respondents (n)
What are the strengths of European higher education?	
Definite advantages upon employment (guaranteed employment)	18
Language practice	17
Quality of education, unique programmes	21
High international value of diploma	18
Flexible learning paths	7
High scientific potential	6
Broad international connections	2
Columns were left blank	15

It was very important to find out the level of awareness of students about the educational programmes of the EU, such as Tempus, Erasmus + and Jean Monnet. The Department of International Relations has participated in many of these projects, and the teachers of the Department are grant-holders of these programmes. Nobody has assessed their knowledge as excellent, twelve students (15,7 %) have never heard about them, approximate equal number of respondents assessed their knowledge from 2 to 4 points.

It is important to mention that for 61.8% of the respondents the main source of information on the European system of education and student mobility programmes is the internet - sites of Russian and foreign universities, special sites for training abroad, social networks. The rest of them receive necessary information from friends, relatives, teachers and foreign guests of the University, as well as from the media.

Table 3. Students' awareness of EU educational programmes (on a 5-point scale)

Scale	Answer	Number of respondents	%
5	Excellent knowledge about all programmes	0	–
4	General information	22	28,9
3	Odd bits of information	23	30,2
2	Familiar words	20	26,3
1	I know nothing and never heard	11	14,4

Then, the respondents were asked to choose among the forms of students' participation in EU programmes available at the university that they were aware of. Currently UrFU provides students with the possibility to take part in a wide range of cooperation programmes. The Department of International Relations alone has cooperation agreements with universities in Italy, Czech Republic and Spain. The Department participates in TEMPUS programme, it has two Jean Monnet professors within the Erasmus+.

The diagram [Figure 3] reflects the distribution of students' answers to the question about their awareness of the following forms of international activities. It should be noted that 40 students did not answer this question. The respondents could choose several forms of their possible participation. 127 options of the educational projects were selected in total. This number was taken as 100%. The most common and popular form was training in foreign universities from 1 to 6 months - 28%; scholarships to study abroad were chosen by 26 respondents (21%); participation in summer schools abroad proved popular among 17% of the respondents; 16% of surveyed students preferred to attend lectures of invited foreign professors without leaving the country; double or joint degrees interested 9% of respondents. However, it should be mentioned that the Department of international relations does not use the latter form of cooperation with foreign universities. The remaining 12% of the respondents chose lectures and seminars provided by UrFU teachers participating in Tempus and Erasmus+ projects.

Further, it was important to find out the students' awareness of cooperation programmes between UrFU and foreign universities. Compared with the previous question, respondents demonstrated higher level of awareness. Only three out of 76 respondents, did not give any answer, nine students responded negatively, six students responded that they know quite a bit, and the remaining 58 their peers (76.3%) indicated that they were aware of the programmes. Respondents named agreements with the University of Florence, Turin (Italy), Brno (Czech

Republic), Cordoba (Spain), Erasmus+ programme and Tempus, grants and internships in Europe and Asia (China, Korea) as the specific areas of cooperation.

Figure 3. Information about available forms of participation

It should be highlighted that the Ural Federal University pays special attention to student mobility - the possibility to spend one or two semesters in a foreign country as a student or a trainee without interrupting studies at the university. The aim of the UrFU programmes is the internationalisation of higher education and cultural integration of young people from different countries. UrFU partners are universities of Austria, Germany, Hungary, India, Italy, Japan, Republic of Korea, Mexico, Romania, Taiwan, Thailand, Finland, France, and the Czech Republic (Exchange programmes, 2016). Student exchanges with Czech, Bulgarian, and Croatian universities are supported by Erasmus+. Moreover, UrFU allocates its own grants to students on a competitive basis for exchange studies. Thus, students in international relations have the opportunity to receive a grant to study at the University of Cordoba (Spain), University of Masaryk (Brno, Czech Republic), Sichuan University (Chengdu, China), Kazakh Economic University (Almaty, Kazakhstan), Kiev International University (Ukraine, TEMPUS), Stockholm University (Sweden), University of Florence, University of "Tuscia", University of Turin, University of Bergamo (Italy). (UrFU Grants for mobility of bachelors and masters, 2016). Bachelors of the International Relations Department, as a rule, go abroad to practice foreign languages at their own expenses. In their third year students study together with foreign students and take exams, which are recognized by UrFU according to Bologna standards. The task of the University and the Department is to minimize the students' expenses by searching for the best partners. According to the inter-university agreements students have the opportunity to take courses and pass the exams for free in partner universities.

Taking into account these opportunities for student mobility at Ural Federal University, potential participants of these programmes were asked to comment on their forms. It turned out that 46 of the respondents do not know anything about them, and relevant fields in their questionnaires remained empty. Exchange programmes and internships were chosen by 37 students (48.6%), various summer schools - by 7 respondents. Participation in the programmes Erasmus+, Volural, Buddy-programme, Best, ESN was suggested by one person each.

As grants for training in foreign universities usually are provided on a competitive basis and the possibilities of free training are limited, students were asked to assess the probability that they or their family would finance their studies on 5-point scale [Figure 4]. All students answered this question.

Figure 4. Probability of self-financing students' studies

The diagram [Figure 4] shows the low probability of studying abroad for the students. The students would pay most likely for studying in Russian universities - 30 students gave it 4 and 5 points. The universities of Europe are in the second place - 22 respondents scored it for 4 and 5 marks. US universities are in the third place, while universities in Australia and Asia are the less attractive.

In order to find out the possible obstacles to studying abroad, even in case Ural Federal University has agreements with foreign partners, respondents were asked to name the possible causes of their refusal to study in foreign universities. The presented results [Table 6] show that for 55 respondents (72.3%) the main reason for refusal might be the lack of finance, which, in our opinion, is largely due to the current socio-economic situation. The absence of the necessary operational information was indicated by 12 students, and 11 people, paradoxically, being students of the International Relations Department, referred to the limited knowledge of a foreign language. For 18 persons (23.7%) there are no obstacles to studying abroad.

Table 6. Students' answers to the question "Possible obstacles to studying abroad"

Answer*	Number of respondents (n)
Poor knowledge of a foreign language	11
Lack of finance	55
Lack of information	12
Household difficulties	5
Political views of the respondent	1
Non-compliance with western values and way of living	1
There are no obstacles	18
Columns were left blank	2

Multiple-choice was possible

The final question was about the impact of world politics and national foreign policies on the international cooperation in higher education and whether it can influence the students' choice of study destination [Table 7]. Due to the significance of the issue the maximum number of respondents provided an answer - 93.3%. As shown in Table 7, the vast majority of respondents (77.5%) agreed that foreign policy and current state of international relations affect the cooperation in higher education among states. As the question was open, students could explain in detail how the policy may affect their decision. 15.7% of respondents said that as "political problems harmed the economy", "funding for educational programmes was reducing" and "studying abroad became expensive". In addition, "the political hostility" limits the possibilities of transnational cooperation among universities. Respondents of this group indicated that financial and political problems could be an obstacle to their studies in foreign universities. The largest group of respondents (40.7%) also agreed that the policy affects the scientific and educational connections of states, "the influence of propaganda" and "financial problems" could restrict cooperation of universities, as well as "difficulties to obtain a visa", etc. However, it cannot affect their decision on where to study. In their view, "science and education should be out of politics" and the most important in modern international relations is to prevent "a new iron curtain". 14.5% of respondents believe that "education is a separate niche in international relations", therefore, national foreign policy course does not affect the cooperation in higher education.

Table 7. Students' answers to the question "Do national foreign policies and current state of world politics influence cooperation of states in higher education and your decision to study or not abroad?"

Answers	Number of respondents	%
It exerts strong influence	16	21,1
It effects my decision	12	15,7
It has influence, but not on my decision to study abroad or not	31	40,7
No, no influence	11	14,5
I find difficulties in answering	1	1,3
No answer	5	6,7

CONCLUSIONS

The study showed that, despite the ongoing reforms for the implementation of the Bologna principles in Russian system of higher education, students have vague notion about the content of this process, as well as the standards and values of European higher education. Students of the Department of International Relations, one of the most active participants in student mobility programmes at Ural Federal University, have a very superficial understanding of the European Higher Education Area. However, the survey showed their positive attitudes towards education in European universities, which they ranked highly. Quality of education, unique programmes, opportunities for career advancement in European universities are attractive to survey participants. At the same time students consider rightly that the international scientific and educational cooperation must develop continuously regardless the ideology and politics. The vast majority of respondents believe in the necessity of integration of Russian higher education with the European Higher Education Area, which along with the active involvement of students in the process of internationalisation and harmonisation of higher education is an essential factor for the successful implementation of reforms in Russia. We believe that the Russian universities and faculties must take the necessary steps in this direction.

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EVALUATION OF PRE-SERVICE TEACHERS' ATTITUDES AGAINST CHEMISTRY LABORATORY ACCORDING TO SOME DEMOGRAPHIC VARIABLES

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ABSTRACT

Reaching the desired level of education in Science classes, can be provided by qualified teachers trained in this field. For effective science teaching, teachers' knowledge, skills and attitude against the application laboratories must be at the desired level. The purpose of this study is to research attitude of pre-service teachers' studying at The Department of Science Education towards chemistry laboratories and to study their attitude towards chemistry laboratories in terms of some demographic variables. "Attitude towards Chemistry Laboratory Scale" developed by Seyhan (2008) has been used in this study. The scale consists of three factors: 1.The ideal lab environment (ILE), 2.Interest in and Against Chemistry Lab (IACL), 3.Benefits of the Laboratory Environment (BLE). The sampling of the survey is made up of Science pre-service teachers in their graduation year. According to the results of the research, the attitude of pre-service teachers towards chemistry labs are at a high level. Significant statistical difference has been determined to the advantage of female students according to the total score of "Science teachers' chemistry lab attitude scale" and factor scores for gender variable. Significant statistical difference has been determined according to the "type of graduated high school" variable. However, according to the grade variable, no statistically significant difference has been determined in frequency of laboratory use between graduated high school and university.

Keywords: Chemistry lab, Attitude, Lab environment, Science education.

INTRODUCTION

Science education laboratory studies are regarded as important mediums to improve attitude, stimulate pleasure and motivate students to learn science, especially chemistry (Freedman, 1997). Learning about certain everyday cases the cause of which is not clear to students by experience in the laboratory, improves students' positive attitudes to the lesson (Gilbert, Bulte & Pilot, 2011). Oskay, Erdem & Yılmaz (2009) concluded as a result of their study on general chemistry students' attitude toward chemistry that, students who attend classes and laboratory simultaneously have higher success rates in chemistry. In the same research, they studied on students who took laboratory lessons or who didn't according to gender variable, and tried to find out if there was a relation between students' attitude toward chemistry and their success in the lesson. When students' attitude toward chemistry was assessed, students who take the class and the laboratory simultaneously were found to have higher attitude levels.

Reaching the desired level of education in science, can be provided by qualified teachers trained in this field. So the assessment of science teacher candidates' attitudes toward science is very important (Hancer, Uludağ & Yılmaz, 2007). In other words, one of the most important variables in effective practice of laboratory studies is, teachers' perception of the laboratory. In a study by Osborne and Collins (2003), the factors that affect student's attitudes toward science were indicated as; gender, personal characteristics, program change, imperceptions of students and teachers. The presence of teacher among these factors is striking. Teachers' approach to chemistry is regarded not only as a method but as an attitude model. Both teachers' and students' attitude and motives are very important at all educational levels. A teacher's attitude is at the centre of his/her success in communication with students (Tanish, 1984).

& Timur 2014). According to Kurt (2002), in order for a science teacher to prepare the learning environment with effective stimulus, the teacher must have the desired levels of knowledge, skill and attitude (Ergin, Şahin-Pekmez & Öngel-Erdal, 2005). Similarly, Soylu (2004) expressed that teacher's attitude toward science is very

important in development of positive student attitude toward science. Science experiments developed by science educationists aim at individual participation with cognitive and affective domains, understanding of scientific concepts, improving interest and motivation as developing practical and analyst skills (Lee, Lai, Yu & Lin, 2012; Boaventura, Faria, Chagas & Galvao, 2013; Timur, Yılmaz

Having laboratory classes regularly is related to teachers' positive attitude. A teacher who has a positive attitude can be more effective in making students' learning easier by realizing laboratory practices, at least the ones that require minimal basic equipment (Ekici, 2002). The scale developed by Uzal, Erdem, Onen & Gurdal (2010) with an aim to define teachers' perception of science experiments with basic equipment, deals with the applicability of the experiment thanks to the simplicity of the equipment, the relation of the experiment with daily life and interest and attitude changes of the learners.

OBJECTIVE OF THE RESEARCH

The aim of this study to find out whether there is a significant difference or not in attitudes of pre-service teachers who study at Science Teaching Department toward chemistry laboratories according variables such as "gender", "grade", "graduated high school type", "the frequency of laboratory practice in high school", "the frequency of laboratory practice in university".

METHOD OF THE RESEARCH

In this study, quantitative research method has been used. Research model is relational screening.

Sample of the Research: The sample of the study was 363 pre-service science teachers from 1st through 4th grades who have taken the General Chemistry and General Chemistry Laboratory courses at the Faculty of Education, Department of Primary Education, Science Education Program. 282 of students (77.7%) are female and 81 of them (22.3%) are male.

DATA COLLECTION INSTRUMENTS

For research a two fold form has been created. In the first part personal data like the gender, department and graduated high school and "the frequency of laboratory practice in high school", "the frequency of laboratory practice in university" data have been collected. "Attitude towards Chemistry Laboratory Scale" developed by Seyhan (2008) has been used in second part of this study.

Attitude towards Chemistry Laboratory (ATCL) Scale

In the study; "Attitude towards Chemistry Laboratory (ATCL) Scale", developed by Seyhan (2008) to determine students' attitude towards chemistry laboratory was used as the data collection tool. Crα reliability for the whole of the scale was found 0.87. The scale consists of 3 factors; was prepared as 5 Likert type, in total 18 items. The scale consists of three factors: 1. The ideal lab environment (ILE), 2. Interest in and Against Chemistry Lab (IACL), 3. Benefits of the Laboratory Environment (BLE). ILE is concerned with circumstances that must be present in the laboratory, IACL is concerned with the attractiveness or unattractiveness of laboratories, BLE (is concerned with student attitudes toward the benefits of laboratory practices. The response range of the scale is from "definitely disagree" (1), "disagree" (2), "uncertain" (3), "agree" (4) to "completely agree" (5). The minimum and the maximum score that can be taken from the scale are between 18-90.

EVALUATION OF THE DATA

Quantitative data was analyzed by using SPSS 16.0 program at the .05 significance level. ANOVA, independent sample t-test and post-hoc test methods were used to evaluate the scores derived from the scales in terms of the socio-demographic variables of the participants.

FINDINGS

Attitudes of science teachers toward chemistry laboratories were studied and Attitude toward Chemistry Laboratory (ATCL) factor score and total scale score were derived. Attitude toward Chemistry Laboratory (ATCL) average total scores were calculated and conclusions were made through arithmetic average scores. The average score that can be achieved in Attitude Toward Chemistry Laboratory (ATCL) is between 18 and 90. As shown in Table 1, the total scale score achieved as a result of this study is calculated as 69,0331.

Table 1. Attitude towards Chemistry Laboratory of Pre-service Science Teachers

Factors	X	SD	SE_X
The ideal lab environment	31,6116	4,20807	0,22087
Interest in and Against Chemistry Lab	22,1791	4,76502	0,25010
Benefits of the Laboratory Environment	15,2424	2,49345	0,13087
ATCL Scale Total Score	69,0331	9,81509	0,51516

Independent group t-test was applied in order to determine whether participant pre-service teachers' scores from Attitude Toward Chemistry Laboratory (ATCL) scale vary significantly according to gender variable or not. As in table 2, as a result of independent group T-test applied to define whether the scores taken from Attitude towards Chemistry Laboratory scale and factors differentiate according to the gender variable; for the scale total score and factor scores the difference between the arithmetic average of the groups have been found statistically significant (p<,05). According to this; female students' ATCL scale and factors score average is significantly higher than the Male students.

Table 2. The results of Independent group T-test of the scores taken from ATCL scale and factors of pre-service science teachers according to the gender variable.

Score	Group	N	X	SD	SEx	t-test t	df	P
The ideal lab environment	Female	282	32,2801	3,85635	0,22964	5,907	361	,000
	Male	81	29,2840	4,56408	0,50712			
Interest in and Against Chemistry Lab	Female	282	23,0106	4,48206	0,26690	6,554	361	,000
	Male	81	19,2840	4,61041	0,51227			
Benefits of the Laboratory Environment	Female	282	15,5071	2,38954	0,14230	3,845	361	,000
	Male	81	14,3210	2,64020	0,29336			
ATCL Scale Total Score	Female	282	70,7979	8,96841	0,53406	6,777	361	,000
	Male	81	62,8889	10,20784	1,13420			

As a result of one-way analysis of variance (ANOVA) which is done in order to determine whether the scores taken from the ATCL scale and factors of preservice science teachers show a significant difference according to the grade variable; the scale and factors scores the difference between the arithmetic average of the group has been found to be insignificant statistically (p>,05).

Results of ANOVA that was applied in order to determine whether participant pre-service teachers' scores from Attitude toward Chemistry Laboratory (ATCL) vary significantly according to "high school type of graduation" variable are shown in Table 3. According to this, a significant difference was found between pre-service science teachers' Attitude toward Chemistry Laboratory (ATCLS) scores, averages according to its factors and "high school type of graduation" variable. (p<,05). One of post-hoc analyses techniques LSD test, was chosen because group variations were found to be homogenous (L=1,862, L=1,575, L=2,490, L=0,664, p>,05) according to the results of Levene's test applied after ANOVA in order to determine in which sub-groups ATCLS score and ILO, IACL, BLE factor scores vary according to "high school type of graduation" variable.

Table 3. The results of one-way analysis of variance (ANOVA) applied to define whether the scores taken differentiate according to the graduated high school variable of students.

Scales	Group	N	X	SD	Var. K.	SS	df	MS	F	p
ILE	Public High School	146	30,7466	4,06127	Between	306,195	2	153,1	9,029	,000
	Anatolian High School	160	32,6438	3,82206	Within	6104,036	360	16,956		
	Teacher High School	57	30,9298	4,98161	Total	6410,231	362			
	Total	363	31,6116	4,20807						
IACL	Public High School	146	21,4178	4,86898	Between	358,09	2	179,05	8,199	,000
	Anatolian High School	160	23,2875	4,24173	Within	7861,271	360	21,837		
	Teacher High School	57	21,0175	5,28303	Total	8219,361	362			
	Total	363	22,1791	4,76502						
BLE	Public High School	146	14,8973	2,5481	Between	63,556	2	31,778	5,231	,006
	Anatolian High School	160	15,7125	2,32673	Within	2187,111	360	6,075		
	Teacher High School	57	14,807	2,6216	Total	2250,667	362			
	Total	363	15,2424	2,49345						
ATCL Scale Total Score	Public High School	146	67,0616	9,65489	Between	1953,903	2	976,95	10,684	,000
	Anatolian High School	160	71,6438	8,60696	Within	32919,7	360	91,444		
	Teacher High School	57	66,7544	11,6685	Total	34873,6	362			
	Total	363	69,0331	9,81509						

When ATCLS scores of pre-service teachers analysed, the scores of Anatolian High School graduates were found to be significantly at a higher level than public high school and teacher high school graduate pre-service teachers. However no significant difference was found between public high school and teacher high school graduate pre-service teacher' ATCLS scores. (Table 4). The same results were derived for factors of the scale.

Table 4. LSD Test Results Applied To Determine In Which Sub-groups ATCLS Scores of Pre-service Science Teachers Vary According To "High School Type Of Graduation" Variable.

(i) Graduated High School Type	(j) Graduated High School Type	Difference of Average (i-j)	SE$_x$	p
Public High School	Anatolian High School [*]	-4,58211	1,09446	,000
	Teacher High School	0,30726	1,49352	,837
Anatolian High School	Public High School [*]	4,58211	1,09446	,000
	Teacher High School [*]	4,88936	1,47506	,001
Teacher High School	Public High School	-0,30726	1,49352	,837
	Anatolian High School [*]	-4,88936	1,47506	,001

No statistically significant difference was found among the groups according to ANOVA results applied to define whether pre-service teachers' scores from (ATCL) scale vary significantly according to "frequency of laboratory use in high school" or not. (p>,05).

No statistically significant difference was found among the groups according to ANOVA results applied to define whether pre-service teachers' scores from (ATCL) scale vary significantly according to "frequency of laboratory use in university" or not. (p>,05).

RESULTS

The average score that can be achieved in Attitude Toward Chemistry Laboratory (ATCL) is between 18 and 90. In this study, the total scale score achieved as a result of this study is calculated as 69,0331. According to the result of the research, the attitude of pre-service teachers towards chemistry labs are at a high level. This result corresponds with results of the study conducted by Can (2012), Oskay et. al. (2009), Kırbaşlar, Özsoy-Güneş, Avcı & Deringöl (2008), Yenice, Balım & Aydın (2008), Nuhoğlu, Kocabaş & Bozdoğan (2004), Shibley & Zimmaro (2002), Özkan, Tekkaya & Çakıroğlu (2002), Temel, Oral & Avanoğlu (2000).

A significant variation to the advantage of female students was found as a result of pre-service science teachers' attitude toward chemistry laboratory scale total score and factor scores according to "gender" variable. Correspondingly, Sarısa, Kaya & Unaldı-Coral (2014), Cheung (2009), Dhindsa & Chung (1999), Oskay et. al. (2009), Salta & Tzougraki (2004), Steinkamp & Maehr (1984), Shannon, Sleet & Stern (1982), have concluded as a result of their studies on students' attitudes toward chemistry classes according to gender variable, that female students have more positive attitude toward chemistry class compared to male students. Weinburgh & Englehard (1994) stated in their studies that gender is a significant factor in effecting attitudes. Salta & Tzougraki (2004) explained the cause of this situation as male students' being more interested in technologic, action packed and schematic activities and associate with them, while female students' being more interested in daily life incidents, and being more intrigued to ask questions such as "why?", "how?". In a study conducted by Kırbaslar, Ozsoy-Gunes & Deringol (2008) female candidate teachers were found to have higher interest rates in chemistry laboratories in comparison with male candidate teachers, all the same, it was indicated that female candidate teachers were more successful at "equation specification" and "nomination" than male candidate teachers. Schibeci & Riley (1986) studied characteristic features of a group of students, their perceptions of and attitudes toward science, along with the effects of these on their success in science, to find out that there were major differences between verbal, quantitative and visual skill levels of male and female students.

There are some studies on science teaching that have positive findings to the advantage of male students as well. In studies by Menis, (1983, Trns: Hoffstein & Mamlok-Naaman, 2011), Barnes, Mcinereney & Marsh (2005); Wolf & Fraser (2008). Çavaş & Kesercioğlu (2005); about Rose Project (appropriateness of science teaching) it was found out that male students liked science classes more than female students did. According to Rose project results, all over the world, male students liked science more compared to female students and more male students want to be scientists than female students do. Meanwhile, in a study by Can (2012), Demircioğlu & Norman (1999), Özdemir & Azar (2004), Taşlıdere & Eryılmaz (2012), Taşlıdere & Korur (2012), Türk (2010), Uzal et al., (2010), Yıldız, Akpınar, Aydoğdu & Ergin (2006), Yenice et al., (2008) gender was established as a variable that didn't affect attitude toward science and science laboratory. Yalvac & Sungur (2000) indicated that there was no significant relation between candidate science teachers' attitudes toward laboratory studies and gender. Demircioglu & Norman (1999) studied student attitudes toward chemistry and observed no difference between female and male students.

It was established that there was no significant difference in factor points and total score of candidate science teachers in attitude toward chemistry laboratory scale according to "grade" variable. However Nuhoglu et. al. (2004) concluded as a result of their studies on science teacher candidates physics, chemistry and biology laboratory attitudes according to grade variable, the higher the grade is, the higher the level of interest in candidate teachers' in the laboratory is.

Statistically significant difference was found between pre-service teachers' and total score of attitude chemistry laboratory scale and factor points of pre-service science teachers according to "high school type graduation" variable. Anatolian High School graduates were found to have significantly higher scores of attitude toward chemistry laboratory than other pre-service teachers, while no statistically significant difference was found between chemistry laboratory attitude score averages of public high school graduate pre-service teachers and teacher high school graduate candidates. Hancer et. al. (2007) expressed that in their study on definition of candidate science teachers attitudes toward chemistry and the relation between the attitudes and success, Anatolian High School graduate candidates ranked the first, Teacher High School graduate candidates the second, Super High School graduates the third, common high school graduates the forth and multi- program high school graduate candidates the fifth in terms of success. However, Yaman & Karamustafaoglu (2006) concluded that candidate science teachers' attitudes toward chemistry show no meaning difference according to type of high school that the candidates graduated from. Similarly, Acisli & Kolomuc (2012) found no significant difference in their studies between the type of high school candidate teachers graduated from and the attitudes toward laboratory practices.

In this study, no statistically significant difference was found between the total score of pre-service science teachers in attitude toward chemistry laboratory scale and factor points according to "frequency of laboratory use in high school." This result corresponds with results of the study conducted by Can (2012).

In this study, when findings on frequency of high school laboratory use are analysed, it is observed that pre-service teachers never marked "always" option. So it is concluded that the students used the laboratory "often", "sometimes" or "never". However, it is a very significant finding that half of the pre-service teachers participated in the survey expressed that they never used the laboratory in high school, while one in three of the candidates said they used it "sometimes", leaving only a very small number of participants who used the chemistry laboratory "often" at high school. These findings coincide with the results Can (2012) derived in his study. The researcher in his study aimed at finding whether pre-service science teachers approached to laboratory practices effectively or ineffectively during their high school studies, and the differences among their thoughts about laboratory practices, indicated that almost half of the pre-service teachers didn't take the laboratory, one in third took partially, and only a very small group used the laboratory practices effectively. Also, statistically significant difference was found between their thoughts toward the laboratory, this difference was to the advantage of students who took the laboratory practices effectively, and to the advantage of students who took the laboratory practices partially compared to students who didn't take laboratory practice during high school. Dalgety & Coll (2005) express that students who didn't participate in adequate laboratory practice, have negative attitude toward laboratory. Ozdilek & Calis (2010) indicate a positive relation between frequency of laboratory application of candidate teachers at primary, secondary and high school and their attitudes toward chemistry laboratories and their interest in laboratory practices.

No statistically significant difference was found between pre-service science teachers' chemistry laboratory total scores and factor points according to "frequency of laboratory use in undergraduate education" variable. When the findings about the frequency of laboratory use of pre-service teachers during undergraduate education, it is observed that the pre-service teacher didn't mark "never" option. So it is concluded that during undergraduate education the students used the laboratory "always", "often" and "sometimes". It is also observed that half of the pre-service teachers who participated in the survey used the laboratory "always", and one in three of the participants used "often" while a small group used "sometimes."

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EVALUATION OF TEACHING AND LEARNING SITUATIONS IN BIOLOGY CURRCICULUM ACCORDING TO TEACHER OPINIONS

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ABSTRACT

The curricula in Turkey has been continuously renewed since 2005 in order to comply with the developments in teaching and learning situations and technology. This change is a result of dynamic structure of curriculum development process. As known, curriculum development is not a process that starts and stops but always goes on, so more research on the stakeholders of the education such as students, teachers, parents etc. is needed in order to put forward the quality, effectiveness, problems and strengths of renewed curricula. Biology curriculum of secondary schools has been changed in 2013-2014 starting at 9th grade. The evaluation of teaching and learning situations by teachers who are the only practitioners of the new biology curriculum which aims not only to teach basic concepts and information but also make students understand the nature of scientific information and have 21st century skills such as technology literacy. Many questions such as if teachers use methods and techniques proposed by the curriculum, whether teaching and learning situations are student-centered as prescribed in the curriculum and applied in that way, if effective teaching is reached await to be answered. This study which employs survey method aims to evaluate the teaching and learning situations in biology curriculum according to teacher opinions. Data will be collected by teaching and learning situations evaluation scale which is developed by the researchers and findings such as frequencies, per cent, mean and some other statistical functions will be given in tables. In addition, it will be investigated if there is any statistically significant difference among teacher opinions in terms of some variables such as years of experience, graduation, in service training, etc.

Keywords: biology curriculum, curriculum evaluation, teaching and learning situations, teacher opinions

INTRODUCTION

In the last century, there has been a shift from behaviorism to cognitivism in education just like in psychology and final dominant approach in education is constructivism. It has changed the education in many ways. For example, the teacher supposed to act not like the "leading role" but the "supporting" one. As a natural result of this change in the teacher's role, students are expected to act as the "leading role." Believing that new information is acquired by connecting it to the previous knowledge, constructivism requires designing the teaching-learning process accordingly (Applefield, Huber, & Mahnaz, 2000). The curricula in Turkey have been continuously changing in order to follow this current and common approach and keep up-to-date. Especially Science, Technology, Engineering and Mathematics (STEM) education requires much faster updating due to continuous and big improvements in these fields, so curricula reforms in STEM happen faster than the social sciences. The biology curricula for the high schools (9th-12th grades) was changed in order to update it appropriate to the constructivism and keep pace with the incredible pace of information age. Basic skills that are aimed to be given to students in biology course is explained as (MEB, 2013): understanding and applying the scientific information; scientific process skills, the relations among the science-technology and society, attitude towards the science, attitudes and morals, understanding the nature of scientific information, 21st century skills. The teaching and learning process that will lead through the gaining of the given skills by the students is explained as a process: that is social, individual centered and includes active participation of them; in which previous knowledge plays an important role in learning and diversified education, research and questioning are the basics. Although everything about teaching and learning process looks perfect on the paper, in other words in theory, it is important to learn the real reflections and results of them in the classroom. When studies on biology curricula in Turkey are examined, it is seen that Gerçek and Soran (2005) state teachers should develop curricula appropriate to the region. Altunoğlu and Atav (2005) report that teachers think experiments were not applicable and more experiments for every subject had to be integrated into previous biology curricula. Besides, teachers think the curricula limited use of different teaching methods because of intensity and time. In their study investigating high school physics, chemistry and biology curricula in terms of scientific literacy, Erdoğan and Köseoğlu (2012) state that biology curriculum is insufficient in developing the understanding of the nature of science which is an important element in the development of scientific literacy. İrez and Yavuz (2009) explain that biology teachers find biology curricula insufficient in terms of assessment and evaluation because of

inadequate content and context, limited weekly time, inappropriate distribution of the topics towards the years, unsuitable class seating and crowded classes. There are other studies in the literature on the evaluation of biology curricula in many different aspects such as evaluation of genetics subjects in biology curricula and determining students' interest in genetics by Uzun and Sağlam (2003); environment education in secondary education and teacher opinions on environment education by Uzun & Sağlam (2007); teaching methods used by biology teachers and opinions on the effect of these methods on student success by Temelli & Kurt (2011); evaluation of secondary school biology curriculum in terms of wild life components by Arıkan & Turan (2015); the comparison of Turkey and South Korea biology curricula by Güneş & Aksan (2015). In international literature, there are studies such as Primary literature as a basis for a high-school biology curriculum by Yarden, Brill & Falk (2001); Investigating teacher learning supports in high school biology curricular programs to inform the design of educative curriculum materials by Beyer, Delgado, Davis & Krajcik (2009); Problem-based learning in the biology curriculum by Kendler & Grove (2004); Biomind—a new biology curriculum that enables authentic inquiry learning by Zion, et al. (2004).

Problem:
What is the biology teachers' evaluation of teaching and learning situations in the current Biology course curricula for the high schools (9th-12th classes)? Is there a statistically significant difference in their evaluation in terms of some demographic variables?
Sub-problems
   1. What is the distribution of teacher views on teaching and learning situations in 2013 Biology curricula?
   2. Is there a statistically significant difference in teacher views on teaching and learning situations in terms of their experience?
   3. Is there a statistically significant difference in teacher views on teaching and learning situations in terms of their level of academic degree?
   4. Is there a statistically significant difference in teacher views on teaching and learning situations in terms of their participating in an in-service training on the new curricula?

Aim of the Study
The aim of the study is to evaluate the teaching and learning situations in Biology curricula for the high schools (9th-12th grades) through the teacher views. The results might indicate weaknesses and strengths of the new curricula.

METHOD
As the aim is to evaluate the Biology curricula by the teachers' views, survey method that is generally used to measure or evaluate the general characteristics of a topic, universe or program (Cohen, Manion, & Morrison, 2007) is employed in this study. The statistics used in this study include: frequencies and percentages to represent teacher views; normal distribution tests to check the normality; t-test to compare two groups on a variable; ANOVA test to compare three or more groups on a variable. The normal distribution of the data is analyzed independently for each group (Can, 2014), through the normality test and when the groups in all comparisons include less than 50 participants Shapiro-Wilks, and when it is above 50 Kolmogorov-Smirnov test is taken into account. According to normality test results, data is normally distributed and parametric tests were used.

The validity and reliability of the data collection tool is done by Ocak, Ocak & Boyraz (2016) and was presented in "INTE 2016 International Conference on New Horizons in Education." Statistical findings about the validity and reliability of the scale in the development study and this study can be seen in Table-1. There are 34 items in the scale under one dimension.

Table-1 Descriptive Information about Data Collection Tool

	Scale Development Study	**Current Study**
Sample	High school teachers	Biology teachers
Number of Sample	357	99
KMO	,971	,834
Barlett	,000	,000
Cronbach alpha	,976	,948

The Universe and Sample
The study was carried out in Afyonkarahisar. All Biology teachers in the city were given the scale after getting required formal permissions from Provincial National Education Directorate. 99 scales were collected back and all were appropriate for the data analysis.

Table-2 Demographic Information about the Sample

Type of High School	N	%	Experience (year)	N	%
Basic Sciences	2	2.0	1-4	19	19.2
Anatolian	39	39.4	5-9	24	24.2
Science	10	10.1	10-14	14	14.1
Vocational and Technical	33	33.3	15 and above	42	42.4
Anatolian Health Vocational	2	2.0	**Total**	99	100.0
Religious	9	9.1	**Level of Academic Degree**		
Multi-program	2	2.0	Graduate	67	67.7
Others	2	2.0	Post-graduate	32	32.3
Total	99	100.0	**Total**	99	100.0

Level of Curriculum Focus			Training on Curriculum		
Rarely	7	7.1	Yes	57	57.6
Sometimes	15	15.2	No	42	42.4
Often	38	38.4	**Total**	99	100.0
Always	39	39.4			
Total	99	100.0			

FINDINGS

Sub-problem 1: How appropriate are the teaching and learning situations in high school Biology curricula to the teaching and learning situations scale?

Table-3 Findings about Teachers' Evaluations

		DA	A	SA		DsA	Result	
1- Sample activities are student-centered.	**f**	0	3	34	44	18	3,78	Agree
	%	0	3,0	34,3	44,4	18,2		
2- Activities are consistent with the content.	**f**	1	4	23	59	12	3,78	Agree
	%	1,0	4,0	23,2	59,6	12,1		
3- Activities are applicable.	**f**	1	13	37	41	7	3,40	Slightly Agree
	%	1,0	13,1	37,4	41,4	7,1		
4- Teaching and learning experiences are consistent with the objectives.	**f**	0	10	22	63	4	3,62	Agree
	%	0	10,1	22,2	63,4	4,0		
5- Teaching and learning approaches are appropriate to the field of study.	**f**	0	4	28	56	11	3,75	Agree
	%	0	4,0	28,3	56,4	11,1		
6- Resulting activities such as discussion, trip, observation, experiment, summarizing, production in the end of learning experiences are directive for the teacher.	**f**	7	9	38	35	10	3,32	Slightly Agree
	%	7,1	9,1	38,4	35,4	10,1		

The participant teachers agree that the activities offered in the curricula are student-centered (X=3,78); consistent with the content (X=3,78) and objectives (X=3,62); teaching and learning approaches are appropriate to the field of study (3,75). Teachers slightly agree that activities are applicable (X=3,40) and final activities are directive (X=3,32).

Table-4 Findings about Teachers' Evaluations

		DA	A	SA		DsA	Result	
7- Activities support learning by doing and experiencing.	**f**	5	12	42	28	12	3,30	Slightly Agree
	%	5,1	12,1	42,4	28,3	12,1		
8- Activities are organized by keeping student interests, needs and demands in mind.	**f**	7	11	40	34	7	3,23	Slightly Agree
	%	7,1	11,1	40,4	34,3	7,1		
9- Teaching and learning process develops critical thinking ability.	**f**	4	9	32	45	9	3,46	Agree
	%	4,0	9,1	32,3	45,5	9,1		
10- Teaching and learning process develops creative thinking ability.	**f**	5	11	41	34	8	3,29	Slightly Agree
	%	5,1	11,1	41,4	34,3	8,1		
11- Teaching and learning process develops research, questioning and deciding abilities.	**f**	2	13	38	39	7	3,36	Slightly Agree
	%	2,0	13,1	38,4	39,4	7,1		
12- Teaching and learning process develops problem solving ability.	**f**	4	10	47	30	8	3,28	Slightly Agree
	%	4,0	11,0	47,5	30,3	8,1		

Teachers agree that the teaching and learning process develops critical thinking ability (X=3,46). On the other hand, they slightly agree that activities support learning by doing and experiencing (3,30) and are organized according to students' interests, needs and demands (X=3,23). They slightly agree that teaching and learning

process in the Biology curricula develops research, questioning and deciding abilities (X=3,36) and problem solving ability (X=3,28).

Table-5 Findings about Teachers' Evaluations

		DA	A	SA		DsA	Result	
13- Teaching and learning process develops communication ability.	f	4	10	40	36	9	3,36	Slightly Agree
	%	4,0	10,1	40,4	36,4	9,1		
14- Teaching and learning process develops correct, effective and good use of Turkish ability.	f	11	10	34	35	9	3,21	Slightly Agree
	%	11,1	10,1	40,4	36,4	9,1		
15- Teaching and learning process develops entrepreneurship ability.	f	7	16	34	34	8	3,20	Slightly Agree
	%	7,1	16,2	34,3	34,3	8,1		
16- Teaching and learning process develops information technology using ability.	f	5	12	30	43	9	3,39	Slightly Agree
	%	5,1	12,1	30,3	43,4	9,1		
17- Teaching and learning process supports 5E instructional model.	f	0	13	40	32	14	3,47	Agree
	%	0	13,1	40,4	32,3	14,1		
18- Teaching and learning process directs towards discussion methods like debate, panel, open forum etc.	f	6	21	44	22	6	3,01	Slightly Agree
	%	6,1	21,2	44,4	22,2	6,1		

Participant teachers agree that teaching and learning process supports 5E instructional model (3,47). They slightly agree that teaching and learning process develops communication ability (X=3,36); correct, effective and good use of Turkish ability (X=3,21); entrepreneurship ability (X=3,20); information technology using ability (X=3,39) and directs towards discussion methods like debate, panel, open forum etc. (X=3,01).

Table-6 Findings about Teachers' Evaluations

		DA	A	SA		DsA	Result	
19- Teaching and learning activities direct towards group work.	f	2	9	44	39	5	3,36	Slightly Agree
	%	2,0	9,1	44,4	39,4	5,1		
20- Methods and techniques are consistent with objectives.	f	1	5	40	45	8	3,55	Agree
	%	1,0	5,1	40,4	45,5	8,1		
21- Methods and techniques are consistent with content.	f	1	6	31	56	5	3,59	Agree
	%	1,0	6,1	31,3	26,6	5,1		
22- Activities can be done both in and out of the school.	f	6	15	39	35	4	3,16	Slightly Agree
	%	6,1	15,2	39,4	35,4	4,0		
23- The teacher is a guide who leads the students and improves him/herself in the process.	f	4	10	34	44	7	3,40	Slightly Agree
	%	4,0	10,1	34,3	44,4	7,1		
24- Curriculum offers materials to be used in the activities.	f	5	10	36	43	5	3,33	Slightly Agree
	%	5,1	10,1	36,4	43,4	5,1		

The participant teachers agree that the methods and techniques are consistent with objectives (X=3,55), content (X=3,59). They slightly agree that teaching and learning activities direct towards group work (X=3,36); activities can be done both in and out of the school (X=3,16); the teacher is a guide who leads the students and improves him/herself in the process (X=3,40) and curriculum offers materials to be used in the activities (X=3,33).

Table-7 Findings about Teachers' Evaluations

		DA	A	SA		DsA	Result	
25- The materials used in teaching and learning process can easily be reached in all regions.	f	14	15	40	26	4	2,91	Slightly Agree
	%	14,1	15,2	40,4	26,3	4,0		
26- Sample activities are appropriate to students' level.	f	9	20	32	29	9	3,09	Slightly Agree
	%	9,1	20,2	32,3	29,3	9,1		
27- A learning experience is in interaction with the others.	f	1	14	35	41	8	3,41	Agree
	%	1,0	14,1	35,4	41,4	8,1		
28- Activities can be done both in and out of the school.	f	7	19	35	36	2	3,07	Slightly Agree
	%	7,1	19,2	35,4	36,4	2,0		
29- Learning experiences support the upper class attainments.	f	3	14	36	37	9	3,35	Slightly Agree
	%	3,0	14,1	36,4	37,4	9,1		
30- There are examples of how to use EBA in the teaching and learning process.	f	10	19	14	39	17	3,34	Slightly Agree
	%	10,1	19,2	14,1	39,4	17,2		

While the teachers agree that a learning experience is in interaction with the others (3,41) they slightly agree that the materials used in teaching and learning process can easily be reached in all regions (X=2,91); sample activities are appropriate to students' level (X=3,09); Activities can be done both in and out of the school (X=3,07); learning experiences support the upper class attainments (X=3,35); there are examples of how to use EBA in the teaching and learning process (X=3,34).

Table-8 Findings about Teachers' Evaluations

		DA	A	SA		DsA	Result	
31- The teaching and learning process directs teachers to use digital materials.	F	3	10	28	36	22	3,65	Agree
	%	3,0	10,1	28,3	36,4	22,2		
32- The teaching and learning process directs students to use digital materials.	F	4	12	31	34	18	3,51	Agree
	%	4,0	12,1	31,3	34,3	18,2		
33- A classroom seating plan is provided appropriate to the activities in the curriculum.	F	16	33	24	17	9	2,70	Slightly Agree
	%	16,2	33,3	24,2	17,2	9,1		
34- There are explanations about the classroom management in the curriculum.	F	9	28	28	28	6	2,94	Slightly Agree
	%	9,1	28,3	28,3	28,3	6,0		

The two questions on digital materials use by both teachers and students as a result of curriculum requirements are agreed by the participant teachers (X=3,65-3,51). However, teachers slightly agree that the curriculum provides a classroom seating plan appropriate to the activities (X=2,70) and explanations about the classroom management (X=2,94).

Sub-problem 2: Is there a statistically significant difference in teacher views on teaching and learning situations in terms of their experience?

Table-9 One-way ANOVA Results on the Evaluation in terms of Years of Experience

Experience (Year)	N	Sum of Squares Within Groups	Sum of Squares Between Groups	df	F	p
1-4	19					
5-9	24	196,897	37702,739	3	,165	,943
10-14	14					
15 and above	42					

As seen in Table-9, the teachers are divided into four groups depending on their years of experience. The number of teachers with an experience of 15 or more years is 42 and this is the most crowded group. Following it comes 5-9 years of experienced teachers with a number of 24. There are 19 teachers with 1-4 years of experience and 14 with 10-14 years. The ANOVA test results indicate no statistically significant difference among them in their evaluation on teaching and learning situations in the Biology curricula in terms of their experience (p=,934; p>,05).

Sub-problem 3: Is there a statistically significant difference in teacher views on teaching and learning situations in terms of their level of academic degree?

Table-10 T-test Results on the Evaluation in terms of Level of Academic Degree

Graduation	N	X	SS	df	t	p
Undergraduate	67	113,28	18,77	97	-,235	,815
Graduate	32	114,28	21,71			

The teachers are divided into two groups in terms of their level of academic degree: 67 undergraduates and 32 graduates. According to t-test results, there is not a statistically significant difference between the two in their evaluation on teaching and learning situations in the Biology curricula (p=,815; p>,05).

Sub-problem 4: Is there a statistically significant difference in teacher views on teaching and learning situations in terms of their participating in an in-service training on the new curricula?

Table-11 T-test Results on the Evaluation in terms of In-service Training

In-service Training	N	X	SS	df	t	p
Yes	57	115,84	21,59	97	1,323	,189
No	42	110,57	16,46			

One of the variables according to which teachers' evaluations are compared is either participating an in-service training on the new curricula or not and while 57 teachers got such a training the rest 42 did not. However,

according to t-test results, there is not a statistically significant difference between the two groups (p=,189; p>,05).

RESULTS AND DISCUSSION

The Biology teachers in Afyon were given a scale consisting of 34 items to evaluate the teaching and learning situations in the new 2013 curricula. According to means, teachers slightly agree with 21 items while they agree with 13 items. This means the teachers think that the teaching and learning situations in the renewed high school Biology curricula is not as effective as it was meant to be and the renewed curricula needs to be revised for example in terms of classroom management, reachability of materials in all the regions etc. In a similar study by Çakmak and Gürbüz (2014), the evaluations of teachers on teaching and learning situations in Biology curriculum is similar and the answers are "agree", "partially agree" and "don't agree". The highest means in teachers' evaluations are about the items related to activities' being student centered and consistent with the content and teaching and learning situations' being appropriate to the field of study. These points seem to be formed in the curriculum better than other parts and they are the positive sides of the curriculum. On the other hand, İrez & Yavuz (2009) state that the majority of the participant teachers do not adopt the new biology curricula and find it insufficient in terms of assessment and evaluation in their study named biology teachers' opinions on evaluation approaches in the new curricula and their implementations. They add that teachers lack information on constructivist theory which takes students in the center of education and its application. The items with lowest means are about the reachability of the materials in all the regions, classroom seating plan and management. It can be concluded that teachers look for more support in the classroom management and materials development in the curricula. One of the important elements of constructivism is that the teaching and learning situations are organized by keeping student interests, needs and demands in mind. Participant teachers "slightly" agree that the renewed Biology curricula for the high schools fulfill this need. Similarly, Çevik and Atıcı (2015) state that biology teachers think the teaching and learning situations in the curricula don't help them to be aware of students' interests, needs and demands. Nearly half of the teachers participating in this study and evaluating the renewed curricula have been working as a teacher 15 or more years so they are very experienced. However, there is not a statistically significant difference in terms of the year of experience in teachers' evaluations on the curricula. It is interesting to find out that nearly one third of the teachers have a graduate degree but again there is not a significant difference between teachers with undergraduate or graduate degree. Curriculum reforms are generally followed by in-service trainings to the teachers and this is thought to be an important factor in curriculum evaluation. More than half of the participants got an in-service training on renewed Biology curricula but there is not a statistically significant difference between the two groups getting a training or not. Altunoğlu & Atav (2005) find no statistically significant difference among participant teachers in terms of gender, experience, the school they graduated, type of high school they work and where they live in terms of these variables.

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EVALUATION OF THE NEW MATH CURRICULUM IMPLEMENTED IN HIGH SCHOOLS BY VIEWS OF TEACHERS AND STUDENTS IN SECONDARY EDUCATION

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ABSTRACT

This study aimed to examine the new math curriculum, which have been implemented since 2013 in our country, in accordance with views of teachers in secondary schools and students studying in these institutions. The survey model was employed, which uses quantitative data instruments, in this research in order to identify directly opinions of teachers and students for the new high school math curriculum. The study population consisted of high schools associated the Ministry of Education. The easily accessible sampling method from purposive sampling methods was adopted in the study. The sample consisted of 64 math teachers from 20 high schools and 2000 students studying in these schools in the center of Karaman city. The data obtained in this study were analyzed using appropriate parametric or non-parametric statistical analysis techniques. At the end of the study, teachers indicated that the curriculum should be associated with the everyday life with regard to educational attainment, content, teaching-learning and assessment processes and there is the lack of observing and creative activities. Students stated that the content of the curriculum is partially appropriate for their levels and there is the need to provide concrete examples and more activities.

INTRODUCTION

Education is an essential part of human life and a vital factor to establish a reliable bridge between past and future. Human beings can improve the community where they live with economic, social, cultural and scientific respects by the educational level they have. The education system has a dynamic structure and should be developed with the requirements of the age. The curriculum is one of the most important components of the education system. It is inevitable to carry on evaluation and development studies on the curriculum in the developing and changing world. In this context, math curriculums were affected by developments in all school levels from primary to higher education together with developments in science, technology and education and changes were anticipated in the curriculum (Baykul, 2012).

The curriculum is the life mechanism that covers all events about a course instruction planned to acquire individuals at school or outside the school (Demirel, 2009). The curriculum is rather important since teachers take as their main source of the guidance in education. Therefore it should be meaningful for teachers when forming these programs. Otherwise, there is a risk of discouraging teachers into the program. It is beneficial to receive opinions of teachers when implementing the curriculum change due to this risk (Merter and Şan, 2012). Today information resources continually increase and rapid change and development take place in technology. These and similar developments are likely to affect education. Different approach methods in math teaching are emerging, which make necessary and compulsory to update math curriculums. Countries revise and update their math curriculums time to time considering designated general objectives (Baki, 2008). The goal of these updates is undoubtedly to make education more qualified.

The first math curriculum in Turkey was prepared in 1924 and revised in 1934. The course hours of the programs of 1935 and 1939 are identical with the programs of 1924 and 1934 years, but main objectives and some suggestions were placed in these new curriculums. Given the fundamental goals of the math education curriculum, it can be seen that these objectives are calculation, mathematical knowledge for other disciplines, reasoning, systematic memory exercises and focusing on math for people who are willing to specialize after high school. When the curriculum in 1956 was examined, some small changes such as only using "Astronomy" instead of the "Cosmography" term is seen. Any clues about teaching techniques, assessment and targets were not given in this program. The program issued in 1970 was the revised version of the curriculum in 1956 and divided into two braches as in tenth and eleventh grade. The modern (new) math curriculum was taken place in all secondary schools in 1976 and this has led to a debate about the opinions of math for different generations. The program issued in 1987 was worked through. Eleventh grade was divided into three branches as math,

natural science and literature. Weekly course hours vary according to the branch. Although the program was in detail, the main objectives were given to teachers in the form of listed recommendations (Argün et al., 2010). The new secondary education math curriculum issued in 2005 were prepared based on national and international research done in math education, math programs of developed countries, experiences in math education in our country. The vision of the program was "Every student learns math" (MEB, 2005). The latest updated version of the secondary education math curriculum was in 2013 and currently being implemented.

Curriculum evaluation is the data collection on the effectiveness of the curriculums with various observation and measurement tools, interpretation of obtained data comparing with criteria that are pointers of the effectiveness of the program and decision-making process about the effectiveness of the program (Erden, 1998). Program evaluation is the final and supplementary circle of the curriculum development process. Due to curriculums require the quality control, determining whether the educational activities serve its purposes, or lead to undesirable results and waste of energy during activities is possible with continuous assessment. Assessment is an indispensable process allowing the program and education to be restorative (Ertürk, 1998).

Teachers who are practitioners of the curriculum have a very active role in the program development, evaluation and implementation process. Knuth (2002) highlighted that views and beliefs of teachers play an important role while reforming the curriculum of the courses such as math. According to Handal and Herrington (2003), the curriculum developed taking the opinions and beliefs of teachers into account are more successful. As the teachers are the practitioners of the program, their opinions are of great importance to implement the program smoothly and effectively and to perform objectives of the program. The study of Koca (199) also confirms this by indicating that teachers' needs and opinions should be taken while developing the program. When examining the literature many studies for evaluation can be seen. Taşçı (2004), Bolat-Soycan (2006), Batdal (2006), Halat (2007), Akça (2007), Aksu (2008), Bal (2008), Yıldırım (2009), Duru and Korkmaz (2010), Çelen (2011), Budak and Okur (2012), Bal and Dinç-Artut (2013), Özdal and Karataş (2015), some of which aimed to evaluate programs at primary education level, can be given from these studies. Following studies about the curriculum implemented in high schools draw the attention.

İnan (2006) investigated whether there is a significant difference between opinions of teachers about the ninth grade math curriculum issued in 2005 in terms of seniority, educational level, and type of schools they work. The study was carried out with 95 math teachers in the survey model in the province of Istanbul. In the study, no significant difference was observed between opinions of teachers for the ninth grade math curriculum issued in 2005 by school types and seniorities of teachers, but there were significant differences in some sub-dimensions by education levels and this difference is in favor of teachers who received master's degrees. Yurday (2006) carried out a study to investigate the effect of teachers' beliefs on perceptions of the new math curriculum. The study was conducted with four math teachers in a high school in the province of Trabzon. According to the research results, teachers have traditional beliefs about the nature of math and teaching and learning math and they perceive foresights in the new curriculum different with the influence of these beliefs. According to research results related to assessment and evaluation, teachers perceive assessment and evaluation proposed by the new curriculum in the form of evaluating given assignments and projects as scores, unlike to former. Bulut (2006) investigated whether math teachers of competences differ by seniority, school types, and educational level for traditional and alternative assessment placed in assessment dimension of the ninth grade math course curriculum in 2005. The study was conducted with 2668 math teachers in secondary schools in 21 districts within the European side of the province of İstanbul. According to research results, while competencies of teachers for the traditional assessment remain unchanged by school types, significant differences were observed in competencies for alternative assessment by school types.

When examining the related literature, a great number of studies related to curriculums can be seen apart from the above studies. It can be seen that many of these studies are related to updated programs in 2005 or 2008 (Cansız-Aktaş 2008; Kutluca and Aydın 2010; Konur and Atlıhan 2012; Merter and Şan 2012; Cansız-Aktaş and Baki 2012; Batdı 2014). Limited studies are available for the updated program in 2013.

Çiftçi and Tatar (2015) conducted a study to determine opinions of secondary education math teachers for the math curriculum. The study was carried out with 9 teachers working in different cities. Research results indicated that teachers are positive for the new program that decreases the intensity of the subjects and regulate the gains but they criticized removal of some subjects and adoption of readiness levels of students. Dikbayır and Bümen (2016) studied commitment to the curriculum in ninth grade math course with three teachers from three different types of high schools in terms of compliance and participant reactions. The study concluded that features of students, curriculums, teachers and institutions along with the centralized education system are determinative in commitment of teachers to the curriculum in which teacher-centered education is carried out.

The new math curriculum put into practice with 2013-2014 education term has been implemented gradually in our country. The curriculum will complete the final phase by applying into the twelfth grade in the 2016-2017-education term. As the program is new, studies on this topic in the literature are limited with the two studies above and there is a gap here in this case. In addition, it can be seen that the program has not been evaluated in terms of its overall framework and scope in the aforementioned studies. This study aimed to contribute filling this niche in the literature.

In the study, it was aimed to evaluate gains, teaching and learning, the content and assessment items of the new secondary education math curriculum in detail in accordance with opinions of math teachers in high schools and students taking this course. The study is original in terms of discussing all aspects of the curriculum in-depth. Besides, no studies in which the program was evaluated based on views of students who are direct payers of the program were come across in the literature. This study differs from other studies in this respect.

Purpose of the Study

It was aimed to evaluate views of math teachers and students for the new secondary education math curriculum issued since 2013. The following questions were asked in this regard:
1. What are the views of math teachers in high schools for the new secondary education math course curriculum?
2. What are the views of high school students for the new secondary education math course curriculum?
3. Is there a significant difference between views of high school math teachers for the new secondary education math course curriculum and different variables?
4. Is there a significant difference between views of high school students for the new secondary education math course curriculum and different variables?

METHODOLOGY

The study was structured in the survey model based on the quantitative research design. Survey models are research approaches aiming to describe past or current situations as they are. Events, individuals or objects subject to the research are tried to be described in their own terms and as they are (Karasar, 2005). The study population consisted of high schools associated by the Ministry of Education.

Study Group
The easily accessible sampling method from purposive sampling methods was adopted in forming the study group of this research. The sample consisted of 64 math teachers from 20 high schools and 2000 students studying in these schools in the center of Karaman city.
Demographic information of math teachers participating in the study is given Table 1.

Table 1. Demographic features of math teachers participating in the study.

Independent Variables	Groups	f (frequency)	% (percentage)
Gender	Female	30	46.9
	Male	34	53.1
Terms of Office	1-5	15	23.4
	6-10	10	15.6
	11-15	8	12.5
	15-20	18	28.1
	21 and over	13	20.3
Classes	9th Grade	17	26.6
	10th Grade	32	50
	11th Grade	10	15.6
	12th Grade	5	7.8
Receiving In-Service Training	Yes	14	21.9
	No	50	78.1
Graduated Faculty	Science	35	54.7
	Education	29	45.3
Total		**64**	**100**

It is seen in the Table 1 that 30 (46.9%) participants are female and 34 (53.1%) participants are male. When participants' terms of office were examined, it is observed that participants fall intensely in the range of 15-20 years (28.1%). While 17 (26.6%) participants teach in 9th grade, 32 (50%) participants teach in 10th grade, 10 of them (15.6%) teach in 11th grade and 5 (7.8%) participants teach in 12th grade. While 14 (21.9%) participants received in-service training, 50 (78.1%) participants did not. 35 (54.7%) participants graduated from Science Faculty and 29 (45.3%) participants graduated from Education Faculty.

Demographic information of students participating in the study is given Table 2.

Table 2. Demographic Features of Students Participating in the Study

Independent Variables	Groups	f (frequency)	% (percentage)
Gender	Female	988	49.4
	Male	1012	50.6
School Type	Science	179	9,0
	Anatolian.	973	48,7
	Social Science	128	6,4
	Vocational	720	36,0
Grades	9th Grade	555	27,8
	10th Grade	630	31,5
	11th Grade	539	27,0
	12th Grade	276	13,8
Enthusiasm for Math	Yes	1217	60.9
	No	783	39.2
Total		**2000**	**100**

It is seen in Table 2 that 988 (49.4%) students are female and 1012 (50.6%) students are male. While 179 (9%) students study in Science high school, 973 (48.7%) students study in Anatolian high school, 128 (6.4%) students study in Social Science high school and 630 (31.5%) students study in Vocational high school. While 555 (27.8%) students in 9th grade, 630 (31.5%) students in 10th grade, 539 (27%) students in 11th grade and 276 (13.8%) students in 12th grade. While 1217 (60.9%) students indicated enthusiasm for math, 783 (39.2%) did not.

Development and Implementation of the Data Collection Instrument
Development of Teacher Surveys
The survey entitled " Views of High School Math Teachers for the New Math Curriculum", which is one of the quantitative data collection tools of the research, consists of 5 sections. The survey questions were developed by the researchers and finalized with the opinions of 2 expert academics in the measurement field and 2 math teachers. Validity and Reliability of the study was conducted with the pilot study. The draft scale was applied to 50 participants in the pilot study and "exploratory factor analysis" was applied for the structure validity in accordance with the obtained data.

Table 3. KMO and Barlett's Test Results of Survey Items

Kaiser-Mayer-Olkin (KMO) Measure of Sampling Adequacy		.63
Bartlett's Test	Chi-Square	1148,967
	Sd	120
	Sig.	.000

p<0.01

Minimum .60 KMO value is sufficient to perform the factor analysis on data (Pallant, 2007). Items' loading values are considered to be at least .30 in determining items of the scale in the explanatory factor analysis (Büyüköztürk, 2009). Besides 25 degrees "varimax" axis rotation was made in the construct validity. The reliability of the scale was examined by the internal consistency coefficient. According to analysis results, items that ensured the construct validity were included in the final scale. The scale consists of 5 sections. The first section includes personal information. The second section includes questions about the program gains and the Cronbach alpha reliability coefficient was calculated as .84. Gains section formed of 2 sub-dimensions and while 1,2,6,13,15,16th questions are measuring "relevancy of gains to the program objectives", 3,5,7,11,12,14th

questions measure "relevancy of gains to students' levels". Item factor sub-score was limited to .50 and 4,8,9, and 10th questions were removed in this case. The third section includes questions for the program content and the Cronbach alpha reliability coefficient was calculated as .77. The content section formed of 2 sub-dimensions and while 1,2,3,9,11,15,16,17,18,19th questions are measuring "relevancy of the content to students' levels", 5,6,8,12,13,20,21,23rd questions measure "relevancy of the content to the program objectives". Item factor sub-score was limited to .50 and 10, 14,22 and 24th questions were removed in this case. The fourth section includes questions for the teaching and learning processes and the Cronbach alpha reliability coefficient was calculated as .82. The teaching-learning section formed of a single dimension. This 14-item section was limited with Item factor sub-score of .50 and 4, 5,6,7, and 12th questions were removed. The fifth section includes questions for the assessment process of the program and the Cronbach alpha reliability coefficient was calculated as .78. The evaluation section formed of a single dimension. This 11-item section was limited with Item factor sub-score of .50 and 6,8, and 9th questions were removed for this reason. The Cronbach alpha internal consistency coefficient of the scale was above .70, which suggests that the scale is reliable (Field, 2005).

Table 4. Factor Distributions and Loadings with Varimax Rotation of Items in the Teacher Scale

Section	Qs	Load. Val.	Section	Qs	Load. Val.	Section	Qs	Load. Val.	Section	Qs	Load. Val.
Gains	Q1	80	Content	Q1	.46	Teaching-Learning	Q1	.58	Evaluation	Q1	.71
	Q2	.74		Q2	.71		Q2	.77		Q2	.63
	Q3	.77		Q3	.61.		Q3	.50		Q3	.60
	Q5	.58		Q5	.54		Q8	.71		Q4	.68
	Q6	.63		Q6	.56		Q9	.77		Q5	.60
	Q7	.78		Q8	.66		Q10	.68		Q7	.61
	Q12	.50		Q9	.61		Q11	.55		Q10	.71
	Q13	.73		Q11	.54		Q13	.66		Q11	.63
	Q14	.65		Q12	.50		Q14	.70			
	Q15	.72		Q13	.58						
	Q11	.50		Q15	.62						
	Q16	.67		Q16	.78						
				Q17	.80						
				Q18	.56						
				Q19	.58						

Factor loading distribution of items ranged from .50 to .80. It was suggested that the factor loading value needs to be above .30 and the difference between two high loading values needs to be at least .10 (Çokluk et al., 2010).

Development of Students' Surveys

Another quantitative data instrument of the research is the survey entitled "Opinions of High School Students for the New Math Curriculum". The survey developed by the researchers consists of 2 sections. The survey was finalized with the opinions of 2 expert academics in the measurement field and 2 math teachers. Reliability and Validity of the scale was conducted with the pilot study. The draft scale was applied to 250 participants and "explanatory factor analysis" was applied for the construct validity in accordance with obtained data. First, KMO and Bartlett's Test values were examined in order to perform the factor analysis.

Table 5. KMO and Barlett's Test Results of Survey Items

Kaiser-Mayer-Olkin (KMO) Measure of Sampling Adequacy		.84
Bartlett's Test	Chi-Square	2358.692
	Sd	28
	Sig.	.000

p<0.01

KMO value of the survey is .82 and the value of Barlett's test is .00, which means that factor analyses of survey items can be performed (Büyüköztürk, 2009). The second section of the survey includes opinions of students for the new math curriculum. The Cronbach alpha reliability coefficient of this section was calculated as .70. Items below .40 were removed from the survey and reduced to 8 questions in the factor analysis done for the validity.

Table 6. Factor Distributions and Loadings with Varimax Rotations of Items in the Student Survey

Questions	Load. Values	Questions	Load. Values
Q1	.65	Q8	.46
Q3	.65	Q10	.40
Q4	.49	Q12	.63
Q6	.41	Q13	.63

As seen in Table 6, factor loading distributions of items ranged from .40 to .80.

Data Analysis

Data obtained in this study were analysed with SPSS 16.0 packet programme. First the normality test was performed to determine whether the date is normally distributed. When examining differences in the scores of scales between groups, it is necessary to determine whether scale scores are normally distributed in each group separately. While results of Kolmogorov-Smirnov test (a) were considered in the variables with sample greater than 50, results of Shapiro-Wilk test were considered in the variables with sample smaller than 50. In this regard, Kalmogorov-Smirnov (a) test results were considered (Büyüköztürk, 2009).

Table 7. Normality Test Results for Dimension and Sub-Dimensions of Opinions of Teachers and Students for the New Math Curriculum Scale

	Kolmogorov-Smirnov Statistics	sd	p
Teacher Survey			
Relevancy of Gains to Program Objectives Sub Dimension	.266	64	.00
Relevancy of Gains to Levels of Students Sub Dimension	.169	64	.00
Relevancy of the Content to Program Objectives Sub Dimension	.142	64	.00
Relevancy of the Content to Levels of Students Sub Dimensions	.109	64	.04
Teaching and Learning Dimension	.077	64	.20*
Assessment Dimension	.124	64	.01
Student Survey			
Evaluation of the Curriculum	.088	2000	.00

*p>.05, sd: Number of Participants, p: Significance value

When Table 7 was examined, it is seen that normality test results of two sub dimension scores of gain section of the teacher scale were not normally distributed by groups (p<.05). In the case of P<.05, it is indicated that the related variable did not come from the normal distribution (Can, 2016). Similarly, dimension and sub dimensions of the content and evaluation sections were not normally distributed (p<.05). Teaching-learning dimension of the scale is normally distributed (p>.05). To apply a parametric test to a variable, the variable examined for normality should be normally distributed in each group. Analyses were performed with the Mann Witney U test from non-parametric tests for gains, the content and assessment dimensions and sub-dimensions of the scale. T-test and one way ANOVA from parametric tests were performed for the teaching-learning dimension. It is also seen that normality test results of the program evaluation dimension scores were not normally distributed in the student survey (p<.05). In determining mean, the range of 1.00 - 1.64 indicates, "disagree", 1.65 – 2.29 indicates "not sure" and 2.30 – 3.00 indicates, "agree". The significance level was taken as .01.

FINDINGS

In this section, the findings obtained for the purposes of the study and their interpretations were given. In this context; while opinions of teachers for the new math curriculum were being evaluated, whether dimension and sub-dimensions of four components of the curriculum differ in terms of variables such as gender, classes, graduated school of teachers were examined.

In addition, views of the students were evaluated and whether these views differ in terms of variables such as gender, school type and enthusiasm for math.

Table 8. Descriptive Data for Dimensions of the Views of Teachers and Students for the Math Curriculum Survey

	N	$\bar{X}$	ss
Teacher Survey			
Relevancy of Gains to Program Objectives Sub-Dimension	64	**2.43**	3.71
Relevancy of Gains to Students' Level Sub-Dimension	64	**1.17**	2.68
Relevancy of the Content to Program Objectives Sub-Dimension	64	1.67	5.58
Relevancy of the Content to Students' Level Sub-Dimension	64	2.01	4.17
Teaching Learning Dimension	64	1.90	5.41
Assessment Dimension	64	1.97	4.57
Student Survey			
Relevancy of the Curriculum to Program Objectives	1871	1.96	3.19

As seen in Table 8, it was emerged from the opinions of teachers that gains were relevant to program objectives, but gains were not relevant to students' level. In addition, teachers were not sure about the content of the program, teaching-learning and assessment dimensions. Students participated in the study were also not sure about the evaluation of the curriculum.

Opinions of Teachers participated in the Study for the New Math Curriculum

Table 9. Items that Have Highest Means in the Gain Dimension of the Math Curriculum

Items for Gains	Agree		Not Sure		Disagree		Mean
	(f)	(%)	(f)	(%)	(f)	(%)	($\bar{X}$)
1.Targeted gains are clear and understandable.	48	75	6	9.4	10	15.6	2.59
13.Gains are consistent.	45	70.3	8	12.5	11	17.2	2.53
14. Gains are in accordance with students' level.	26	40.6	4	6.3	34	53.1	1.87
16. Gains were formed in accordance with the general objectives of the program.	40	62.5	9	14.1	15	23.4	2.39

As seen in Table 9, 48 (75%) of 64 math teachers indicated that gains are clear and understandable, 44 (68.8%) math teachers indicated that gains are in accordance with students' level, 45 (70.3%) math teachers indicated that gains are coherent and 40 (62.5%) teachers indicated that gains are relevant for the general objectives of the program for gains.

Table 10. Items that Have Highest Means in the Content Dimension of the Math Curriculum

Items for the Content	Agree		Not Sure		Disagree		Mean
	(f)	(%)	(f)	(%)	(f)	(%)	($\bar{X}$)
2.Concrete examples are given in the curriculum.	26	40.6	9	14.1	29	45.3	1.95
5.Gains in the curriculum are consistent with the content.	44	68.8	7	10.9	13	20.3	2.48
8. The program content is understandable by teachers and students.	31	48.4	9	14.1	24	37.5	1.89
18. The content enables students to develop alternative solution methods for the problems.	34	53.1	8	12.5	22	34.4	1.81

As seen in Table 10, 29 (45.3%) teachers of 64 math teachers participated in the study indicated that concrete examples were not given in the program content, 44 (68.8%) teachers indicated that the content is consistent with gains, 31 (48.4%) teachers indicated that the program content is understandable by teachers and students and 34 (53.1%) teachers indicated that the program content allows students to develop alternative solutions for the problems for the content.

Table 11. Items that Have Highest Means Teaching – Learning Dimension of the New Math Curriculum

Items for Teaching – Learning	Agree		Not Sure		Disagree		Mean
	(f)	(%)	(f)	(%)	(f)	(%)	($\bar{X}$)
1. The program aimed students to participate actively in the courses.	27	42.2	7	10.9	30	46.9	1.95
2. Teaching – Learning activities in the Program are clear and understandable.	33	51.6	7	10.9	24	37.5	2.14
9. Teaching – Learning process in the program is leading for teachers in teaching the course.	32	50	5	7.8	27	42.2	2.07
10. Teaching – Learning process in the program is consistent with targeted gains.	31	48.4	14	21.9	19	29.7	2.18

As seen in Table 11, 30 (46.9%) teachers of 64 math teachers indicated that the program did not aim students to participate actively in the class, 33 (51.6%) teachers indicated that teaching – learning activities in the program is clear and understandable, 32 (50%) teachers indicated that teaching – learning process in the program is leading for teachers for teaching the class and 31 (48.4%) teachers indicated that teaching – learning process in the program is consistent with the targeted gains for the teaching – learning dimension.

Table 12. Items that Have Highest Means in the Evaluation Dimension of the New Math Curriculum

Items for Assessment	Agree		Not Sure		Disagree		Mean
	(f)	(%)	(f)	(%)	(f)	(%)	($\bar{X}$)
1. The Assessment is guiding teachers on how to follow a path after the assessment and evaluation process.	32	50	11	17.2	21	32.8	2.17
5. A Variety of assessment and evaluation techniques are available in the program.	33	51.6	9	14.1	22	34.4	2.17
7. Teachers are capable of preparing different assessment techniques.	35	54.2	11	17.2	18	28.1	2.26
10. The Proposed assessment processes are understandable and clearly expressed.	35	54.2	11	17.2	18	28.1	2.26

As seen in Table 12, 32 (50%) teachers of 64 math teachers participated in the study indicated that the assessment is guiding teachers on how to follow a path after the assessment and evaluation process, 33 (51.6%) teachers indicated that various assessment and evaluation techniques are available in the program, 35 (54.2%) teachers indicated that teachers are capable of preparing different assessment and evaluation techniques and 35 (54.2%) teachers indicated that the proposed assessment and evaluation techniques are clear and understandable for the assessment dimension of the curriculum.

Opinions of Students Participated in the Study for the New Math Curriculum
Items that have highest means in the student survey are given in Table 13.

Table 13. Items that Have Highest Means in the Dimension of the Relevancy of the New Math Curriculum to Program

Items	Agrees		Not Sure		Disagree		Mean
	(f)	(%)	(f)	(%)	(f)	(%)	($\bar{X}$)
12. Assessment techniques applied by our teacher are appropriate to assess students.	482	24.1	836	41.8	671	33.6	2.09
6.Topics we learned are detached from everyday life.	629	31.5	789	39.5	573	28.7	1.97
8.We are just listening to when teachers explaining the topics.	528	26.4	639	32	820	41	2.14
13. I am having difficulty in learning math, as there are not enough activities.	515	25.8	855	42.8	579	29	2.03

As seen in Table 13, 629 (31.5%) students of 2000 students participated in the study indicated that topics in the program are detached from the everyday life, 789 (39.5%) students are not sure. 820 (41%) students indicated that they are not listening to their teachers. While 826 (41.8%) indicated that they are not sure about the relevancy of assessment and evaluation techniques of the program teachers applied to assess themselves, 671 (33.6%) stated they are appropriate. In addition, 855 (42.8%) students indicated that they are not sure if they have difficulties in learning math, as there are not enough activities in the math class, 579 (29%) stated they do.

Opinions of Teachers for Components of the Curriculum by Different Variables
Analysis results that indicate significance of opinions of participants for gains dimension of the math curriculum by gender dimension were given in Table 14.

Table 14. Mann Witney U – Test for Gain Sub-dimension of the Survey by Graduation Type of Teachers participated in the Study

	Graduation	N	Rank Mean	Sum of Rank	Z	U	p
Relevancy of the Program to its Objectives	Education	35	29.74	1041	-1.32	411	.18
	Science	29	35.83	1039			
	Total	64					
Relevancy to Students' Level	Education	35	36.73	1285.5	-2.02	359	.04
	Science	29	27.40	794.5			
	Total	64					

As seen in Table 14, a significant correlation was observed between relevancy of gains to students' levels and graduate of education faculty (p<0.05). This relation is in favor of graduate of education faculty.
Analysis results that demonstrate significance of opinions of participants for the content dimension of the new math curriculum with the term of office factor were given in Table 15.

Table 15. Kruskal Wallis H Test for Sub-dimension of the Survey by Term of Office of Teachers participated in the Study

	Term of Service	N	Rank Mean	sd	X²	p
Relevancy of the Content to Students' Levels	1-5	15	31,20			
	6-10	10	35,60			
	11-15	8	33,94	4	8.40	.07
	15-20	18	23,78			
	21 and over	13	42,81			
	Total	64				
Relevancy of the Content to Program Objectives	1-5	15	41,00			
	6-10	10	35,60			
	11-15	8	27,75	4	6.93	.13
	15-20	18	25,00			

21 and over	13	33,62	
Total	64		

As seen in Table 16, no significant correlation was observed between term of service of teachers participated in the study and the content section of the survey (p>0.05). Analysis results that demonstrate significance of opinions of participants for the teaching and learning dimension of the new math curriculum were given in Table 16.

Table 16. One Way ANOVA Results for the Teaching and Learning Dimension of the Curriculum by Classes Teachers Teach

	Variance Source	Sum of Squares	sd	Mean of Squares	f	p
Teaching – Learning Dimension	Intergroup	88.83	3	59.05		
	Groups within	1760.91	60	58.86	1.009	.395
	Total	1840.75	63			

As seen in Table 16, no significant difference was observed between scores of opinions of teachers for teaching - and learning by classes they teach (F(3,60)=1,009; p>.05). Analysis results that demonstrate significance of opinions of participants for gains dimension of the new math curriculum by graduation factor were given in Table 17.

Table 17. Mann Witney U – Test for Evaluation Dimension of the Curriculum by Gender of Teachers participated in the Study

	Gender	N	Rank Mean	Sum of Rank	Z	U	p
Relevancy of Program to Program Objectives	Female	30	33.73	1012	-.50	473	.61
	Male	34	31.41	1068			
	Total	64					

As seen in Table 17, no significant correlation was observed between genders of teachers participated in the study and total scores of evaluation dimension of the program (p>0.05).

Opinions of Students for the Curriculum Components by Different Variables

Analysis results that demonstrate significance of opinions of participants for the new math curriculum by the gender factor were given in Table 18.

Table 18. Mann Witney U – Test for Relevancy of Program to Program Objectives by Genders of Students participated in the Study

	Gender	N	Rank Mean	Sum of Rank	Z	U	p
Relevancy of the Program to its Objectives	Female	988	1015.65	1003465	-1.16	484956	.24
	Male	1012	985.71	997534			
	Total	2000					

As seen in Table 18, no statistical significant correlation was observed between genders of students participated in the study and relevancy of the program to its objectives (p>0.05).

Analysis results that demonstrate significance of relevancy of math curriculum to its objectives and participants' enthusiasms for math were given in Table 19.

Table 19. Mann Witney U – Test for Opinions of Students for Relevancy of Program Objectives by Students' Enthusiasms for Math

	Enthusiasm for Math	N	Rank Mean	Sum of Rank	Z	U	p
Relevancy of Program to its Objectives	Yes	1217	842.87	1025778	-15.28	284625	.00*
	No	783	1245.49	975221			
	Total	2000					

p<0.05

As seen in Table 19, a statistical significant correlation was observed between students' enthusiasms for math and their opinions for relevancy of the program to its objectives (p<0.05). This relation is in favour of students who do not have enthusiasms for math.

Analysis results that demonstrate significance of relevancy of the program to its objectives by school types of participants were given in Table 20.

Table 20. Kruskal Wallis H Test for Relevancy of Program to its Objectives by School Types of Students

	School Types	N	Rank Mean	Sd	X^2	p
Relevancy of Program to its Objectives	Science High School	179	1174,03			
	Anatolian High School	973	1036,46			
	Social Science High School	128	1093,86	3	49.07	.00*
	Vocational High School	720	892,16			
	Total	2000				

*p<0.05

As seen in Table 20, a statistical significant correlation was observed between school types of students participated in the study and total scores of students' opinions for relevancy of program to its objectives. Mann Witney U test was performed to find out the direction of this relation. According to this, there was significance in favour of Science high school between students of Science high school and Anatolian high school (Science High School Mean = 640.87> Anatolian High School Mean= 564.66), in favour of Science high school between students of Science high school and Vocational high school (Science High School Mean = 554.72> Vocational High School Mean= 423.97), in favour of Anatolian high school between students of Anatolian high school and Vocational high school (Anatolian High School Mean = 898.48> Vocational High School Mean= 777.43), in favour of Social Science high school between students of Social Sciene high school and Vocational high school (Social Science High School Mean = 496.14> Vocational High School Mean= 411.76).

CONCLUSION

The new secondary education math curriculum issued in 2013-2014 education period will be fully implemented in 2016-2017 education period at all class levels. Therefore studies on the new secondary education math curriculum are limited in the literature. The emerging picture that aimed to evaluate gains, teaching – learning, content and assessment components of the new math curriculum being implemented in high schools in line with the views of teachers and students as follows:

Math teachers in high schools stated about the new secondary education math curriculum that gains are clear, understandable and coherent, but they are not appropriate for the students' levels. This finding is in line with the study results of Çiftçi and Tatar (2015), which determined views of secondary education math teachers for the math curriculum. Çiftçi and Tatar (2015) reported that teachers benefited the planning of gains, but they criticized removal of some topics and the adoption of readiness levels of students. Teachers participated in the study expressed that the content of the program in consistent with the gains and the content is understandable but concrete examples were not provided. Teachers stated for the teaching – learning process of the program that teaching –learning process is guiding teachers in teaching the course, but students remain passive in activities in

the program. Dikbayır and Bümen (2016) reached the conclusion that math teachers make changes in the program according to the students' levels and students have difficulties in establishing links between math and everyday life. This finding is in line with views of teachers for the content and the teaching and learning process of the program. In addition, teachers participated in the study highlighted that assessment and evaluation techniques were included in the program and these techniques are clear and understandable. Erturk (1998) stated that the evaluation process of a program is an indispensable process allowing the program and education to be restorative.

Students studying in high schools participated in the study expressed that topics in the new math curriculum were detached from the everyday life, assessment and evaluation techniques in the program and applied by teachers were not appropriate for themselves and not enough activities were included in the program. This emerging finding is in line with studies of Çiftçi et al. (2013), Merter and Şan (2012) and Bal (2008).

Considering the significance between opinions of teachers in the study and different variables, a significant difference was observed between views of them for relevancy of gains to students' levels by school types teachers graduated and it was determined that this significance is in favor of education faculty graduates. Besides, no significant difference was observed between views of teachers for the program content by terms of office. This finding is in parallel with the studies of Merter and Şan (2012), Karagülle (1998), Yapıcı and Leblebiciler (2007), Acat and Demir (2007) and Aydın (2005). No significant difference was also observed between views of teachers teaching – learning process by classes in which teachers teach. Similarly, no significant difference was found between views of teachers for the evaluation process by gender factor. No significant correlation was found between genders of students participated in the study and relevancy of the program to its objectives. However, a significant difference was identified between students' enthusiasms for math and relevancy of the program to its objectives. This significance is in favor of students who dislike math. A significant difference was determined school types of students participated in the study and views of them for relevancy of the program to its objectives. This significance is in favor of Science and Anatolian high schools. This finding indicates that students studying in Science and Anatolian high schools are more sensitive towards the curriculum.

In the study, opinions of teachers and students were received for the new secondary education math curriculum and it is considered that the findings emerged would contribute to the literature. This is because; it is less likely to encounter studies for the program in the literature due to the implementation of the program in all classes was just completed. In this context, the study is original in the field. It is considered that the obtained results are important to shed light on new programs planned to be implemented in the future.

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EVOLVING INTEREST IN USING AN INFORMAL LEARNING SPACE FOR FORMAL TEACHING

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ABSTRACT
An informal learning space in the Carleton University's MacOdrum Library was envisioned out of the academic plan, and then designed and implemented. The space, the Discovery Centre, consists of a large single open space, with three rooms off from this space: a gaming lab, a multimedia lab and a learning lab. The Centre contains furniture that is moveable and has integrated technology, so that the combination facilitates both group and independent study. Although designed for informal learning and study, some instructors have recognized the potential of the space and have conducted formal teaching there. The uses have included office hours, project meetings, poster sessions, project demonstrations and class teaching. Open comments were sought from instructors on why and how they are using the Centre for teaching. Key factors such as the flexible and reconfigurable furniture, the state-of-the-art technology, and the ease of having students conduct group work were identified in interviews as important. Although similar to active learning classrooms, the Centre is fundamentally different in that it is open study space and students who are not in the course and are studying close-by or walking past can observe the class whilst it is in progress.

Keywords: informal learning space, formal learning, high impact practices, active learning, innovative teaching

INTRODUCTION

The rise of electronic information encouraged the start of the creation of the information commons in university libraries in the early 1990s (Beagle, et al., 2006, Forrest, & Halbert, 2009). These spaces in libraries allowed the access of digital information through CD-ROMs and the Internet, as well as providing tools for processing information, for example word processors, spreadsheets and printing facilities. Furthermore, the growth in the availability of spatial data, the digitization of maps, and the development of user-friendly geographic information systems (GIS), resulted in library map collections being converted into spatial data centres. Over the next decade there was a move in some centres towards providing learning support services in addition to the access to digital information and analytical technology. These spaces were often called learning commons (Accardi, et al., 2010), indicating the broader range of involvement than just data and information processing. Now a student could find in a university library not only books and journals in printed form, but also access to electronically sourced information and data, as well as computing facilities to help with processing and displaying the information and support services in areas such as writing services and other study skills.

Over time and as technology became more readily accessible, especially through wireless routes, students started to bring their own computing technology to university, first with laptop computers and then with mobile devices such as smartphones and tablets. The easier and wider access to electronic information allowed opportunities to once again revisit the space within the university libraries, as books and journals could be digitized and replaced by electronic databases, thus reducing the need for shelves and stacks and freeing up that space for other uses. The learning commons model could now be broadened to provide more space for both

individual and group work activity. Learning between a number of individuals could be encouraged through furniture that helped groups of students to work together, while still accommodating individuals who wanted to work on their own. Space no longer needed to focus on providing banks of desktop computers as many students had their own portable devices or libraries offered laptop loans. Instead more flexible study space could be provided. This type of flexible learning space can be termed as informal learning space. *Informal* in this case is used to indicate that it is not planned to be used for scheduled teaching. As Jamieson, 2013 states "'Informal' learning … can be viewed as a student-driven course or programme-based study which occurs outside the classroom (or in class-rooms out-of-class hours) with no direct teacher involvement." Eraut, 2000 gives a "broad definition of formal learning" as being learning involving one of the following:

- "a prescribed learning framework
- an organised learning event or package
- the presence of a designated teacher or trainer
- the award of a qualification or credit
- the external specification of outcomes" (Eraut, 2000, p114)

Therefore we can view formal learning as where there is a scheduled meeting and interaction of an instructor and a student, for example a scheduled class, laboratory or seminar. Conversely, anywhere that students can study outside of class time and without an instructor can be viewed as an informal learning space.

At Carleton University in Ottawa, Canada, the first move towards a digital information centre was the establishment of the Maps, Data, and Government Information Centre (MADGIC) in the MacOdrum Library (Carleton University, 2016b) in 1996. MADGIC resulted from the amalgamation of the Map Library, the Government Documents Department, and the Data Centre; and it was the first move towards combining public service and technical service activities. In 2005 a Learning Commons was created which brought together electronic library resources, student learning support services, and computer and technical assistance in order to support students in the learning process. The Learning Commons is still in operation today, although greatly expanded from its original size. Then in 2011, a partnership between the Office of the Provost and Vice-President (Academic) and the Library resulted in the creation of an entirely new kind of learning space in the library to support student engagement and success. This new space was inspired by the Carleton Academic Plan, which placed an emphasis upon student-centred learning through critical and creative inquiry.

CARLETON ACADEMIC PLAN

In June, 2010 the Academic Senate of Carleton University approved the University's first academic plan. the Carleton Academic Plan (CAP) was developed through the Office of the Provost and Vice-President (Academic) and involved extensive consultation across the university. The CAP was founded upon some key academic values that are embedded within the culture of the institution, namely that research and teaching comprise integrated endeavours that together inspire faculty and students to great achievements; that academic programs must be intellectually stimulating and challenging, promoting rigorous academic standards and seeking continuous improvement; that, as Canada's Capital University, Carleton is rooted in and shaped by its regional community and is committed to enhancing and influencing the intellectual, economic, social, and cultural capacity and development of the National Capital Region; and that through its global perspective and initiatives, Carleton is also committed to serving communities throughout Ontario, Canada and the world.

One of the central goals of the CAP was to improve the student academic learning experience through a focus on critical and creative inquiry. While inquiry-based learning is a given at the graduate level, it is less prevalent at the undergraduate level, especially in the early years of an undergraduate student's experience. Pedagogical practices that promote critical and creative inquiry take on many forms, but for the purpose of the CAP, the institutional approach was centred around the promotion of four pillars: undergraduate research, international learning experiences, experiential learning (including workplace and community service learning), and immersive learning. These are all well recognized high-impact practices (Kuh, et al., 2008) that take students out of the traditional teaching environment and stretch their intellectual capabilities in different and creative ways. Through the use of high impact teaching practices, students become actively involved in their learning,

hence the notion of delving deeper into the learning experience than is the case with some more traditional forms of teaching. The result can be greater student engagement and satisfaction, and consequently better retention rates and increased student success. Deep-level approaches have been shown to produce positive results in student learning:

"In contrast to surface-level learning, deep-level processing emphasizes both acquiring information and understanding the underlying meaning of the information. Deep approaches to learning are important because students who use these approaches tend to earn higher grades, and retain, integrate and transfer information at higher rates." (NSSE, 2007, p.13)

The aim of the critical and creative inquiry initiative was to create the support for building into the undergraduate experience a culture of active learning within a modern, innovative learning environment that would reflect the needs and realities of the twenty-first century. The concept of providing a physical space was to link the four pillars of the critical and creative inquiry initiative to another high-impact practice through the promotion of learning communities. While learning communities are typically related to linked courses in which groups of students study together (Brownell, & Swaner, 2010, 13-14), the creation of a space to encourage group and team work was seen as a way to encourage the development of informal learning communities, with the goal of increasing student engagement and success.

In 2011, a government infrastructure program provided funding for a significant expansion and renovation of the MacOdrum Library, and with it the opportunity to use a substantial part of the expansion to create a physical space for the promotion of the critical and creative inquiry initiative. The idea was to go beyond the typical learning commons and create a flexible space that could be used by students to engage in a variety of new and innovative learning experiences. The space would become the flagship of the critical and creative inquiry initiative, providing a physical centre to promote undergraduate engagement in the four pillars and new opportunities for student engagement in deep-level learning experiences. This space would become the social and academic hub for the new library and indeed for the entire campus. Within this space, students would engage in collaborative learning, using state-of-the-art technology, to discover their potential as critical and creative learners. Through this idea, the reality of the Discovery Centre was born.

THE DISCOVERY CENTRE
The Discovery Centre (Carleton University, 2016a) is located in the new fourth floor extension of the MacOdrum Library at Carleton University and operates through a partnership between the Library and the Office of the Provost and Vice President (Academic). The aim of the Discovery Centre was to provide a space where students could work and study in a stimulating environment. That work could be conducted alone or in groups, and if it was the latter the space would allow for talking and interaction between members of the group. Thus, it was not to be designated as quiet space and it was also agreed with the University Librarian that cellphones could be used within the Centre, as up to then if a patron wanted to make a phone call the would have had to move to the Library stairwells so as not to disturb other users. The reason for allowing the use of cellphones was that if group work was to be permitted and encouraged, then cellphones could be a legitimate way for a group member to be included in the group work even if they were not physically present. Furthermore, as smartphones are increasingly used by students as replacements for regular computers, it is necessary for them to be able to use those devices to access apps, social media, and other sources of information and communication during their work.

The Discovery Centre comprises approximately 650 m^2 of open space with three rooms directly connected to the main space. Each of these rooms has a particular role. The Gaming Lab has two gaming stations each with the current popular gaming consoles (PlayStation 4®, Xbox One® and Wii U™), as well as a gaming computer and related game controllers, including virtual reality headsets. Also in the room are three 3D printers and a 3D scanner to provide the ability of students to create real objects whether linked to gaming or other project. The glass walls of the Gaming Lab provide good views of the printers in operation and the technology seems to complement the gaming station and their operation. The Multimedia Lab is the larger of the three rooms and it contains movable furniture and a 5.5 m x 1.5 m computer screen together with a 7.1 surround sound system. This room can be used for presentations, movie showings, large screen gaming, data or image examination and a

variety of other possibilities where a large screen and sound system could be used. The third room is a classroom designed to be an active learning style classroom, called the Learning Lab. Four tables are placed towards the corners of a square room, with each table seating up to 6 students and equipped with a display screen that allows computers or mobile devices to connect to it. Students can work at each table and easily display their work to others. The central area of the room is clear so that an instructor can easily move between the tables. The instructor has access to a computer that can display onto two large screens located on opposite walls in the room. Each display shows the same output, but by using the two walls all students could easily see what the instructor is showing without needing to turn around in their seat. Through its design, this classroom has no obvious front or back as teaching can be done from anywhere within the room, and active (*i.e.* participatory) learning can be undertaken throughout the entire room at all times.

Figure 1: The main space in the Discovery Centre

The main open space includes a range of furniture, Figure 1, many of which are on castors allowing users to easily move and arrange the furniture to match the way they want to work. Some fixed furniture is used, including sofa-like seating around a display. Like those in the Learning Lab, this display allows a number of students to connect their devices to the display and switch focus between them at a press of a button, see Figure 2. A height adjustable table is included to accommodate wheelchair users, various seat heights or standing deskwork. That table also includes a large display for the showing of information from a connected computer. Finally, two treadmill desks are included and placed together near a window with views overlooking the historic Rideau Canal (a UNESCO World Heritage site) and the Government of Canada's Experimental Farm. Users can work whilst walking, proving an alternative way of working and linking to Carleton's award winning Healthy Workplace program. In addition to wall outlets, electrical outlets in the floor are distributed throughout the main open space in order to support flexible use of the furniture and laptops, as well as other mobile devices that need charging from time to time.

As part of the flexible nature of the space, mobile white boards are provided in the Centre. These are meant to facilitate group work and can be used as a scratch pad for preliminary work (dry marker pens and erasers were provided on loan), but students also use them as temporary screens to define discrete space for increased privacy. These white boards have proven to be popular, especially close to examination time and more were purchased in order to meet student demand.

Figure 2: Furniture and technology for group work.

The Discovery Centre commenced operation in October 2013 and was officially opened in November 2013 by the Premier of Ontario, the Honourable Kathleen Wynne, as part of the grand opening of the expanded and refurbished MacOdrum Library. The space was an immediate success from day one as it had good natural and artificial light and, with the innovative furniture and technology, it provided a welcoming and flexible space that was very different from any other space on campus, and rapidly became popular with students. Access times work around the opening times of the Library and the number of users and sound level in the room could vary with the time of day. Mornings have proven to be quieter times and early to mid-afternoon tend to be the most populated. Often early evening time has a tendency to noisier, partly as groups would meet and have a period of relaxation. The overall noise in the open space has not been a major problem and if individuals became too loud, the Centre staff could request them to be quieter in order to respect the other users. Groups actively discuss but the overall sound in the space has not been problematic. At the planning stage there had been consideration to the use of a sound masking system, but it was found to be unnecessary as long as sound levels could be regulated to a reasonable level. Indeed, it has been investigated and determined that a certain level of noise may help creativity (Mehta, et al., 2012).

During the design stage of the learning space attention was paid to accessibility for all within the Centre. Booth arrangements of sofas were avoided in order to allow easy access for wheelchair users (booth arrangements can force a wheelchair user to participate from the side only). Sofas were selected that did not have arms thus allowing wheelchair users to easily move from their chair to the sofa. As already mentioned, the height adjustable table also facilitates accessibility for wheelchair users. The flexibility and variety of furniture helped with all users. There was also a supportive comment made by a user who had an attention deficit disorder who found the treadmill desks helpful to aid studying.

Concerns about material that could be displayed on the screens in the Gaming Lab (which had a glass wall) and the main open space were soon allayed. Signage asked users to be respectful of other users in what they displayed on the screens. There have been few if any misuses of the large displays, and one form of popular video game played is a first-person shooter game which potentially could upset a small number of patrons.

USES OF THE DISCOVERY CENTRE FOR FORMAL LEARNING

As previously mentioned, the space was immediately popular with students from the day of opening, and it has become a hub of student activity and use within the Library. The Discovery Centre promotes and facilitates high-impact learning activities involving the four pillars. For example, Carleton University's undergraduate research program is run through the Centre, providing institutional funding to support undergraduate research. The Centre is used for presentations, both in the form of oral and poster presentations, by students about their research, and an annual research conference is held. A similar program supports student international mobility, and the space has been used for students to present on their international learning experiences. The main open space is also used for students engaged in various kinds of group or teamwork projects, including community engagement projects by which students are working with community groups outside of the university. Recently, a Provost's Scholars award has been established to recognize outstanding students who demonstrate high achievements in leaning activities covered by the four pillars.

Yet, although the main open area was set up as an informal learning space for students, as defined in the introduction, the popularity of the space did start to grow with some professors. The flexibility, openness, furniture and technology in the space did offer possibilities for student-instructor interaction that do not exist in traditional classroom configurations. Some professors started using the space to meet with students and this interaction varied from holding office hours to instructing a class.

Office hours for a course are the scheduled times when a faculty member is available for an individual or group of students so they can ask questions. Typically this is for one hour each week per course and usually at the instructor's office. A number of professors have decided to use the Discovery Centre for the location of their office hours for a course. Booking one of the booths with a screen in the main open space provides a less intimidating and more informal setting than their office. The larger display screen allows the student and instructor to easily see any point that requires illustration with the use of a computer. One professor mentioned that an advantage of using the Centre for office hours is that the openness of the space allows waiting students to hear the discussion points of the course material; answers are heard by more than one and perhaps help the waiting student as well as the person who is raising the question. Of course, private or personal issues that need to be raised with the instructor can be dealt with at a more private location, like the instructor's office.

In a similar way to the office hours, another professor would meet with a group of students undertaking a capstone group project. With five or more students in a group this proved to be too many to fit into the faculty member's office. Using the Centre space allowed screens and whiteboards to be used in the regular meetings. The meeting environment now was moved to a student focused space, as opposed to a professor's office, and this potentially provided more open dialogue and engagement with and between the students.

With the large space and the displays it is possible to have a number of students demonstrating projects. One engineering course used the space for an end of term project display. This made use of the displays in both the Multimedia and the Learning Labs. Each display could show presentation material including computer code and projects could be displayed on the tables or on the floor, if too large.

The gaming technology is also used for formal teaching with classes booking the gaming laboratory, and occasionally the multimedia room, to allow a student to play games that are being used in society and study how the games are played and how the player interacts with the game. The flexible furniture is useful here and students can work in groups as well as individually.

Other uses of the space included having performances in a graduate class (although the focus of the Centre is undergraduate students, graduate student use is not discouraged) and having a videoconference with an overseas academic. For the videoconference the Learning Lab was used and the instructor's screen displayed the guest academic from overseas and a wide-angle video camera pointed at the students allowed the guest academic to see the class of students. Using common videoconference software to bring an expert in a certain topic from another country was straightforward to do and provided a new learning experience for the students.

Perhaps the most interesting formal use of the Centre was using the open space for a regular class. Although the original intention was not to have the Centre in the regular classroom pool, accommodation for some classes is possible at times when there is not a high demand for using the space (for example in the summer). It is this

specific use of the space that we shall now focus upon as it demonstrates the innovative opportunities that the Centre is creating.

While a number of different classes have used the Gaming, Multimedia and Learning Labs as was intended, the use of the main open space was an unexpected development. The use of this space was an interesting decision as only parts of the space could be reserved for the classes, so this meant that students who were not in the course were in the same room and often sitting close by the class and instructor. None of the instructors objected to this and, as will be seen, one instructor thought it had a positive effect on their class learning and participation as he believed his students felt they were on show and consequently 'raised their game'.

Two classes that used the Gaming Lab were a fourth year film studies seminar course on 'video games and difference' and a third year digital history course on 'video games and simulations for historians'. The advantage of using the Gaming Lab is the practicality of students being able to play games while the class is in progress. The setting is less formal than a regular classroom or a computer laboratory, for example sofas can be used in front of the gaming stations and the furniture can be arranged to allow for group observation of the gaming and discussion. A comment from the film studies professor on the space was:

"…in this open and dynamic space where people are coming in and out…It is a kind of casual and flexible space, which sets a different tone for them"

The history professor made the following comment about the environment being a more 'authentic' setting:

"By going up to the Discovery Centre in the Gaming Lab they are not just performing for each other in doing these talk aloud protocols, where they actually discuss why they are doing what they are doing and what they are thinking. They are also being observed by other students in the class and also the people who are walking around outside. So it becomes less of putting on a performance for me but it situates it in a broader context and in many ways it is a lot more authentic to how they would normally engage with video games anyways. So if we are trying to understand how to write good history in a video game then we have to not be trying to replicate the writing of an essay in a history class."

The Learning Lab was used by instructors for classes with registered students as well as for training sessions with staff, information sessions for students, and for meetings. Sometimes the Learning Lab was used in conjunction with the main open space. More private group meetings or interviews could be conducted in the Learning Lab and then students could work in the open space in groups or individually. The use and movement of students between the spaces was captured by an Industrial Design instructor who used the space with a class and wrote:

"During the first class, I briefed the students on their activity in the Learning Lab. The activities moved between individual and group work and were timed in short intervals. As individuals, students had to review the preliminary background or site research they had done on Healthy Workplace and their specific topic and brainstorm on developing a research question, listing assumptions they have about the topic and questions to help challenge or probe their assumptions. This activity was short (about 20 minutes) and then students met in their groups at tables in the Learning Lab and Media Booths and were asked to do a round table to share their thoughts (about 30 minutes). After a break, they were then asked to formulate as a group, a research question and the ten best questions they would ask a staff member a[t] Carleton to help challenge their assumptions about the topic, and answer their research question. This activity then contributed to the content of the assignment due the following week. What we noticed about the process is that the timing, movement of activities and quick but achievable deadlines, animated the space and students, and allowed them to build team relationships while working effectively towards their upcoming group deliverables."

Within the main space another instructor from Law and Legal Studies used the flexibility of the space to give lectures, conduct group work and illustrate social justice ideas with a class on 'Social Theory and Human Rights'. Using whiteboards and a large piece of woven material for an exercise to illustrate John Rawls' concept of 'the veil of ignorance' (Rawls, 1997), the professor explained that "this was a way of teaching I would not have thought of using before, because the space is pliable. That has allowed me to be much more dynamic and

flexible in the way that I think about teaching. It is like the space has opened up a whole new … a whole new era of teaching and so many possibilities that just weren't there before. So I think there is absolutely no parallel to be honest, because it is a space that is both enabled and enables thought, ideas, progressive teaching, teaching that is focused around a very different type of student learning, and I think that type of student learning is really important in the academy." Allowing students to move around, interact and participate made the professor a strong supporter and user of the space. Classes in the course would move around the large open space. One of the rooms would be used as an interview room for sub groups of students who would interview different social justice advocates or activists. This flexibility or 'pliability' as the instructor called it made the space a preferred location for her class than a conventional classroom. She explained why this was the case:

"It gives me the freedom to think creatively about pedagogy, about what I hope students will learn and what I can do with students in the classroom. So the space itself is so versatile that instead of limiting me and thinking about what I can do with students sitting at desks bolted to the floor, I can think about what students can do when they move around and when they can use technology and it has complete liberated the way I think about teaching and the way I think about learning."

Another user of the main space was a history professor who used a large table within the space for seminars with his graduate students. His observations of using this space reflected on the nature of the students being on display. "… When we do it [the seminar] upstairs in the Discovery Centre at the huddle table, with that great big screen across the back, people are walking by as we are talking it raises their game tremendously. Because they are not just talking for me, they are not just performing for me, but they are actually on display in ways that mimic or parallel the ways that a lot of digital humanities work gets done, through social media, through open peer review, …". This notion of students being on display to other students outside of their discipline is interesting and one that would be very rare in a traditional classroom where almost always students in the room are studying the same course.

CONCLUSION

A progressive and flexible learning space, the Discovery Centre, was designed for informal learning. This space formed as a partnership between the Library and the Provost's office. The intention was to create a space that could complement the ideas and initiatives that were at the core of the Carleton Academic Plan, and to promote student engagement and success. The space has proven to be popular for informal learning with the mix of technology, space for group work and flexible furniture. However, it also attracted interest from some instructors who started to use the space with their students. Office hours, poster sessions, group project meetings with supervisors and performances were some of the uses made of the space. Perhaps the most interesting use was the request by some faculty to use the space for scheduled class sessions, even while other students who were not in the course were using the space. Now the space had a mix of formal and informal learning going on at the same time. Professors who used the space were interviewed for their views and opinions on using the space for teaching and learning.

The formal learning made use of the technology, mostly large displays for student group work, as well as WiFi and video conferencing technology. The flexible furniture and the space for students to move around were also key factors behind the interest in using the space. One professor thought that the flexibility offered allowed her to be creative about the way she taught. Instructors using the learning space as a classroom made comments about their preference to move away from spaces where desks were fixed to the floor and where they were expected to be at the front of the classroom. The presence of other students from outside the class was noted to be a potential distraction but one professor, who used the space for a seminar, felt that students in his seminar knew they were on display as other students were around them and consequently they tried to improve their involvement in the seminar. He felt that being in the open like this mirrored the openness of the discipline of digital humanities that the course was about.

The space has acted like an incubator for new ideas and fresh approaches of instructors to how learning occurs in their courses. Professors actively and enthusiastically explored the potential of the space. Although not

originally intended for regular formal learning, the space has shown that there is a potential for spaces that are open and dynamic with a mixture of students undertaking formal and informal learning. Though similar in some ways to active learning classrooms (ALC), this space has in one way removed the walls of the ALC idea as now the room contains students not only from the instructor's class but any student or library user from any discipline. In terms of breaking down the traditional barriers of traditional pedagogies, the removal of the classroom walls is one of the most dramatic innovations brought about by the creation of the Discovery Centre. It will be interesting to see how these innovations develop, and whether the centre will prove to be as much of a space for discovery for professors as it is with students.

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EXAMINATION OF THE ANXIETY LEVELS OF VISUALLY IMPAIRED ELITE FUTSAL PLAYERS

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ABSTRACT

The aim of this study is to determine state and trait anxiety levels of elite futsal players who are visually impaired. The study is consisted of 30 elite futsal players; 16 of them are from Turkish Blind 1 Futsal Team and 14 of them are from Turkish Blind 2/3 Futsal Team whose average age differ respectively 25, 63±5, 39 and 26±3, 44.

In the research, a socio-demographic data form and State-Trait Anxiety Inventory (STAI) were used. Datum was analyzed by IBM SPSS (version 18.0). For the examination of data and the comparison of two independent groups the t-test was used and for the analysis of more than two groups ANOVA test was used. Post Hoc test was used to find the statistical difference among groups. According to statistical analysis, there was not a statistically significant difference observed in state and trait anxiety levels according to age and sport age ($p > 0,05$). Both of anxiety levels were significantly varied according to eye classification and national team categories of sample group was found ($p < 0, 01$).
As a result of this study; trainers should consider anxiety levels of visually impaired sportsmen according to their eye classification. They should develop training programs which is required to contain not only physical but also psychological skills.

Key Words: Anxiety, Futsal, Visually Impaired

INTRODUCTION

Disability is an organ deficiency or dysfunction resulting in varying functional loses, require support and assistance in everyday life (Özer, 2010). According to another definition, disability is "any restriction or lack (resulting from an impairment) of ability to perform an activity in the manner or within the range considered normal for a human being" (WHO, 1976). Approximately 8-8,5 million people with disabilities are recognized in Turkey (Acet, Karademir, Koç, Açak, Kızılet, 2011, s. 925-931). According to Tubitak's report, there are approximately 400,000 blind people in Turkey (Tübitak, 2002, s. 13). One of the most important benefits of sports for people is that it facilitates socialization, which is vital for people to live in relatively more peaceful, secure and sheltered (Demirel, 2015, p.113). Sport is promoting better social integration of people with disabilities to society. Recently, sport participation has increased among people who have disabilities (Acet, Karademir, Koç, Açak, Kızılet, 2011, s. 925-931). Making arrangements for control groups within a school or university can be difficult (Harmandar Demirel, 2015, p. 2291). İnal defines sport as "biological, pedagogical and social endeavors which is aimed to improve a person's physical activity, motor skills, is also biological, pedagogical and social behaviors in certain arrangements" (İnal, 1998, s. 5).

Futsal (the official name for five-a-side indoor soccer) was introduced in 1930 with the aim of allowing football to be played in restricted spaces. Its organizing body remains FIFA, under whose auspices international competitions are arranged (Barbero-Alvarez, Soto, Barbero-Alvarez, Granda-Vera, 2008, s. 63 – 73). It is hard to precise when and where the first blind football activities happened, main reason of these initiatives generally didn't start from the professionals and teachers; usually in blind institutes, the blind students wanting to play football too, as the sighted people can play (De Oliveira Silva, 2008, s. 16).

Blind futsal was joined the IBSA fold in 1996. Since then, official IBSA regional and world championships have been held regularly and international friendly tournaments such as the IBSA Cup are a regular feature on the blind futsal calendar. IBSA has two types of futsal - B1 for footballers who are completely blind, and B2/B3 for players who are partially sighted (IBSA, 2015).

In sport psychology, anxiety refers to an unpleasant emotion which is characterized by vague but persistent feelings of apprehension and dread (Cashmore, 2002, s. 24). Spielberger describes the anxiety which occurs in

the sport atmosphere as in general state anxiety, while dividing the anxiety into two as state and continuous anxiety (Spielberger, 1972, s. 3–20).

According to our review of literature, The State Anxiety Inventory is one of the most long-standing and frequently used measures of anxiety. The scale has been translated into numerous languages (Bieling, Martin, Antony, Swinson, 1998, s. 777-788) and has been applied on many people include athletes from different branches, different types of works and disabled people or their families (Acet, Karademir, Koç, Açak, Kızılet, 2011, s. 925-931, Çoksevim, Sarıtaş, Kaya, Pepe, 2006, Polat, Çoksevim, Günay, Pepe, 2010, s. 570-576) but has not been studied on visually impaired futsal players. Therefore, the aim of this study is to determine state and trait anxiety levels of elite futsal players with visually impaired according to their handicapped categories.

MATERIAL AND METHOD

This study include 30 elite futsal players 16 of them from Turkish Blind 1 Futsal Team and 14 from Turkish Blind 2/3 Futsal Team, were participated voluntary. Turkish Blind 1 Futsal Team was participated to Blind 1 Futsal championship in Italy at 2013 and Turkish Blind 2/3 Futsal Team was participated to 7th IBSA B2/B3 European Futsal Championship in Italy at 2014. Socio-demographic Data Form and The State-Trait Anxiety Inventory (STAI) were applied to sportsmen one day before tournament in the camp hotel. Volunteers were provided with assistance by pollsters.

SOCIO-DEMOGRAPHIC FORM

This form include 4 personal questions (Age, Sport Age, Disability Category and Participated National Team)

STATE-TRAIT ANXIETY INVENTORY (STAI)

Spielberger et al (14) originally developed this inventory to separately determine state- trait anxiety levels. It was adapted into Turkish by Öner and Le Compte, and they also conducted reliability and validity studies (Öner, 1983).

This inventory contains 40 items. First 20 questions are for state anxiety and the other 20 questions are for trait anxiety. Participants rated each feeling item on a 4-point scale ranging from 1 (never) to 4 (always). Participants answer to this interval for each question. In the questionnaire 1, 2, 5, 8, 10, 11, 15, 16, 19 and 20th items are reverse expressions. The others items are direct expressions. The points respondents give for each question are summed to find reverse and direct expressions. The total point of reverse expressions is subtracted from the total point of direct expressions. Finally, 50 point is added to the obtained score. This result is state anxiety score. In the questionnaire 21, 26, 27, 30, 33, 36 and 39th items are reverse expressions. The others items are direct expressions. The points respondents give for each question are summed to find reverse and direct expressions. The total point of reverse expressions is subtracted from the total point of direct expressions. Finally, 35 point is added to the obtained score. This result is trait anxiety score. Higher scores indicated high anxiety and lower scores indicated low anxiety levels (Polat, Çoksevim, Günay, Pepe, 2010).

DATA ANALYSIS

Data was saved on computer by using SPSS package program (version 18.0). For the examination of data, for comparison between two independent groups the t-test was used and ANOVA was used for analysis of more than two groups. Post Hoc test was used to find the statistical difference among groups. The level of statistical error was 0.05.

FINDINGS

Table 1: Group comparison according to age variance

Anxiety	Age	N	Mean±SD	$F_{(2,27)}$	P	Difference
State-Anxiety	18- 23	9	39,67±4,18			
	24-29	14	39,29±3,69	0,44	0,96	P>0,05
	Above 30	7	39,14±3,34			
Trait-Anxiety	18- 23	9	34,78±1,30			
	24-29	14	34,36±1,50	0,34	0,71	P>0,05
	Above 30	7	34,29±1,11			

As it is seen in Table 1, there was not a statistically significant difference observed in state and trait anxiety levels according to age as state ($F_{(2,27)}$=0,44 p>0,05) and trait ($F_{(2,27)}$=0,34, p>0,05).

According to Table 2, there was not a statistically significant difference observed in state and trait anxiety levels according to sport age as state ($F_{(2,27)}$= 1,52, p>0,05 and trait ($F_{(2,27)}$= 0,30, p>0,05).

Table 2: Group comparison according to sport age variance

Anxiety	Sport Age	N	Mean±SD	$F_{(2,27)}$	P	Difference
State-Anxiety	Under 8	11	38,82±3,82			
	9-12	12	38,67±3,65	1,52	0,24	P>0,05
	Above 13	7	41,43±2,99			
Trait-Anxiety	Under 8	11	34,73±1,35			
	9-12	12	34±1,41	1,28	0,30	P>0,05
	Above 13	7	34,86±1,07			

Table 3: Group comparison according to disability categories variance

Anxiety	Eye Classification	N	Mean±SD	$F_{(2,27)}$	P	Difference
State-Anxiety	B1	16	42,06±2,41			1-3
	B2	6	36,17±2,04	24,81	0,00**	1-2
	B3	8	36,38±2			
Trait-Anxiety	B1	16	34,94±1,12			1-3
	B2	6	34,83±1,47	6,20	0,01**	1-2
	B3	8	33,25±1,89			

*P<0,05, **p<0,001

In table 3, both state anxiety levels ($F_{(2,27)}$=24,81, p<0,01) and trait anxiety levels ($F_{(2,27)}$=6,20, p<0,01) of the sample groups showed significant differences according to eye classification.

In Table 4 both state anxiety levels (p<0,01) and trait anxiety levels (p<0,05) of the sample groups showed significant differences according to national team categories.

Table 4: Group comporison according to national team variance

Anxiety	National Team Categories	N	Mean±SD	t	P
State-Anxiety	B1	16	42,06±2,41	7,17	0,00**
	B2/B3	14	36,29±1,94		
Trait-Anxiety	B1	16	34,94±1,12	2,20	0,05*
	B2/B3	14	33,93±1,38		

*P<0,05, **p<0,001

DISCUSSION AND RESULT

The state and trait anxiety levels of visually impaired elite futsal players were determined in relation to demographic variables in this study.

The findings don't suggest any statistical difference between age and state-trait anxiety levels of visually impaired elite futsal players (Table 1). Yanlıç et al examined anxiety levels of physically handicapped athletes playing volleyball in sitting position and found no significant relationship between age and state-trait anxiety (Yanlıç, Karademir, Çoban, 2011). In another study, Yücel (2003) stated that age was not an affecting factor of state and trait anxiety levels among sportsmen doing taekwondo. Findings of the presented study showed us similarity with the findings of the studies on literature. The reason that situation was thought that there were no ability identification model of this branches and starting age of athletes in this branches was too late in Turkey according to European countries.

There was not a statistically significant difference observed in state and trait anxiety levels according to sport age of elite futsal players with visually impaired (Table 2). Yücel studied on sportsmen who do taekwondo and found that high or low level of state and trait anxiety did not depend on the year of experience in that sport (Yücel, 2003). In another study, Başaran et al (2009) studied on state and anxiety levels of sportsmen who participated in different types of sports such as basketball, volleyball, handball, taekwondo and wrestling and found significant relationship in results. These different results indicate that it is necessary to do further studies

on different sport age groups. Besides, it was unexpected situation to find that athletes with higher sport age had higher state anxiety levels. The reason of this situation; older athletes' awareness of being national team athletes and feeling responsibility for this, to be aware of what positive and negative gains would have when they compete on behalf of national team, and difficulty to accept defeat psychology, then it can be considered as some of the factors of the high level of state anxiety.

When state and trait anxiety levels of the visually impaired futsal players were compared according to eye classification significant differences found between B1 and B3, B1 and B2 but there was not a statistically difference found between B2 and B3 (Table 3). Acet et al (2011) studied on anxiety levels of sportsmen with physically disabilities who participated in different types of sports such as amputee football, wheelchair basketball, archery, power lifting and shooting and there was not statistically difference found in either state or trait anxiety levels according to sport branch. It was thought that significant differences were found because of both visually impaired groups would participate to similar competition status (European Championship) but B1 Blind national futsal team provide a success at European championship in the past and they wanted to have a new success in similar tournament.

According to Table 4, Turkish B1 National Team's state and trait anxiety levels were classified as 42,06±2,41 and 34,94±1,12 respectively and both anxiety levels were classified as 36,29±1,94 and 33,93±1,38 for Turkish B2/B3 National Team. The range of 36-41 points state and trait anxiety levels were classified as high-level by N. Oner and A. Le Compte (Öner, 1983). Both state anxiety levels (p<0,01) and trait anxiety levels (p<0,05) of the sample groups showed significant differences according to national team categories. As it seen, both national team groups state anxiety levels were classified as high level. Turan et al (2015) studied on sub-elite in-door soccer players and the average score of the students' self-esteem was higher than the average scale scores (14,73± 4,15). In another study Sucan et al (2015) studied on sub-elite in-door soccer players and reported that there are positive increases in the self-esteem and other personality traits. Competitive sport can make even the world's most successful athlete feel nervous. Many factors such as expectations, perfectionism, fear of failure, lack of confidence, induce feelings of anxiety in athletes (Moran, 2004).

B1 futsal is one of the branches of Paralympic but B2/B3 futsal are not like that. Award regulation of Turkish Government is higher for the branches which are Paralympic. Because of this reason, it can be considered as one of the most important factors that has higher level of state and trait anxiety levels than B2/B3 futsal players
As a result of the study, trainers should consider anxiety levels of visually impaired sportsmen according to their eye classification. Trainers should develop training programs which will contain not only physical skills but also psychological state.

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EXAMINATION OF THE RELATIONSHIP BETWEEN BRANCHES OF SPORTS SCIENCE FACULTY STUDENTS AND THEIR PROBLEM SOLVING SKILLS

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ABSTRACT

In this research, it is aimed to reveal whether there is a relation between departments in which Faculty of Sport Sciences students are enrolled, the sport branches of the students and their problem solving skills or not. Totally 207 (71 female and 136 male) Uşak University Faculty of Sport Science students participated in this study. 145 of them are studying in Physical Education and Sport Teaching department and 62 of them are studying in Sport Management department.

In this study, personal information form developed by researcher and originally developed by Heppner and Peterson (1982) and then adapted to Turkish by Şahin and Heppner (1993)   "Problem Solving Inventory" were used as data collection tools. Descriptive statistics, Kruskal Wallis H, Man Whitney U and Anova were utilized in analyze of obtained data. The significance level was considered as 0.05.

As a conclusion, while no significant difference was found between genders in terms of problem solving skills at the total scores and sub-dimensions, on the other hand between Physical Education and Sport Teaching and Sport Managment statistically significant consequences were obtained in favour of teaching department. It was determined that problem solving skills of the students who are interested in individual sports and the students whose branches are basketball are better than the students who are interested in volleyball, football and badminton.

Key words: Problem solving, Physical Education, creativity in problem solving, sportive student

INTRODUCTION

Problem solving skill is defined as a process of removing problems to reach desired goal by Bingham (Bingham, 1998). The individual needs to certain amount of knowledge and experience to remove the problem that the individual encountered. It can be mentioned about accumulation of knowledge dating back to the childhood years. Especially children will meet some problems when the things don't go to the plan and they will seek for solutions to handle the problems, even in this process they will make some mistakes which provide them to find the right solution on their own (Berke, 2016). Problem solving skill, being able to handle the problems, is an important vital skill that affects and involves in every part of individual's life (Temel, 2015). This skill is important to handle the individual's problems about society and his/her own. The development of problem solving skill is a subject that starts in the family and needs to emphasize at schools by educators. Because the development level of this skill differs from each individual.

When we speak of sportive activities, everyone thinks about just physical performance. But it should be considered that sportive activities are the whole of social activities as well as physical, mental and psychomotor performance (Kuru, 2000). So the problem solving skill is directly proportional to the character development. Individuals, who are not shy, have high self-esteem and self-respect are more skillful about problem solving skill because of their entrepreneurial characters and not being afraid of taking responsibility (Afyon et al., 2014). Individuals with enterprising characters are more successful about problem solving skill because they are aware of their capabilities and they know their rights (Efe, Öztürk & Koparan, 2008). It has been seen that individuals who have weak problem solving skill are more anxious, have lower self-esteem and have more emotional problems compared to the other individuals who are good at problem solving skill (Şentürk, 2010 & Heppner and Baker, 1997).

In some cases personal creativity might be needed besides knowledge and experience to solve the problem (Basmacı, 1998). It is taught that there is a connection between problem solving and creative thinking (Güzel, 2004). The need of innovative and creative solutions for special circumstances increases day by day (Collins, Sibthort & Gookin, 2016).

This study aims to reveal the fact that whether there is a relation between the departments that students of sport science faculty registered, sport branches they interested in and their problem solving skills.

METHOD

Totally 207 students (71 female and 136 male) of Uşak University Sport Sciences Faculty take part in this study. 145 of these students are studying at Physical Education and Sport Teaching Department and the other 62 students are studying at the Department of Sports Management. All students who take part in this study are asked to answer the Personal Information Form developed by the researcher, and the Turkish version of Problem Solving Inventory developed by Heppner and Petersen (1982) then translated into Turkish by Şahin and Heppner (1993).

The inventory used in the research measures the self-perceiving about individual's problem solving skill and it is a type of likert scale graded 1 to 6 and consisted of 35 items. During the evaluation 3 of 35 items of inventory left out of the evaluation as its original. And inventory consists of 6 sub-dimensions, these are; Hasty Approach, Considerate Approach, Self-Confident Approach, Avoidant Approach, Evaluative Approach and Planned Approach.

It is found that the Cronbach's Alpha internal consistency of the scale was 0.88 and by using split-half method the reliability co-efficient was 0.81 (Aldemir, Biçer & Kale, 2014). The 6 factors of likert type measurement tool consist of 35 items as 'I always behave like this.'(1) and 'I never behave like this'(6). After reversed of the negative items (1., 2., 3., 4., 11., 13., 14., 15., 17., 21., 25., 26., 30., 34. items) and left the 3 items (9., 22., 29. items) out of the scale, the scoring range changes between 39 and 192. If the total score of individual is low, it means individual's problem solving skill is high. After the calculation, results indicate that scores between 32-85 are high, 86-138 are medium, 139-192 are low level of problem solving skill (Şahin, Şahin & Heppner, 1993).

FINDINGS

Table1: The relation between students' departments and their problem solving skills

Department	Median(Min:Max)	P value
Physical Education and Sports Teaching (n=145)	86(49:154)	p<0,001
Sports Management (n=62)	101(67:130)	

At Table1 there are statistical datas as a result of comparison of the relation between students' departments and their problem solving skills. The comparison results indicates that there are significant differences between Physical Education and Sports Teaching Department and Sports Management Department (p<0,001). Sports Management Department's median value of problem solving skill is higher than Physical Education and Sports Teaching Department's median value of problem solving skill. Students of Sports Management Department think that they are more inadequate about problem solving skill than the students of Physical Education and Sports Teaching Department. In that case, it can be concluded that Physical Education and Sports Teaching Department students' problem solving skill perception is in more positive direction compared to the students of Sports Management Department.

Table 2: Problem Solving Skill Scores of Students According to Their Sport Branches

Students' Sport Branches	N	Mean	SD
Volleyball	31	94,29	23,75
Individual Sports	84	83,90	19,48
Basketball	10	74,70	14,70
Football	69	90,88	19,63
Badminton	13	90,37	14,57

At Table 2 there are distribution of students according to their sport branches, averages of their scores from Problem Solving Inventory and their standard deviation scores. If the scores getting from the inventory are high, it means the problem solving skill perception is low. But if the scores getting from the inventory are low, it means the problem solving skill perception is high. So we can say that Basketball and Individual Sports groups have the highest level of problem solving skill perception. And the Volleyball group has the lowest level of problem solving skill perception.

Table 3: Results of the Pairwise Comparison According to the Students' Branches

Branches	Volleyball	Individual Sports	Basketball	Football	Badminton
Volleyball		P=0.027	P=0.019	P>0.05	P>0.05
Individual Sports	P=0.027		P>0.05	P=0.043	P>0.05
Basketball	P=0.019	P>0.05		P=0.012	P=0.038
Football	P>0.05	P=0.043	P=0.012		P>0.05
Badminton	P>0.05	P>0.05	P=0.038	P>0.05	

At Table3 there are results of the pairwise comparison according to the students' branches. When we examine the table we can see that there is significant difference between Volleyball and Basketball branches (p=0,019). The average of the total score of problem solving skill at Volleyball branch is higher than Basketball branch. So we can say that the problem solving skill perception of the students of Basketball branch is in more positive direction than other students who are interested in the Volleyball branch. On the other hand students of Volleyball branch feel more inadequate about problem solving skill perception compared to the students of Individual Sports. In that case it can be understood that problem solving skill perception of students of other branches are in a more positive direction than students of Volleyball branch. According to the table, students of Football branch feel more inadequate about problem solving skill perception compared to the students of Basketball branch.

Table 4: The Relation between Student's Hasty Approach Attitude and Their Sport Branches

Branch	Mean±S.D	P value
Football (n=69)	31,44±6,93	0,045
Individual Sports (n=84)	28,58±6,06	

It is understood that there is significant difference between football and individual sports students as a result of pairwise comparison to find out about the differences between branches (p=0,045). It can be concluded that students of individual sports use the hasty approach less than football students do because individual sports students' average total score of hasty approach is lower than scores of football students.

Table 5: The Relation Between Student's Considerate Approach Attitude and The Programmes They Study

Department	Median(Min:Max)	P value
Physical Education and Sports Teaching (n=145)	11(5:30)	0,001
Sports Management (n=62)	15(7:29)	

As a result of pairwise comparison , statistically significant difference between Physical Education and Sports Teaching Department and Sports Management Department is obtained (p=0,001). It is seen that Physical Education and Sports Teaching Department students' total score median value of considerate approach is higher than Sports Management Department students' total score median value of considerate approach. So it can be understood that students of Physical Education and Sports Teaching Department use considerate approach more than students of Sports Management Department do.

Table 6: The Relation Between Student's Avoidant Approach Attitude and The Programmes They Studey

Department	Median(Min:Max)	P value
Physical Education and Sports Teaching (n=145)	9(4:23)	0,002
Sports Management (n=62)	10(4:20)	

There is a statistically significant difference between two departments in terms of avoidant approach (p=0,002). Physical Education and Sports Teaching Department students' total score median value of avoidant approach is lower than Sports Management Department students' total score median value of avoidant approach. In other words, Physical Education and Sports Teaching Department students use avoidant approach less than Sports Management Department students use.

Table 7: The Relation Between Student's Self-Confident Approach Attitude and The Programmes They Study

Department	Median(Min:Maks)	P value
Physical Education and Sports Teaching (n=145)	17(8:41)	0,006
Sports Management (n=62)	17(7:35)	

There is a statistically significant difference between two departments in terms of self approach (p=0,006). Sports Management Department students' total score median value of self-confident approach is higher than Physical Education and Sports Teaching Department students' total score median value of self-confident approach so it can be concluded that Sports Management Department students use self-confident approach less than the others.

DISCUSSION

People encounter a lot of problem every part of their lives and they always try to find solutions for these problems and they will never stop seeking for solutions. Today, especially in our country trying to do sports or lead other people to do sports mean to face many problems. To do sports or lead other people to do sports we may have to face many problems such as school management, families, financial potentials etc. Under these circumstances, problem solving skills of students who achieved this struggle and had a chance to study at the Physical Education Department of universities can be seen as developed. In the light of the datas obtained from this study, it is determined that problem solving skill perception of students, studying at Sport Sciences Faculty, is at a medium level. This result shows similarities with the results of Kiremitçi and Canpolat (2014). Aldemir, Biçer & Kale obtained the similar results when they studied about football players aged between 16-20. Çağlayan, Taşğın & Yıldız (2008) came to a conclusion that indicates problem solving skill of high school students who do sports is at a medium level like this study. However, Karabulut and Pulur (2011) have demonstrated different results by this work that youth engaged in sports actively had higher scores than youth doing sports only for health or youth away from sports in terms of problem solving skill in their study on youth center members young athletes. Erozkan (2013) concluded a significant correlation between emotional intelligence and problem solving skill of students of Faculty of Education and Physical Education Teaching Departments. In his study, Otacıoğlu (2011) realized that students of Musical Education Department have a higher level of problem solving skill perception in terms of sub-dimensions such as approaching, avoidance and personal control compared to the students of Psychological Counseling and Guidance Department. Özen (2015) who used indoor climbing as a sportive activity determined that these activities help children to develop their problemsolving perception.

When examined in terms of both total score and sub-dimensions, problem solving skill perception of Physical Education and Sports Teaching Department students is higher than students of Sports Management Department. The results are obtained in favor of students who are studying at teaching department with regard to considerate approach, self-confident approach and avoidant approach. In our country generally more successful students choose Physical Education and Sports Teaching Department firstly compared to the other departments of Physical Education so this situation may cause this result. It is detected that basketball and individual sports students have the highest level of problem solving skill perception as a result of comparison of students' branches. Any significant differences cannot be determined between Volleyball, Football and Badminton players.

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EXAMINING OF MATHEMATICS TEACHERS AND TEACHER CANDIDATES' PEDAGOGICAL CONTENT KNOWLEDGE REGARDING THE ALGEBRA WITHIN THE CONTEXT OF STUDENTS' ANSWERS

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ABSTRACT

Algebra is one of the main learning areas of mathematics. The present study extends past, as in other areas of mathematics, algebra learning domain refers to the many challenges and misconceptions faced by the students. to overcome the difficulties encountered in algebra teaching, learning can be achieved with the right approach. This way the training of teachers of possible strengthening of the pedagogical content knowledge. For a start, in addition to teachers who are already in office, he has yet to determine whether the teachers take teaching step in what level of pedagogical content knowledge is also of great importance. In this study, teachers and teachers of mathematics, algebra Grade 6 to recovery of two different learning areas located in the two sets be ranked from easy to difficult problems has been requested. In doing so, the justifications were asked why they did sort this way. In this way, we have tried to determine their approach to the question. The participants of the study, which consists of a state university in mathematics teaching reading in primary mathematics teachers and 38 mathematics teachers who volunteer to serve in two different primary schools. Designed as a research case study, data were analyzed based on qualitative research techniques. In the literature, making use of criteria were established for the determination of pedagogical content knowledge (Ball&Thames&Phelps, 2008) participant responses were grouped under different categories. At the end, one of the teachers and teachers' questions appeared to be different from one sorted. Dismissal question of sorting student teachers who were determined that they care more than knowledge and skill levels. These differences are discussed in the context of the importance of pedagogical knowledge and brought different proposals for the development of such information.

INTRODUCTION

Content Knowledge of the teachers, an essential aspect of education and training process, has inarguably a significant effect upon the success of the students. There are ongoing discussions on what the Content Knowledge that a teacher should have is. Those researches have evolved into a notable frame thanks to the support of the experimental studies in our day. With reference to Shulman (1986) and Shaw's (1903) infamous saying as " He who can, does. He who cannot, teaches. " , which started the arguments, Shulman (1986) initially put forward the Content Knowledge as follow:

- Content Knowledge
- Pedagogical Content Knowledge
- Curriculum Knowledge

A year later the same researcher, (Shulman, 1987) revised the knowledge that a teacher should have and expressed it as follow :

- Content Knowledge
- General Pedagogical Knowledge
- Curriculum Knowledge
- Pedagogical Content Knowledge (PCK)
- Knowledge About the Learners
- Knowledge on Forming a Educational Environment
- Knowledge on the Philosophical and Historical Objectives of Education

The component of Pedagogical Content Knowledge mentioned here was then centralised and made the subject of further researches. Ball, Thames and Phelps (2008) broadened the study of Shulman (1986) on "knowledge of teaching" , and stated new developments upon the nature of the content of "knowledge to teach". Contrary to the theoretical studies conducted so far then, this time experimental studies rather than the Curriculum Knowledge were carried out in order to seek answers to the questions that remained unanswered. In their study that seeked answers to the question "what are the components necessary for teaching?" , the issue of "mathematical knowledge for teaching" was handled in two categories as "subject matter knowledge" and "pedagogical content knowledge" by the researchers. This structure is illustrated in figure 1:

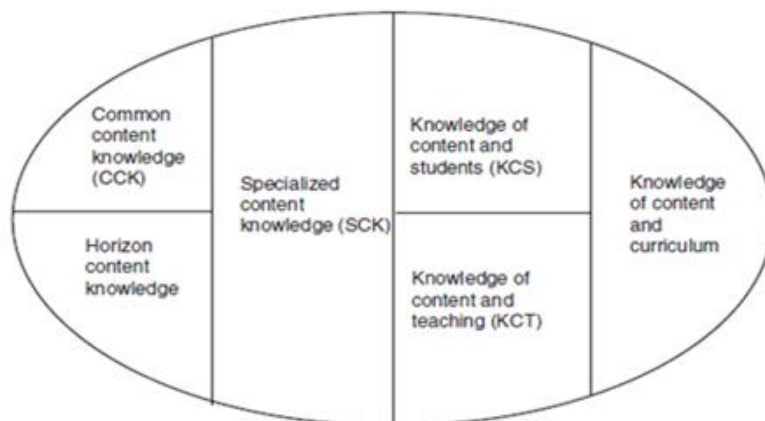# DOMAINS OF MATHEMATICAL KNOWLEDGE FOR TEACHING

Figure 1: Domains of Mathematical Knowledge for Teaching

The first section of this frame; Subject Matter Knowledge, which we have benefited from in our study, comprises of three categories as; *Common Content Knowledge (CCK)* , *Specialized Content Knowledge (SCK)* and *Horizon Content Knowledge (HCK)*. those categories are explained below:

Common Content Knowledge (CCK): CCK, apart from teaching, is defined as the mathematical knowledge and skill that are used for organization. The teacher is to be able to detect a wrong answer coming from a student or an incomplete definition in a book. The teacher is supposed to apply the correct terminology and notation when s/he writes something on the board.

Specialized Content Knowledge (SCK): SCK is defined as the special mathematical knowledge and skill used in teaching. SCK has no typical objective but teach. This type of knowledge deals with issues such as looking for a model in students' mistakes or searching if solutions apart from the standart approaches work or not.

Horizon Content Knowledge (HCK): This type of knowledge involves comprehending the relations among mathematical subjects and concepts. Benefiting from this type of knowledge, the teacher can estabilish a relation between the previous or next subject, and helps students do the same.

Pedagogical Content Knowledge, like the first structure, comprises of three sections as; Knowledge of Content and Students (KCS), Knowledge of Content and Teaching (KCT), and Knowledge of Content and Curriculum (KCC). Those sections that form the focus of our study are explained in detail below:

Knowledge of Content and Students (KCS) : This type of knowledge is quite like the combination of knowing the students and knowing mathematics. The teacher is expected to know what the students are capable of thinking and what things they find confusing. While choosing the examples, the teacher should also be able to foresee whether the students find them interesting, motivating or not. This type of knowledge requires the teachers be close to the students and their type of mathematical knowledge.

Knowledge of Content and Teaching (KCT): KCT is a combination of knowing to teach and knowing mathematics. Most of the mathematical tasks to be used in teaching require mathematical knowledge to design the structure. The teacher composes a special content for the structure and can choose which example s/he starts with and which examples would deepen the learning of the students. The teacher can evaluate the advantages and disadvantages of the methods that s/he will apply. The materials that the teacher will use are designed in such a way that they consist not only of the mathematical understanding but also the pedagogical approach.

Knowledge of Content and Curriculum (KCC): This type of knowledge requires having a comprehensive knowledge of the curriculum, teaching the lesson at the convenient level and using the relevant curriculum tools.

There are various studies in the literature on how to determine the teacher candidates' mathematical knowledge to teach. This study was designed to fill a gap in the algebra field in Turkey due to the fact that most of such studies focus on geometry (Bozkurt&Koç, 2012; Altaylı&Konyalıoğlu&Hızarcı&Kaplan, 2014; Çakmak&Konyalıoğlu&Işık, 2014 Gökkurt&Şahin&Soylu&Doğan, 2015;).

Problem: Which components of Mathematical Knowledge for Teaching are related with the teachers and teacher candidates' reasons for putting the questions selected from the algebra field into an order from easy to difficult?

METHOD
Of the qualitative approaches, a case study was used in this study. A case study investigates one or a few subjects thoroughly and puts forward the factors of a case, and defines how those factors affect the case or how the case is affected by those factors (Yıldırım and Şimşek, 2008). In our study, the answers of students and teachers were analysed from the documents.

Data Collection Tool
As for data collection tool, a problem paper consisting of 4 questions that cover an acquisition in the algebra field selected from the 6th grade program was used. The questions used cover the acquisitions of 6th grade and they may cover acquisitions beyond 6th grade as well. The said acquisition is in the Turkish secondary school mathematics program and is as follows: "6.2.1.1. Can express the rule of the arithmetic series in letters; can find the rule of the expected term which is put in letters".

Participants of the Study

The participants of the study are;
- 38 teacher candidates (6 male and 32 female) who are studying their 3rd year in the department of Elementary Mathematics Education at a state university.
- 2 mathematics teachers at an elementary school. Either teacher is female and has 15 years of working experience.

Data Collection

The application was carried out within the scope of the course Algrebraic Concepts and Approaches in Teaching. Each teacher candidate was given a problem paper that has 4 questions in and asked to put them into an order from easy to difficult by giving their reasons for doing so. They were also asked to evaluate the reasons for the difficulty with its all aspects. The two experienced mathematics teachers were asked to do the same as well. Teachers firstly analysed the questions individually, and then they were asked to discuss it among each other and arrive at a consensus. Another mathematics teacher joined the discussions right afterwards, and they defined the difficulty level of the questions from the point of the components of Mathematical Knowledge for teaching (Ball, Thames and Phelps, 2008). We tried to specify how differently the teachers and teacher candidates made the order from one other.

Sub-Categories that are used to determine the mathematical knowledge for teaching;

- Common content knowledge: CCK

- Horizon content knowledge: HCK

- Specialized content knowledge: SCK

- Knowledge Of Content And Students: KCS

- Knowledge of Content And Teaching: KCT

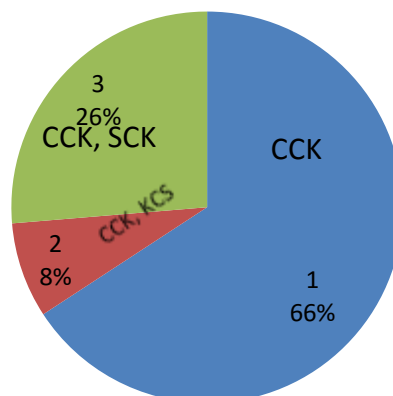- Knowledge of Content And Curriculum: KCC

abbreviated as above.

How much of the answers of the students matched to the answers supplied by the teachers was also analysed.

FINDINGS

Findings Regarding the First Question

For the 1st question, the teachers stated; CCK, SCK, KCS; 25 students stated CCK; 3 students stated CCK, SCK and 10 of them stated CCK, KCS.

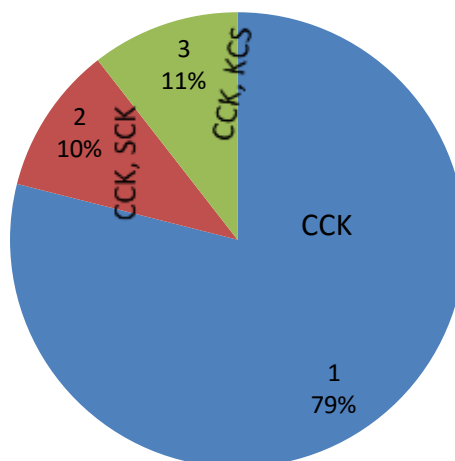**Percentage Distribution of Students' Statements for 1st Question**

%66 of students' answers focus on the common content knowledge. However the experts state that the common content knowledge also covers the specialized content knowledge and knowledge of content and students. Only %8 of the students included their knowledge of content and students while they were analysing the questions.

Findings Regarding the Second Question
For 2nd question, the teachers stated CCK, SCK, KCS, KCC; 30 students stated CCK; 4 students CCK; SCK, and 4 of the students stated CCK, KCS.

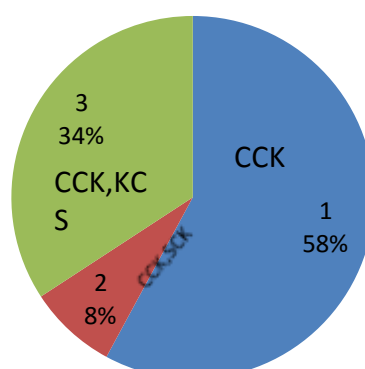**Percentage Distribution of Students' Statements for 2nd Question**

Analysing 2nd question, it is observed that students' statements mainly focus on the common content knowledge (%79), and only %4 of them cover the specialized content knowledge (SCK) and knowledge of content and students (KCS).

Findings Regarding the Third Question
For 3rd question, teachers stated CCK, SCK, KCS; 22 students stated CCK; 3 students CCK, SCK, and 13 students stated CCK and KCS. As in the earlier questions, the tradition was not broken and answers mainly focused on the common content knowledge.
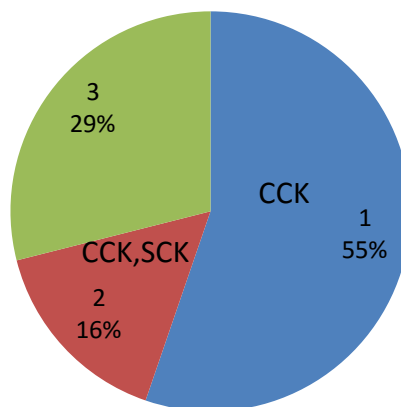
Percentage Distribution of Students' Statements for 3rd Question

Findings Regarding the Fourth Question

For the fourth question, the teachers stated CCK, HCK, SCK, KCS; 21 students stated CCK; 6 students CCK and SCK, and 11 students stated CCK, KCS.

Percentage Distribution of Students' Statements for 4th Question

In the fourth question, the focus was mainly on the common content knowledge, however an interesting finding was also observed, which is that no students referred to the "horizon content knowledge". This clearly suggests that the teacher candidates do not have a comprehensive knowledge of the elementary school programs.

CONCLUSIONS AND DISCUSSION

The data gathered in the study suggest that while they were putting the questions into an order from easy to difficult, the teacher candidates attending their 3rd year in the department of Elementary Mathematics Education at a state university mainly made their evaluations in compliance with the subject matter knowledge rather than pedagogical content knowledge, which clearly points out the fact that the teacher candidates have a low level of pedagogical content knowledge and have difficulty handling a teaching material from the perspective of student, teacher and curriculum. Çalık and Aytar (2013) arrived at similiar findings in their own study as well. Hacıömeroğlu (2013) also found out that the teacher candidates had a low grasp of KCS.

Results of various studies conducted, which also support these findings indicate that teacher candidates have insufficient pedagogical content knowledge in many mathematical subjects. (Ball, 1990a, 1990b; Baumert et al, 2010; Gökkurt, Şahin, & Soylu, 2012; Lannin et al., 2013; Lubinski, Fox, & Thomason, 1998; Ma, 1999; Nagle & McCoy, 1999; Tirosh, 2000; Toluk-Uçar, 2011).

Apart from these, all students have a good command of common content knowledge. That they were successful in solving the problems is an indicator to that. The reason for this could be the questions were from the elementary level and the teacher candidates could solve them with the basic knowledge that they have.

The first place that the teacher candidates acquire professional competence is the teacher training colleges. Therefore teacher candidates should be given more opportunity to perform activities in order that they should be able to comprehend and have a grasp of knowledge of students (Penso 2002).

On the other hand, PCK is a type of knowledge that usually develops along with the teaching experience (Grossman, 1990; National Research Council (NRC), 1996; Baxer & Lederman, 1999). So, it can be expected that the teacher candidates with little or no experience in the field have a low level of PCK. Teachers increase

and enhance their knowledge, experience and pedagogical content knowledge as long as they work, teach, cooperate with colleagues and even make mistakes (National Research Council, 1996). Therefore it is not only helpful but also useful for the teacher candidates that they should do more practice, work on student products with the counselling teachers and do exchange of ideas with other teachers especially during their practical training courses at schools.

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EXAMINING SOCIAL STUDIES TEACHER CANDIDATES' VIEWS ON HABIT OF READING BOOKS ABOUT POLITICAL ISSUES BASED ON DIFFERENT VARIABLES

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ABSTRACT

Statement of the Problem: Reading habit is a prominent element for social development Books are the primary tool for information consumption. Equipping individuals with the habit of regular and continuous reading is an important way for improving the level of welfare in the society. Although reading books is of great importance, sufficient interest cannot be attracted to this habit. In a study on the reading habit of university students, it was found that only 5% of the students spent their free time with reading, and only 26% read books outside classes (Esgin&Karadağ, 2000: 21). A good social studies teacher should have the abilities to understand and use politics, criticize politics, express views about politics, and the skill of understanding how political knowledge and attitudes affect societies. In addition, a social studies teacher should have the habit of reading books about politics so that he/she can have background knowledge on politics.
Aim of the Study: The aim of this study is to reveal the views of social studies teacher candidates who were final year students in the Education Faculty of Pamukkale University on the habit of reading books about politics.
 Method: In the study, survey method was used to determine the teacher candidates' views.
Data Gathering Tool: The data were gathered through the "Scale of Identifying Teacher Candidates' Views on the Habit of Reading About Political Issues" developed by Tarhan (2015).
Participants: In the selection of the participants, convenient sampling that is one of the purposive sampling methods was used. The participants of the study were 126 social studies teacher candidates studying at the Education Faculty of Pamukkale University in the 2015-2016 academic year.
Findings: The research process is still in progress. The findings will be presented after the necessary analyses.
Key words: Politics, Teacher Candidates, Reading Books, Qualitative Research.

INTRODUCTION

Reading habit is a prominent element for social development, and books are the primary tool for information consumption. Developments and changes need to be followed constantly in order to achieve progress within the society. Equipping individuals with the habit of regular and continuous reading is an important way for improving the level of welfare in the society. Reading is a crucial skill in terms of individuals' personal development in that learning continues outside the school as well.

Beside gaining the habit of reading, it is also important that the act of reading is performed as a skill. Instead of quick reading and scanning, students need to acquire competencies such as having a critical perspective, looking for information in appropriate sources, and associating their prior knowledge to the new information obtained.

The importance of reading as a habit cannot be neglected because learning continues outside the school as a life-long process, and in individuals' personal development. Although the significance of gaining the habit of reading is known, research shows that the desired interest and motivation in reading as well as the necessary infrastructure and opportunities cannot be ensured. In this regard, in a study on the reading habit of university students, it was found that only 5% of the students spent their free time with reading, and only 26% read books outside classes (Esgin&Karadağ, 2000: 21). A similar result was also reported by Gömleksiz and Telo (2003) who focused on students at an education faculty.

In this case, it can be argued that the habit of not reading is common in our society rather than the reading habit. The only way to gain this habit and improve it as a skill is reading regularly. In this sense, the habit of reading can be developed in early ages (Collins, 1996; Sangkaeo, 1999).

Individuals who have the habit of reading choose the content of what they reading depending on their interests, expectations, needs, wishes and statuses in their process of reading regularly. Interest in history leads them to read publications on history, whereas the aim of achieving certain economical goals orients them towards resources that include the knowledge of economy. In higher education institutions, students have the opportunity to increase their knowledge and skills in the area of their choice beyond performing the profession that they aim to practice. Other than reading textbooks on their area, the desire to obtain information from different resources is about whether students have gained the habit of reading or not.

Politics, a discipline within social sciences, is perceived as distant and even undesirable in the society. Moreover, due to this perception, students are advised not to be involved in politics. This understanding stems from the fact that politics is limited to a narrow area as something that only those practising politics should know about, or it looks as if it is merely about a group of individuals coming together to criticize the ruling party. In fact, politics is a way of life that concerns everybody in the country where it is practised. Talking about politics, which is interwoven with life, without any background knowledge but based on hearsay information can neither move it further as a science, nor contribute to the humanity in terms of enhancing the standards of living. The social studies course that primarily aims to train effective citizens expects from its teachers to equip their students with the skills that effective citizens need to have. Some of these skills include critical thinking and involvement.

In the literature, no studies have been encountered which focused on social studies teacher candidates' views on the habit of reading about politics. In this respect, there is a need to make an in-depth examination of their views on this issue. The aim of this study is to reveal the views of the social studies teacher candidates who study their fourth year at the Faculty of Education, Pamukkale University, on the habit of reading books about political issues. Based on this aim, the following research questions were addressed in the study:

- Do the teacher candidates' views on the habit of reading about political issues differ based on gender and the number of books possessed?
- Do the teacher candidates' views on the habit of reading about political issues without considering any variables?

METHOD

This study was designed based on the survey model. In this regard, some of items in the scale developed by the researcher were revised or excluded after the opinions of field experts were obtained, and the pilot implementation was conducted.

Participants

The characteristics of the sample are presented in Table 1.

Table 1. Characteristics of the Sample

		f	%
Gender	Male	62	49,20
	Female	64	50,80
TOTAL 100			

The population of the study consisted of the teacher candidates studying their fourth year at the Faculty of Education, Pamukkale University, in the 2015-2016 academic year. First, second and third year students were not included because they had not completed the subject area and methodological courses then. The sample comprised of 126 teacher candidates in total. As is seen in the table, 62 of these teacher candidates were male, and 64 were female.

Data Gathering Tool

A scale developed by Tarhan (2015) was used to identify the social studies teacher candidates' views on the habit of reading books about political issues.In the questionnaire consisting of 28 items, 5-point likert scale was used. While 5 referred to strongly agree, 1 was strongly disagree. The reliability coefficient (Cronbach Alpha) of the scale was calculated as ,88.

Data Gathering and Analysis

The scale used in the data gathering process was administered to the social studies teacher candidates on a voluntary basis by the researchers and the data were transferred to computer environment. In data analysis, t-test and one-way variance analysis (ANOVA) was performed by using SPSS 17.0 package program.

FINDINGS and INTERPRETATION The findings and interpretations regarding the teacher candidates' views on the habit of reading about political issues are presented in this section.

Findings for the First Research Question and Interpretations

Whether the teacher candidates' views differed based on their gender was examined to address the first research question. T-test was performed in this respect, and the findings are shown in the table below.

Table 2. Comparison of the Teacher Candidates' Views on the Habit of Reading About Political Issues Based on "Gender" (t-test)

Groups	N	$\overline{\mathrm{X}}$	Ss	t	df	p
Female	64	105,7031	12,11149	2,296	124	0,23
Male	62	110,8871	13,18855			p>0,05 Difference not significant

The result showed that the male and female teacher candidates' views were different from each other [$t_{(0,05;\ 126}$ = 2,296]. The level of the female teachers' habit of reading books about political issues ($\overline{\mathrm{X}}$ = 105,7031) was lower than that of the male teachers ($\overline{\mathrm{X}}$ = 110,8871).

Whether the teacher candidates' views differed based on the number of books they possessed was also examined with regard to the second research question. The results of the analyses are shows in Table 3.

Table 3. Means and Standard Deviations for the Teacher Candidates' Views Based on the Number of Books

Number of Books Possessed	N	$\overline{\mathrm{X}}$	Ss
Less than 10 books	20	109,050	10,772
11-25 books	18	108,166	12,926
26-50 books	22	110,227	14,780
51-100 books	21	102,428	12,027
More than 100 books	45	109,688	12,851
TOTAL	126	108,254	12,867

As is seen in Table 4, the mean of the teachers who had 26-50 books was 110,227, that of those who had more than 100 books was 109,688, that of those who had less than 10 books was 109,050, that of those who had 11-25 books was 108,66, and that of those who had 51-100 books was 102,428. The results of the variance analysis conducted to see whether there were significant differences between the groups are presented in the table below.

Table 4. Results of the Variance Analysis for the Differences Between the Teacher Candidates Views Based on the Number of Books

	Sum of Squares	sd	Mean Square	F	p
Between-groups	903,772	4	225,943	1,381	,244
Within-groups	19794,101	121	163,588		
TOTAL	20697,873	125			

As can be seen in Table 2, variance analysis was performed to determine whether there were significant differences between the teacher candidates' views based on the number of books they had, and no significant differences were found as a result of the analyses. Consequently, it can be argued that teacher candidates' views on the habit of reading books about political issues do not change based on the number of books they have.

Findings for the Second Research Question and Interpretations

With this research question, it was aimed to examine the teacher candidates' views without taking any variables into account. Frequencies and percentages for their answers in the scale were calculated along with the means of all items, and the results are presented in Table 5.

Table 5. Frequency, percentage and mean score values related to the teacher candidates' views

INDEX ITEMS	Strongly Agree		Agree		Somewhat Agree		Agree		Strongly Disagree		X
	f	%	f	%	f	%	f	%	f	%	
9. A teacher candidate who does not read books about political issues can still be a good teacher.	66	48,2	47	34,3	10	7,3	3	2,2	-	-	4,39
26. I think reading books about political issues contributes to one's development.	57	41,6	55	40,1	10	7,3	4	2,9	-	-	4,30
14. Reading different books about political issues enables one to form his/her own ideas.	52	38,0	55	40,1	15	10,9	4	2,9	-	-	4,23
23. Reading books about political issues enables one to take part in political discussions without a hesitation.	43	31,4	71	51,8	8	5,8	4	2,9	-	-	4,21
22. I like reading books about political issues.	43	31,4	66	48,2	15	10,9	1	0,7	1	0,7	4,18
17. I have a library with many books on politics.	40	29,2	63	46	20	14,6	3	2,2			4,11
24. Reading books about political issues changes our perspective to politics.	44	32,1	57	41,6	20	14,6	4	2,9	1	0,7	4,10
15. I think reading books about political issues is boring.	39	28,5	66	48,2	17	12,4	1	0,7	3	2,2	4,9
16. I think reading books about political issues would be useful to understand today's politics.	38	27,7	63	46	19	13,9	4	2,9	2	1,5	4,04
27. I think reading books about political issues develops high-order skills (analysis, synthesis and evaluation) in views	35	25,5	69	50,4	16	11,7	4	2,9	2	1,5	4,03

on politics.											
19. I think reading books about political issues contributes to being more conscious about politics.	32	23,4	65	47,4	20	14,6	4	2,9	5	3,6	3,91
13. Reading books about political issues enables one to have a political opinion.	34	24,8	53	38,7	32	23,4	7	5,1	-	-	3,90
25. I think it is important to read books about political issues in order to understand significant political events.	34	24,8	52	38	33	24,1	7	5,1	-	-	3,89
21. I regularly read books about political issues.	30	21,9	58	42,3	29	21,2	8	5,8	1	0,7	3,85
12th	31	22,6	49	35,8	39	28,5	6	4,4	1	0,7	3,82
28. Reading books about political issues enables us to easily express our feelings and thoughts related to politics .	32	23,4	55	40,1	24	17,5	10	7,3	5	3,6	3,78
Eleventh I think the best way to learn politics is to read books about political issues.	32	23,4	41	29,9	45	32,8	7	5,1	1	0,7	3,76
20. I prefer reading books of different kinds rather than those about political issues.	18	13,1	72	52,6	26	19	9	6,6	1	0,7	3,76
1. Reading books about political issues provides individuals the chance to be an active participant in the events about themselves and their society.	36	26,3	24	17,5	40	29,2	16	11,7	10	7,3	3,48
8. I think I can obtain political information thanks to reading books about political issues.	23	16,8	33	24,1	29	21,2	23	16,8	18	13,1	3,16
18th Reading various books about political issues shows individuals that there are different opinions and decisions as well.	12	8,8	63	46	20	14,6	3	2,2	-	-	3,015
6. I think reading books about political issues helps individuals form unique ideas for the	9	6,6	30	21,9	48	35	22	16,1	17	12,4	2,94

solution of personal and social problems.											
3. Reading books about political issues help individuals easily comprehend a political incident.	21	15,3	19	13,9	36	26,3	31	22,6	19	13,9	2,94
10. Reading books about political issues increases my interest in politics.	11	8	33	24,1	33	24,1	36	26,3	13	9,5	2,94
2. Reading books about political issues helps us understand the problems related to politics.	12	8,8	16	11,7	41	29,9	39	28,5	18	13,1	2,72
4. Reading books about political issues helps us understand political developments in our country and the world.	13	9,5	15	10,9	38	27,7	36	26,3	24	17,5	2,66
7. I feel my self more comfortable in environments where political topics are discusses because I read books about political issues.	6	4,4	16	11,7	30	21,9	31	22,6	43	31,4	2,29
5. Individuals who read books about political issues would more easily accumulate knowledge of politics.	4	2,9	9	6,6	15	10,9	38	27,7	60	43,8	1,88

RESULTS AND DISCUSSION Sixty-six teacher candidates who participated in the study (48,2%) thought that a teacher who does not read books about political issues can still be a good teacher. On the other hand, 57 teacher candidates (41,6%) argued that reading books about political issues would contribute to individuals' development, whereas 45 teacher candidates (38%) thought it would provide them the opportunity to form their own opinions. The teacher candidates were aware that reading books about political issues was indeed important, but had problems in putting this into practice. The fact that many parents who grew up in the oppressive and unsteady social climate in the aftermath of 1980 prevented their children from being interested in politics, either knowingly or unknowingly, and politics being reflected as men's job only caused the young population to develop negative attitudes towards politics. Teachers are one of the most important determinants for having interest in politics and being informed of political events. All important aspects such as families, teachers, books read, peers and the media can be crucial factors in political socialisation. If teachers introduce their students the books that have a prominent mission in transferring the background of political and social events to young generations, this will help increase the amount of reading books about politics. By reading books on politics, young individuals and children gain the abilities to compare, criticise and questions the political information presented by different authors (Tarhan, 2015). In a democratic, it is of great importance that individuals have critical thinking skills as well as use critical thinking and decision-making skills in the solutions of social problems they encounter (Tarhan, 2016).

One of the reasons why the teacher candidates who thought that a teacher candidate who does not read books about political issues can still be a good teacher kept distant from politics could be that men outnumber women in real political life, and they perform politics with an aggressive attitude. It is thought that by teaching students

basic information related to politics starting from elementary school to university, students would be interested in politics and have positive feelings towards politics. In this regard, social studies is regarded as a course in which students develop positive attitudes towards politics as well as questioning and evaluation skills, and that aim to train them as active and effective citizens. Therefore, social studies teachers are important in that they equip elementary school students with democratic attitudes, skills and values (Tarhan, 2015).

SUGGESTIONS
The following suggestions are offered based on the results of the current study:
1. This study was conducted with a small sample in the context of reading books about political issues. Similar studies can be carried out with larger samples, and include faculty members, or teachers.

2. In addition to the courses that social studies teacher candidates take during their undergraduate education, a new course that includes basic knowledge and skills regarding politics, and addresses how critical thinking skills are developed can be included in social studies teacher education programs.

3. Experimental activities on political education can be performed with students in the social studies course to enhance their interests in politics and help them develop positive attitudes towards politics.

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EXAMINING THE IMPLEMENTATION OF INCLUSIVE EDUCATION AND SPECIAL EDUCATIONAL SUPPORT SERVICES FOR STUDENTS WITH HEARING LOSS IN TURKEY

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ABSTRACT

As a form of educational practice, inclusive education enables students with special needs (i.e. children with hearing loss) to have education as their typically developing peers at the same educational context by supplying them special education support services. Improvements in language and communication skills, and social and academic skills are the summary benefits of inclusive education for children with hearing loss. These possible benefits are also the answer of the question "Why inclusive practices should be disseminated through national level?" There are many prerequisites for successful inclusion practices such as physical adaptations in schools and classrooms, training and in-service improvement of the education staff, individualization of the educational programs, adaptation of education and instruction processes, and supplying special education support services. The purpose of this proposed presentation paper is to examine the implementation of inclusive education and special educational support services for students with hearing loss in Turkey. Parallel to the frame of the purpose, a questionnaire, "Inclusion and Educational Support Services Questionnaire" (I-ESSQ; K-DEHA), was developed by the responsible research team within the context of the TUBİTAK 1001 project on the inclusion of children with hearing loss (Project no: 114K236). I-ESSQ contains 39 items that aims to determine (a) the opinions of the teacher about inclusive practices, (b) the status quo of the children with hearing loss in inclusive settings, (c) problems of inclusive education, and (d) demographics of the participants. The analysis of the questionnaire is in statistical process. Following the statistical analysis, the findings will be available, and discussion and suggestions will be supplied on the bases of the findings.

INTRODUCTION

As a form of educational practice, inclusive education enables students with special needs (i.e. children with hearing loss [CHL]) to have education as their typically developing peers at the same educational context by supplying them special education support services (Antia & Kreimeyer, 2003; Easterbrooks, 2011; Hanks, 2013; Hintermair, 2010; Hornboy, 2015).

There are many prerequisites for successful inclusion practices (Caethon, 2001; Easterbrooks & Baker, 2002; Foster & Cue 2009; Hanks, 2013; Hornboy, 2015). These include:

- physical adaptations of schools and classrooms,
- training and in-service improvement of the education staff,

- individualization of the educational programs,

- adaptation of education and instruction processes, and

- supplying special education support services

If the aforementioned prerequisites are in charge, improvements in language and communication skills, and social and academic skills were the major benefits of inclusive education for CHL (Antia & Kreimeyer, 2003; Bauer & Kroeger, 2004; Caethon, 2001; Easterbrooks, 2011; Easterbrooks & Baker, 2002; Hanks, 2013). These possible benefits are also the answer of the question "Why inclusive practices should be disseminated through national level?" But before dissemination attempt there is a need of situation determination of inclusive practices in general education settings.

Purpose of the Study

The purpose of this study is to examine the implementation of inclusive education and special educational support services for students with hearing loss in Turkey.

Method

Design

This study is based on quantitative paradigm with the sub-design of descriptive research.

Participants

Participants are 121 teachers from seven geographical regions of Turkey. All the teachers are teaching in inclusion classes or supplying special education support services. The demographics of the participants were shown in Table 1.

Table 1. Demographics of the Participants ($N = 121$)

Categorical Variables	f	%
Gender		
Female	64	61,5
Male	40	38,5
Total	104	100
Level of Education		
Bachelor	80	76,9
Master	20	19,2
Doctoral	3	2,9
Total	104	100
Field of Education		
Hearing-Impaired	37	37
Intellectual Disability	5	5
Visually-Impaired	-	-
Special Education	12	12

Primary Class Teaching	30	30
Other	16	16
Total	104	100
Continuous Variables	**Mean**	**SD**
Age	34,6	8,9
Experience of teaching	10,9	8,8
Experience of Inclusive Education	5,7	5,6

As seen in Table 1, there seemed a balance between the genders of the participants. The level of education of the participants were prominently bachelor's degree. The field of education are the education of the hearing impaired and special education. The average duration for participants' experience of inclusive education is 5 years and 7 months.

DATA COLLECTION

Parallel to the purpose, a questionnaire, "Inclusion and Educational Support Services Questionnaire" (I-ESSQ), was developed by the responsible research team within the context of the TUBİTAK (The Scientific and Technological Research Council of Turkey) 1001 project on the inclusion of children with hearing loss (Project no: 114K236). I-ESSQ contains 39 items that aims to determine

    A. teacher competencies about inclusive practices,

    B. the status quo of the CHL in inclusive settings,

    C. problems of inclusive education, and

    D. demographics of the participants.

The development process of the I-ESSQ was as follows:

    1. Building the development team (four researchers)

    2. Literature review (21 thesis + 35 articles)

    3. Creating an item pool (almost 500 items)

    4. Purifying the item pool (71 items)

    5. Having expert opinions

    6. Preparing the final form (39 items)

Of the 121 questionnaires, 66 were administered manually, 55 were administered via web. The return rate was 70%.

Data Analysis

All the data were analyzed by using SPSS descriptive statistics.

MAJOR FINDINGS

The major findings of the study were given for I-ESSQ sub-dimensions in Table 2, Table 3 and Table 4.

Table 2. I-ESSQ Dimension I: Teacher Competencies About Inclusive Practices

No	Question	Positive Responses	%
1	Any lecture about inclusion?	Yes	71
2	Any in-service seminar about inclusion?	Yes	59
3	Using any formal assessment for following the progress of CHL?	Yes	38
4	Using any technique for managing behavioral problems?	Yes	46
5	Information about legal arrangements?	Yes/Partial	56
6	Directors' knowledge of inclusion?	Partially enough	44
7	Fit between IEPs by GRC and student's academic performance?	Partially	54
8	Fit between IEPs by GRC and student's social skills?	Partially	60

As obvious in Table 2, most of the items on teacher competencies about inclusive practices of I-ESSQ were rated below %50. This indicates that teacher competencies about inclusive practices are not found enough according to teacher reports.

Table 3. I-ESSQ Dimension II: The Status Quo of CHL in Inclusive Settings

No	Questions	Responses	%
1	Existence of IEP team in the school?	Yes	80
2	IEP team fit for purpose?	Partially	57
3	Placement type?	GRC plan	30
4	Assessment procedure?	GRC plan	28
5	Use of hearing technology by CHL?	CI, HI	50
6	Routine control of hearing technology?	Yes	30
7	Audiological controls in school?	Yes	0
8	Physical arrangements in classroom?	Yes	30
9	Any collaboration with families?	Yes	35
10	Contributions of the Director to inclusion?	Yes/Partial	65
11	Contributions of the PCG teacher to CHL?	Yes/Partial	70
12	Contributions of the in-field-teacher to CHL?	Yes/Partial	70

As seen in Table 3, most of the items on the status quo of CHL in inclusive settings of I-ESSQ were rated below %50. In some items the rate of the positive response was %0, for example, there was no audiological controls in any schools. This indicates that the status quo of CHL in inclusive settings are far from enough according to teacher reports.

Table 4. I-ESSQ Dimension III: The Status Quo of Special Education Support Services

No	Question	Responses	%
1	Special education support service (SESS) at school?	Yes	44
2	SESS type?	One-to-one/out of classroom	70
3	How to determine of SESS need?	Observations and IEP	43
4	How to plan SESS?	Observations and MoNE targets	58
5	How to structure the content of SESS?	All materials	100
6	SESS materials?	All materials	100
7	Assessment of SESS?	IEP tools	45
8	Problems faced during SESS practice?	Physical, environmental	33

As presented in Table 4, most of the items on the status quo of special education support services of I-ESSQ were rated mostly negative. This indicates that the status quo of special education support services is in need of development according to teacher reports.

DISCUSSION

The purpose of this study is to examine the implementation of inclusive education and special educational support services for CHL in Turkey. In accordance with the purpose, the findings of the study indicate severe problems at least in three areas:

- Problems regarding teacher competencies about inclusive practices (e.g. teachers from unrelated branches, not enough education and training on inclusion and SESS, insufficiency of assessment skills, behavior management skills, legacy knowledge, mismatch between IEPs by GRC and student's academic performance and social skills) (Easterbrooks, 2011; Gürgür & Uzuner, 2010; Hintermair, 2010).

- problems regarding CHL in inclusive settings (e.g. lack of IEP team in some schools, mismatch between team's work and purpose, ambiguity of placement and assessment procedure, lack of routine audiological controls in schools, inadequacy of physical arrangements in the classroom, insufficient instructional adaptations, inadequate collaboration with families, and even with the other teachers) (Bauer & Kroeger, 2004; Caethon, 2001; Hanks, 2013; Hintermair, 2010).

- problems regarding special educational support services (e.g. Lack of SESS in most of the schools, ambiguity in determination of SESS need and planning, physical problems faced during SESS practice) (Antia & Kreimeyer, 2003; Akay, Uzuner & Girgin, 2014; Gürgür & Uzuner, 2010).

All the results indicate a clear need for improvement about the aforementioned areas before or during inclusion of CHL. We come to a conclusion that prerequisites for successful inclusion practices should be met. The specific needs are:

- physical adaptations of schools and classrooms,
- training and in-service improvement of the education staff,
- individualization of the educational programs,
- adaptation of education and instruction processes, and
- supplying special education support services

We tried to describe the problems of inclusive education and SESS for CHL in Turkey. Further research may focus on "How to improve the system."

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EXAMINING THE PROBLEM TYPES IN MIDDLE SCHOOL MATHEMATICS TEXTBOOKS IN THE CONTEXT OF PRESENTATION, CONTENT AND SOLUTION

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ABSTRACT
Considering the update of curricula and the importance of problem solving skills in mathematics education; the need for examining the problems in mathematics textbooks in the context of presentation, content, and solution becomes a current issue. In this study, it was aimed to designate the problem types used in middle school mathematics textbooks and to determine whether the problem types used are dependent on class levels or not. The study was conducted by using the document analysis method. Data were analyzed by using content analysis method. In terms of presentation, it was observed that textbooks involved the problems rather verbal, not including quantitative data, and short. When contents of the problems were considered, it was observed that the use of the problems routine, not involving missing and irrelevant data, being curriculum dependent, and not being far from daily life is quite high. On the other hand, in terms of solution, it was observed that textbooks included the problem types which are easy, not requiring much calculation, and not involving different strategies more. Types of problems used in the textbooks can be enriched in the context of presentation, content, and solution to improve achievements and problem solving skills of students in mathematics classrooms.
Keywords: Mathematics education, problem types, problem solving, mathematics textbooks.

INTRODUCTION
Problems are obstacles that we face in daily life and situations that we have difficulty dealing with (Huilt, 1992; Kneeland, 2001). In other words, a problem is a conflict situation in which individuals encounter obstacles when trying to achieve a goal (Morgan, 1999). For a mathematics teacher, a problem means an unconventional question for which the steps and paths that will take the student to a solution are not known (Schoenfeld, 1989). Problem solving in mathematics is defined as the process of solving non-routine problems, applying mathematics to real situations, suggesting and testing interpretations that may lead to creation of new fields (Charles, 1985). All experiences gained by the individual from childhood form the basis of the problem solving process (Kennedy, 1980). In this sense, problem solving can be seen as a process that may eliminate many obstacles to development of the individual.

National Council of Teachers of Mathematics (NCTM) published a document titled Curriculum and Evaluation Standards for School Mathematics in 1989 (NCTM, 1989). The document notes that the use of problem solving skills by students will only be possible by turning problems into mathematical equations, utilizing different strategies when solving problems, checking the accuracy of, and generalizing results (NCTM, 1989: p.209). This statement highlights how important problem solving is for mathematics teaching. For this reason, it can be said that problem solving is of vital importance (Yıldız, 2016). The importance of improving problem solving skills is emphasized in renewed and updated mathematics curricula in Turkey as well (Ministry of National Education [MoNE], 2009, 2013).

Middle school mathematics curriculum aims to provide students with basic concepts and skills, help them understand problem solving strategies, and allow them to see that mathematics can be applied to problems of daily life (MoNE, 2013). Students will learn to value mathematics by finding different ways to solution in the problem solving process, which will allow them to be successful, and successful students will develop positive attitudes toward mathematics (MoNE, 2009). Also, the use of different methods or strategies by teachers will motivate students and encourage them to become active in in-class applications (Silver, Ghousseini, Gosen, Charalambous, & Font Strawhun, 2005). In order to keep students active during the class, teachers may use different problem types in their lectures. The use of different problem types during in-class applications is of great importance for the development of students' problem solving skills (Özmen, Taşkın, & Güven, 2012).

It is obvious that curricula and in-class applications of teachers alone will not be enough to help students reach the desired level in terms of problem solving skills. The importance of problem types used in mathematics textbooks cannot be denied, since "we cannot expect students to improve when they face with the same problem

type all the time (Özmen et al., 2012)". For this reason, textbook authors need to "be careful when choosing problem types which teachers use in their in-class applications as well (Hembree, 1992)". Also, in order to attain goals of middle school mathematics curriculum specified above, it is necessary to introduce teachers to textbooks prepared with different problem types. Because teachers firstly refer to textbooks when making a decision on how to teach subjects and how to make use of the curriculum (Beaton, Mullis, Martin, Gonzalez, Kelly, & Smith, 1996). Moreover, as well as guiding teachers in facilitating the learning process, textbooks are the most important sources for students to study at home, develop projects or do homework (Duman, Karakaya, Çakmak, Eray, & Özkan, 2001). The use of different problem types in mathematics textbooks will allow for raising individuals who are able to understand and deal with problems and develop appropriate strategies to solve them. Since problem types play a significant role in improvement of problem solving skills of students and textbooks are of vital importance for both teachers and students, it is necessary to investigate whether mathematics textbooks are prepared in a way that they contain different problem types and whether problem types are selected based on students' level.

Studies in the literature seem to classify problem types used in in-class applications in terms of presentation, content or solution and address one or several of these classifications (Özmen et al., 2012). Although there are numerous studies in the literature reviewing mathematics textbooks for different purposes (Altun, Arslan, & Yazgan, 2004; Arslan & Özpınar, 2009; Demir, Maskan, Çevik, & Baran, 2009; Erbaş, Alacacı, & Bulut, 2012; Gökçek & Hacısalihoğlu Karadeniz, 2013; Işık, 2008; Şahin & Turanlı, 2005; Ünsal & Güneş, 2004; Yan & Lianghuo, 2002; Yıldız, Hacısalihoğlu Karadeniz, & Göl, 2015), the lack of a study examining problem types in middle school mathematics textbooks in terms of presentation, content, and solution created a need for the present study. From this point, how problem types are handled in middle school mathematics textbooks published by MoNE in terms of presentation, content, and solution and whether problem types used are dependent on levels of students at different grades emerged as an important subject of research. Therefore, this study aims to determine the current situation of problem types in middle school mathematics textbooks in terms of presentation, content, and solution and whether problem types used are dependent on levels of students at different grades.

METHOD
The study utilizes the document analysis method. The document analysis method involves the analysis of written or visual materials containing information (books, journals, newspapers, letters, diaries, films, videos, etc.) (Cansız Aktaş, 2014). Considering the purpose of the research, the document analysis method was used in this study with the idea that it would allow for examining middle school mathematics textbooks.

Data Sources and Data Collection
Data sources of the research were randomly selected from middle school mathematics textbooks which were announced by MoNE on its official website to be used in 2015-2016 school year. The list of middle school mathematics textbooks used in the study is as follows:

Committee. (2015). *Middle school mathematics 5th grade 1st book* (3rd Edition). Ankara: MoNE Publishing.
Committee. (2015). *Middle school mathematics 5th grade 2nd book* (3rd Edition). Ankara: MoNE Publishing.
Bağcı, O. (2015). *Middle school mathematics 6th grade textbook.* Ankara: Dikey Publishing.
Bağcı, O. (2015). *Middle school mathematics 7th grade textbook.* Ankara: Tutku Publishing.
Baykal Yelli, B., & Kişi, E. (2015). *Primary education mathematics 8th grade textbook* (2nd Edition). Ankara: MoNE Publishing.

"Problem Types Data Collection Form" was developed by the researchers in order to examine middle school mathematics textbooks. When developing the data collection form, firstly the relevant literature was reviewed and it was checked whether there was a collection tool available to examine middle school mathematics textbooks in terms of presentation, content, and solution. Then, the researchers discussed what criteria could be used to examine mathematics textbooks in accordance with the purpose and the scope of the study and opinions of one Turkish language and three mathematics experts were taken. In this context, we decided to examine problems with solutions found in the textbooks under the titles of grade, unit, subject, and problem types. The grade title in the data collection form indicates the 5th, 6th, 7th, and 8th grades, the unit title and the subject title indicate what units and subjects are addressed in the textbook, and the problem types title indicate categories and sub-categories in Table 1. Categories, sub-categories, and definitions related to sub-categories adapted from the study of Özmen et al. (2012) for problem types are shown in Table 1:

Table 1: Categories, sub-categories and definitions used for problem types

PRESENTATION	Verbal	Problems presented with written statements or figures.
	Visual	Problems presented with visual aids such as figures, tables or graphics.
	Including quantitative data	Problems presented with five or more quantitative data.
	Not including quantitative data	Problems presented with four or fewer quantitative data.
	Long	Problems presented using a large number of words or sentences (at least five sentences).
	Short	Short problems presented using a small number of words or sentences (four and fewer sentences).
CONTENT	Routine	Problems including concretized versions of events encountered by students in real life.
	Non-routine	Problems encouraging the use of flexible methods, in other words; the problems that require not using routine solutions to reach the answer.
	Involving irrelevant data	Problems including data that is not needed for the problem situation and solution.
	Not involving irrelevant data	Problems including all necessary information to find a solution and not involving irrelevant data.
	Far from daily life	Problems with content which students cannot associate with daily life and make adaptations.
	Not far from daily life	Problems with content which students can associate with daily life and make adaptations.
	Involving missing data	Problems for which some of the necessary information is not given.
	Not involving missing data	Problems for which all of the necessary information is given.
	Curriculum dependent	Problems containing attainments of the relevant grade.
	Curriculum independent	Problems containing attainments of the relevant grade and also addressing to different grades or levels.
SOLUTION	Requiring much calculation	Problems which take time to solve and require a lot of operations to solve.
	Not requiring much calculation	Problems with short solutions which require fewer operations to solve.
	Involving different strategies	Problems which can be solved with different solutions other than the linear solution (such as drawing a diagram, intelligent guessing and testing, organizing the data, working backwards strategies, etc.)
	Not involving different strategies	Problems which can only be solved using the linear solution (problems can be solved by direct calculation or construction equation).
	Difficult	Problems which cannot be solved by all students and can discriminate between students at different levels.
	Easy	Problems which can easily be solved by all students and have similar structures.

Data Analysis

The content analysis method was used for data analysis. The content analysis method was preferred for the study for reasons such as "it allows for associating properties of written sources with messages produced and it offers the opportunity to analyze informing techniques (Arıkan, 2004)". The data were tabulated under the titles of grade, unit, subject, and problem types after the content analysis. The types of problems in the textbooks were determined through a consensus between both researchers. In matters on which the researchers could not come to an agreement, opinions of two mathematics teaching experts were taken and the problem types were finalized in accordance with expert opinions. Problems with solutions were classified after being assessed under multiple categories. Also, the chi-square independence test was used in order to determine whether problem types used in the textbooks were independent from grades of students in terms of presentation, content, and solution. Since the number of frequencies smaller than five was more than 20% of the entire data, some arrangements were made to be able to perform the chi-square independence test. In this context, problems including quantitative data under the presentation category were combined with the problems under the long sub-category. Similarly, problems involving missing-irrelevant data under the content category were combined with curriculum independent and non-routine problems. Lastly, all problem types were brought together and the chi-square independence test was used again in order to determine whether problem types were independent from grade.

FINDINGS

It was found that 5th, 6th, 7th, and 8th grade mathematics textbooks contained 133, 69, 50, and 49 problems with solutions respectively. Information related to which units and subjects contained these problems and the number of problems is summarized below:

In the 5th grade mathematics textbook, a total of 22 subjects under 5 units contained problems with solutions. In the "Natural Numbers and Operations (39)" unit, the following subjects contained problems with solutions: '*Patterns (3)*', '*Operations with Natural Numbers (16)*', '*Operations with Parenthesis (1)*', '*Mental Operations (1)*', '*Problems (8)*', and '*Measuring Time (10)*'. In the "Data Processing (7)" unit, the following subjects contained problems with solutions: '*Creating a Research Question and Data Collection (4)*', '*Data Organization and Interpretation (2)*', and '*Tree Diagram (1)*'. In the "Geometry (1)" unit, only the '*States of Points According to Each Other (1)*' subject contained problems with solutions. In the "Fractions, Decimal Notation, and Percentage (34)" unit, the following subjects contained problems with solutions: '*Introduction to Fractions with Whole Numbers (3)*', '*Equivalent Fractions (2)*', '*Calculating The Desired Fraction of Quantities (3)*', '*Addition and Subtraction with Fractions (11)*', '*Decimal Notation (1)*', '*Addition and Subtraction with Decimals (4)*', and '*Percentages (10)*'. In the "Geometry and Measurement (52)" unit, the following subjects contained problems with solutions: '*Measuring Length (13)*', '*Length of Circumference (15)*', '*Angles in Triangles and Quadrilaterals (6)*', '*Measuring Area (15)*', and '*Geometric Solids (3)*'.

In the 6th grade mathematics textbook, a total of 21 subjects under 5 units contained problems with solutions. In the "Natural Number (10)" unit, the following subjects contained problems with solutions: '*Operations with Natural Numbers (2)*', '*Solving Problems with Natural Numbers (4)*', '*Prime Numbers (2)*', '*Adjacent, Complementary, Supplementary, and Alternate Angles (2)*'. In the "Fractions (26)" unit, the following subjects contained problems with solutions: '*Addition and Subtraction with Fractions (7)*', '*Multiplication and Division with Fractions (7)*', '*Solving Problems with Fractions (4)*', '*Multiplication and Division with Decimal Fractions (1)*', '*Estimating Results of Operations with Decimal Fractions (2)*', and '*Solving Problems with Decimal Fractions (3)*'. In the "Geometry (11)" unit, only the '*Data Analysis (11)*' subject contained problems with solutions. In the "Whole Numbers (5)" unit, the following subjects contained problems with solutions: '*Whole Numbers (1)*', '*Addition and Subtraction with Whole Numbers (4)*'. In the "Circumference, Area, and Volume (17)" unit, the following subjects contained problems with solutions: '*Area of Parallelogram (2)*', '*Area of Triangle (1)*', '*Area Measurement Units (3)*', '*'Solving Problems Related to Volume (2)*'. '*Volume Measurement Unites (2)*, and '*Fluid Measurement Unites (2)*'.

In the 7th grade mathematics textbook, a total of 10 subjects under 5 units contained problems with solutions. In the "Operations with Whole Numbers and Rational Numbers (9)" unit, the following subjects contained problems with solutions: '*Problems Requiring Operations with Whole Numbers (5)*' and '*Multi-staged Operations and Problems with Rational Numbers (4)*'. In the "Equations (5)" unit, the following subjects contained problems with solutions: '*Protecting the Equality in Equations (4)*' and '*Coordinate System (1)*'. In the "Ratio-Proportion and Percentages (26)" unit, the following subjects contained problems with solutions: '*Quantities in Ratio (5)*', '*Inverse Proportion (11)*', and '*Percentages (10)*'. In the "Lines, Circles, and Data Processing (3)" unit, the following subjects contained problems with solutions: '*Circle Graph (1)*' and '*Lines and Angles (2)*'. In the "Polygons and Rotation Geometry (7)" unit, only the '*Area of Rhombus and Trapezoid (7)*' subject contained problems with solutions.

In the 8th grade mathematics textbook, a total of 12 subjects under 6 units contained problems with solutions. In the "From Geometry to Probability (12)" unit, the following subjects contained problems with solutions: '*Exponential Numbers (2)*', and '*Probability and Combination (10)*'. In the "The World of Numbers (9)" unit, the following subjects contained problems with solutions: '*Real Numbers (5)*', and '*Identities, Factorizing, and Rational Expressions (4)*'. In the "The World of Triangles (7)" unit, the following subjects contained problems with solutions: '*Edges and Angles in Triangles (1)*', and '*Identity and Similarity in Triangles and Trigonometric Ratios (6)*'. In the "A Journey in Mathematics (6)" unit, the following subjects contained problems with solutions: '*Slope, Equation Systems, and Graphs (4)*', and '*Different Representation of Data and Statistics (2)*'. In the "Introduction to Geometric Solids (9)" unit, the following subjects contained problems with solutions: '*Prisms and Pyramids (3)*', '*Cone and Sphere (3)*, and '*Intersections of Geometric Solids (3)*'. In the "Volume of Geometric Solids and Illustrations (6)" unit, only the '*Volume Relations (6)*' subject contained problems with solutions.

Findings Related to Distribution of Problems with Solutions In Terms of Presentation
Problems with solutions found in the middle school mathematics textbooks were examined in terms of presentation and the number of problems under each sub-category was tabulated as follows according to grade:

Table 2: Distribution of problems with solutions in terms of presentation

Grades	Unit Names	Verbal	Visual	Including Quantitative Data	Not Including Quantitative Data	Long	Short
5th Grade	Natural Numbers and Operations	36	3	2	37	9	30
	Data Processing	5	2	3	4	1	6
	Geometry	0	1	1	0	0	1
	Fractions, Decimal Notation, and Percentage	31	3	0	34	0	34
	Geometry and Measurement	18	34	5	47	3	49
6th Grade	Natural Numbers	10	0	3	7	4	6
	Fractions	25	1	2	24	5	21
	Data, Tables, and Graphics	10	1	8	3	4	7
	Whole Numbers	5	0	1	4	2	3
	Circumference, Area, and Volume	15	2	2	15	5	12
7th Grade	Operations with Whole Numbers and Rational Numbers	2	7	1	8	1	8
	Equations	1	4	1	4	1	4
	Ratio-Proportion and Percentages	18	8	0	26	1	25
	Lines, Circles, and Data Processing	1	2	0	3	0	3
	Polygons and Rotation Geometry	4	3	2	5	0	7
8th Grade	From Geometry to Probability	12	0	1	11	4	8
	The World of Numbers	8	1	0	9	3	6
	The World of Triangles	2	5	1	6	5	2
	A Journey in Mathematics	4	2	3	3	6	0
	Introduction to Geometric Solids	2	7	1	8	5	4
	Volume of Geometric Solids and Illustrations	2	4	2	4	5	1
	Total	211	90	39	262	64	237

The table shows that the middle school mathematics textbooks mostly use verbal and short problems which do not include quantitative data. The result of the analysis performed in order to determine whether the presentation structure of problems were independent of grade was found to be χ^2(sd=12, n=903)=90.836 and p=0,000<0.05. It is understood that there is a significant relationship between the presentation structure of problems used in the textbooks and grade.

Findings Related to Distribution of Problems with Solutions In Terms of Content
Problems with solutions found in the middle school mathematics textbooks were examined in terms of content and the number of problems under each sub-category was tabulated as follows according to grade:

Table 3: Distribution of problems with solutions in terms of content

Grades	Unit Names	Routine	Non-routine	Involving Irrelevant Data	Not Involving Irrelevant Data	Far from Daily Life	Not far from Daily Life	Involving Missing Data	Not Involving Missing Data	Curriculum Dependent	Curriculum Independent
5th Grade	Natural Numbers and Operations	34	5	0	39	1	38	0	39	39	0
	Data Processing	7	0	0	7	0	7	0	7	7	0
	Geometry	1	0	0	1	0	1	0	1	1	0
	Fractions, Decimal Notation, and Percentage	34	0	0	34	0	34	0	34	34	0
	Geometry and Measurement	42	10	0	52	18	34	0	52	52	0
G	Natural Numbers	10	0	0	10	3	7	0	10	10	0

	Fractions	25	1	2	24	1	25	0	26	26	0
	Data, Tables, and Graphics	11	0	0	11	5	6	0	11	11	0
	Whole Numbers	5	0	0	5	0	5	0	5	5	0
	Circumference, Area, and Volume	17	0	0	17	5	12	0	17	17	0
7th Grade	Operations with Whole Numbers and Rational Numbers	9	0	0	9	0	9	0	9	0	9
	Equations	5	0	0	5	1	4	0	5	5	0
	Ratio-Proportion and Percentages	26	0	0	26	0	26	0	26	26	0
	Lines, Circles, and Data Processing	3	0	0	3	0	3	0	3	3	0
	Polygons and Rotation Geometry	7	0	0	7	2	5	0	7	7	0
8th Grade	From Geometry to Probability	12	0	1	11	0	12	0	12	12	0
	The World of Numbers	9	0	0	9	3	6	0	9	9	0
	The World of Triangles	7	0	0	7	0	7	0	7	7	0
	A Journey in Mathematics	6	0	0	6	0	6	0	6	6	0
	Introduction to Geometric Solids	8	1	0	9	1	8	0	9	9	0
	Volume of Geometric Solids and Illustrations	5	1	0	6	1	5	0	6	6	0
	Total	283	18	3	298	41	260	0	301	292	9

The table shows that the middle school mathematics textbooks mostly use routine, curriculum dependent problems which are not far from daily life and do not involve missing and irrelevant data. The result of the analysis performed in order to determine whether the content structure of problems were independent of grade was found to be χ^2(sd=21, n=1505)=23.666 and p=0.310>0.05. It is understood that there is an insignificant relationship between the content structure of problems used in the textbooks and grade.

Findings Related to Distribution of Problems with Solutions In Terms of Solution
Problems with solutions found in the middle school mathematics textbooks were examined in terms of solution and the number of problems under each sub-category was tabulated as follows according to grade:

Table 4: Distribution of problems with solutions in terms of solution

Grades	Unit Names	Requiring Much Calculation	Not Requiring Much Calculation	Involving Different Strategies	Not Involving Different Strategies	Difficult	Easy
5th Grade	Natural Numbers and Operations	12	27	1	38	2	37
	Data Processing	5	2	2	5	0	7
	Geometry	0	1	0	1	0	1
	Fractions, Decimal Notation, and Percentage	6	28	2	32	3	31
	Geometry and Measurement	19	33	14	38	13	39
6th Grade	Natural Numbers	4	6	4	6	4	6
	Fractions	5	21	6	20	1	25
	Data, Tables, and Graphics	6	5	0	11	2	9
	Whole Numbers	0	5	0	5	0	5
	Circumference, Area, and Volume	8	9	0	17	1	16
7th Grade	Operations with Whole Numbers and Rational Numbers	0	9	0	9	1	8
	Equations	4	1	5	0	5	0
	Ratio-Proportion and Percentages	6	20	8	18	6	20
	Lines, Circles, and Data Processing	0	3	0	3	0	3
	Polygons and Rotation Geometry	0	7	0	7	0	7
8th Grade	From Geometry to Probability	8	4	3	9	4	8
	The World of Numbers	2	7	1	8	2	7
	The World of Triangles	3	4	1	6	2	5
	A Journey in Mathematics	4	2	2	4	1	5
	Introduction to Geometric Solids	2	7	0	9	2	7
	Volume of Geometric Solids and Illustrations	3	3	0	6	1	5

Total	97	204	49	252	50	251

The table shows that the middle school mathematics textbooks mostly use easy problems which do not require much calculation and different strategies. The result of the analysis performed in order to determine whether solution of problems were independent of grade was found to be χ^2(sd=15, n=903)=17.577 and p=0.286>0.05. It is understood that there is an insignificant relationship between the solution structure of problems used in the textbooks and grade. The result of the analysis performed in order to determine whether the problems types used in textbooks were independent of grade was found to be χ^2(sd=54, n=3311)=132.079 and p=0,000<0.05. It is understood that there is a significant relationship between the problem types used in the textbooks and grade.

DISCUSSION and CONCLUSION

The following results were found as a result of the discussion made based on findings of the study, which was conducted in order to investigate whether mathematics textbooks are prepared in a way that they contain different problem types and whether problem types are selected based on students' level:

It was determined that there was a significant relationship between the presentation structure of problems used in the textbooks and grade. Also, it was found that the middle school mathematics textbooks mostly used verbal and short problems which do not include quantitative data. This result may be related to the fact that the nature of units and subjects in the textbooks are more appropriate for verbal problems. However, considering that visually presented problems increase student success (Hembree, 1992), we believe that adding visual problems to textbooks will be useful. This may allow students to improve their problem solving skills. In addition, it seems that short problems which do not include quantitative data are preferred frequently. The authors may have preferred to use short problems which do not include quantitative data in textbooks with the idea that long problems which include quantitative data may be too difficult for and misunderstood by students. However, short problems which include quantitative data may be added to textbooks in order to allow students to improve their problem solving skills.

When problem types in textbooks were examined in terms of content, it was found that routine, curriculum dependent problems which are not far from daily life, and do not involve missing and irrelevant data were preferred more frequently. Also, problems involving missing data were not seen in any of the textbooks. It was found that authors used routine problems more frequently compared to non-routine problems. The reason behind authors' reluctance to use non-standard problems may be the curriculum dependent and exam-centric nature of the Turkish educational system or that they do not possess the necessary experience and knowledge to prepare different types of problems. Considering that non-routine problems will have positive effects on students' learning of problem solving strategies (Dönmez, 2002) and development of different strategies (Follmer, 2000), we believe that non-routine question should be added to textbooks as well.

When problem types in textbooks were examined in terms of solution, it was observed easy problems which do not require much calculation and different strategies were preferred more frequently. It is noted in the literature (Özmen et al., 2012) that mathematics teachers use very easy problems which do not require much calculation in their lectures. It seems that authors prefer problem types which will allow students to solve a high number of problems and practice. We believe that the exam-centric educational system in Turkey is effective in this case. Considering that it is necessary to provide students with different solutions for a problem in order to motivate them and increase their participation to class (Silver et al., 2005), we recommend that problems with different difficulty levels which require using different strategies are added to textbooks.

In summary, it is understood that there is a significant relationship between the problem types used in the textbooks and grade. Also, it seems that authors of textbooks prefer to use verbal, short, routine, easy, curriculum dependent problems which are no far from daily life and do not include quantitative data, do not require much calculation and strategies, do not involve missing and irrelevant data. In order to visualize problems for students and allow them to gain more concrete experiences, we recommend that visual and long problems which include quantitative data are added to textbooks in terms of presentation. We also recommend that non-routine, curriculum independent problems which are far from daily life and involve missing and irrelevant data are added to textbooks in order to increase mathematical thinking skills of students and allow them to develop different solutions for problems which they encounter. In order to ensure students become good problem solvers in future and allow them to develop different strategies, we believe that difficult problems which require much calculation and different strategies should be added to textbooks. Thus, teachers who use textbooks containing different problem types will raise students who can think mathematically, have improved reasoning ability and high associating ability. Lastly, we recommend that future researchers examine problems without solutions in middle

school mathematics textbooks in terms of presentation and content and conduct similar studies for problems with and without solutions in high school mathematics textbooks.

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EXPERIENTIAL EDUCATION IN UNDERGRADUATE TEACHER TRAINING AND ITS INFLUENCE ON THE CLASSROOM CLIMATE

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ABSTRACT
Classroom climate is an essential determinant of educational and edifying process of students in the school. One possibility of effective development experiential education appears from the process aspect of Ethics whose inspiration can be used. The paper presents the possibility of a positive classroom climate through the implementation of experiential education already in undergraduate teacher training. The authors, which results based of research conducted at selected elementary schools in Slovakia, emphasize influence by the class teacher, his approach impact heads to one component of the classroom climate - satisfaction. They also point to the need for changes in undergraduate teacher training towards the acquisition of competences how to create and develop a positive classroom climate.

INTRODUCTION AND THEORETICAL STARTING-POINTS

In the 20th century, the professionalization of teaching as an occupation shifted the minimal competencies of teachers from disseminating knowledge into a broad and open expertise (Kosová in Kasáčová et al., 2006). World pedagogy is progressing from the understanding of teaching as a technological process towards perceiving it as a flexible and creative process of personal meetings between the teacher and pupil through the subject matter. The teacher is perceived as an expert in these meetings; they facilitate the learning process and solve educational situations in school (Coolahan, Vonk, Shulman, Hustler, Intyre, Perrenoud, Berliner and others in Spilková, 2004). Therefore, the teacher should be able to expertly diagnose situations and subjects, identify, and apply interpersonal strategies as well as self-reflection (Vašutová, 2004). Spilková (2004) shifts the accent from the theoretical basis of academic subjects to psychodidactic education, and general cultivation of the teacher. Current European trends reflect the requirement regarding the structure of teacher competencies and the common effort of the experts, thus dividing these competencies into two major groups: a) competences related to the process of teaching, b) competencies related to the results of teaching (European Commission, 2002). Based on this study, the expert group in Slovakia designed a **teacher competency profile,** which defines both key and specific competencies in the context of professional standards (Kasáčová et al., 2006). It is comprised of three dimensions: a) pupil, b) educational process, and c) teacher's own personal development. Within these dimensions, the teacher is expected to identify the developmental and individual characteristics of their pupil, the psychological and social factors influencing their learning, and the sociocultural context of their development. They are expected to mediate the subject matter, create appropriate conditions for education (positive classroom climate), influence personal development, and last but not least, to grow professionally and self-develop. During pre-graduate training, there are opportunities to develop competencies in future teachers – establish the basis of their professionalism. The framework of the key competencies is a part of it, maintaining the status of teachers as experts. The core of teacher professionalism consisting of the didactic component and practical training is currently the most underestimated area (Kosová et al., 2012). Whilst the preparation of future teachers in basic theoretical disciplines evolved at universities, the practical and professional components of training did not change much (Kosová, Tomengová et al., 2015). Based on this, it seems that one of the priorities of pre-graduate training should be the development of competencies in future teachers related to practical and professional skills.

Innovations in approaches, methods and forms have been recently introduced, however, they need to be employed as soon as the pre-graduate training. Turek (2014) points out that there are hardly any innovative approaches regarding the teacher personality development in the context of the competence profile. He states that scientific and expert competencies prevail in teacher training. Personalist, constructivist, and social contextual trends are integrated into the model of the teacher as a reflexive expert (Kosová et al., 2012). These trends emphasize the gradual development, maturing of the teacher's personality, who – through constant reflection – turns from a student into a teacher, an expert in teaching and developing other people.

As for the innovative approach to the creation and development of the competence profile of the future teacher, experiential education gradually finds its way into the system of pedagogic sciences. Experiential education develops an individual's personality universally by using specific forms, methods, and educational tools based on personal experience (Kratochvílová, 2010). Many research studies and analyses speak of the psychological, sociological, physiological, and educational benefits of experiential activities (Ewert, 1989, Barrett, Greenaway,

1995). According to Jurásek (2004), experiential education teaches through personal experience; apart from traditional pedagogy, it allows one to confront themselves with other people. Based on this, experiential education rightly has its place in the educational process, therefore also in the pre-graduate training of teachers. Moreover, it is desirable that teachers learn how to apply experiential education in their teaching practice and use its tools effectively – research indicates that experiential education positively influences the classroom climate (Orosová, 2010; Orosová, 2011, Brestovanský, 2013; Ferencová, Šuťáková, 2004). During pre-graduate training, it is necessary to develop the personality of the future teacher, acquaint them with new, untraditional methods, techniques, and approaches; encourage their creativity and innovative ideas related to the educational process they plan and control, and make them realize the importance of their own self-development. It seems that experiential education as a method should be taught during pre-graduate training; research has proven that teachers are not sufficiently prepared to take care of extraordinarily talented or specific-needs students (Machu, Málek, 2015). Scientific research of experiential education and its influence on the personality development of future teachers as well as its impact on the competence profile of a student of teaching has become a topical issue.

As for inspiration regarding the implementation of experiential education in the educational process, Ethics as an academic subject is a great source. Ethics as an academic subject, as its name indicates, is not only an educational subject – it is a very specific and original subject consisting of three interconnected levels: cognitive – educational (learning knowledge, skills, and habits, upbringing – (an affective level) forms, develops, and refines moral, civil, and aesthetic attitudes and values; and developing (motivation for life-long improvement, searching for a life mission, creativity, cooperation, identity, autonomy). In comparison with other subjects, Ethics has a very specific processual constitution. According to Podmanický (2013), Ethics as an academic subject draws from the fact that ethical attitudes are formed through live experience and exposure to morally relevant situations. A model of education and upbringing that involves original experiences consisting of stages and sequences is more than suitable for ethics. Here we are speaking of the 4-level model of experiential education. The current teaching styles in ethics involves the processually relevant experiential method, which emphasizes essential human experience, their identity, as well as the holistic approach permitting the person experience and process something on various levels. The extraordinary nature of the situations, its newness – the challenge – turns into a specific and personal reflection for the pupil/student. Upbringing is mainly a formative and relationship-creating process; a person is considered integrated based on the quality of the relationships they exist in (Říčan, 2004).

In the school environment, relationships can be discussed in the context of the classroom climate. Kolář et al. (2012) define **classroom climate** as the long-term atmosphere typical for the given class. The climate is created by all pupils as a whole, groups of pupils, individuals, and also teachers who teach this class. The classroom climate can be observed from five perspectives: satisfaction, friction, competitiveness, teaching difficulty, and class cohesiveness. According to Hanuliaková (2010), creating a positive atmosphere and optimal climate is a precondition to form and improve social competencies in pupils. Finally, the creation of a positive climate in a class is in the hands of the teacher, one of its basic factors. The teacher's approach significantly influences the classroom climate. Often it is said, that a class –as the collective, and therefore also the classroom climate, reflects the approach of the class teacher. The classroom climate needs to be addressed as soon as the pre-graduate training. Future teachers should develop their competencies related to the formation of a positive classroom climate. They should be prepared both theoretically and practically; know the ways and tools to do so (Honzíková, 2015). The classroom climate can be positively influenced using various tools; one of them seems to be dramatization (Puchalová, 2005). Due to the absence of previous research regarding experiential education and its influence on positive classroom climate, we decided to maintain the continuity of studies regarding classroom climate, pre-graduate training, and experiential education, join them, and carry out our own research.

METHODOLOGY

The research was focused on the influence of experiential education applied by the class teacher in their work on the classroom climate. The aim of the research was to find out whether the classroom climate is, in fact, influenced by the class teacher who had employed the features of experiential educational already during their own pre-graduate training.

The goal of our research was to detect the influence of expert level experiential teaching on the classroom climate. As the independent variable, class teachers of the 5th year of the primary school were selected, based on the following criteria:

a) *they used experiential education on the expert level*, i.e. *they studied* subjects aimed at the implementation of experiential education into the educational process from the position of the class teacher; and they actually apply this knowledge during class meetings.

b) *they used experiential education on the non-expert level*, i.e. they *did not study* subjects aimed at the implementation of experiential education into the educational process from the position of the class teacher; however, they apply the method during class meetings because they learned it on their own.

The dependent variable was the classroom climate consisting of the following components: satisfaction, friction, competitiveness, teaching difficulty and class cohesiveness. For the purpose of this study, only satisfaction was selected for focus.

In order to achieve the research goal, it was important to fulfil the following **research tasks**:

    1. Identify the initial classroom climates in the research groups – pretest.

    2. Carry out a teaching experiment – use experiential education by the class teacher during class meetings.

    3. Verify the classroom climate after the experiment was carried out – post test.

After these tasks were fulfilled, obtained data were statistically processed and correlations detected. Based on them, recommendations for the teaching practice were formulated.

The selected sample of subject consisted of pupils of the 5th year of primary schools located in the eastern part of Slovakia, namely the districts of: Stará Ľubovňa, Sabinov, Humenné, Prešov, Vranov and Košice. The collectives did not change in terms of members between the 4th and 5th years.

The sample was selected according to three criteria:

    ✓ there were at least two classes in the given year of study at the given school,

    ✓ one of the class teachers studied subjects aimed at the implementation of experiential education into the educational process from the position of the class teacher; and they applied this knowledge during class meetings.

    ✓ one of the class teachers did not study subjects aimed at the implementation of experiential education into the educational process from the position of the class teacher; however, they applied the method during class meetings based on what they learned on their own.

The experimental group (EG) consisted of 160 pupils from 6 primary schools. The control group (CG) consisted of 154 pupils from 6 primary schools. The total number of pupils involved in the research was 314 pupils in their 5th year of studies from 6 primary schools. 12 class teachers participated in the research; 6 teachers studied subjects aimed at the implementation of experiential education into the educational process from the position of the class teacher; and they applied this knowledge during class meetings, i.e. they used experiential education expertly; 6 teachers did not study subjects aimed at the implementation of experiential education into the educational process from the position of the class teacher; however, they applied the method during class meetings based on what they learned on their own, i.e. they did not use experiential education expertly.

Research sample labelling:

EG – experimental group – classes led by teachers who studied subjects aimed at the implementation of experiential education in the educational process from the position of the class teacher, i.e. they used experiential education expertly

EG – control group – classes led by teachers who did not study subjects aimed at the implementation of experiential education into the educational process from the position of the class teacher; however, they applied the method during class meetings based on what they learned on their own, i.e. they did not use experiential education expertly.

EEE – Class with a class teacher who used experiential education expertly.

NEE – Class with a class teacher who did not use experiential education expertly.

Table 1: Structure of research samples

Group	Class	# of pupils			Total
		boys	girls	total	
EG	1EEE	13	16	29	160
	2EEE	10	14	24	
	3EEE	12	15	27	
	4EEE	13	13	26	
	5EEE	12	13	25	
	6EEE	12	17	29	
CG	1NEE	11	16	27	154
	2NEE	11	13	24	
	3NEE	10	16	26	
	4NEE	11	14	25	
	5NEE	12	13	25	
	6NEE	13	14	27	
Total		**140**	**174**	**314**	**314**

Source: own processing

The standardized „Naša trieda" MCI (My Class Inventory) questionnaire originally created by Fraser and Fischer

(1986, in Lašek, Mareš, 1991) was used in the first and third stages of our research. The questionnaire is designed for primary school pupils from the 3rd to 6th years of study. This method was selected because of the simplicity of questions, ways the opinion was to be expressed, and minimization of exhaustion in pupils. The questionnaire was filled in by both the experimental and control groups before (pretest) and after (post test) the experiment was carried out. The questionnaire allowed us to evaluate the classroom climate from five perspectives. However, for the purpose this study, only one perspective will be discussed – class satisfaction. The items in the questionnaire were assigned 3, 2, and 1 points to the answers YES, I DON'T KNOW, and NO respectively. Items no. 6, 9, 10, 16, 24 points were assigned the other way around. The characteristics of the classroom climate were subsequently evaluated based on the following criteria:

Table 2: Scale of classroom climate characteristics for satisfaction

Variable	Climate characteristics	# of points
satisfaction	Excellent	13.1 - 15
	Good	10.1 - 13
	Worse	7.1 - 10
	Inappropriate	5 - 7

Source: personal processing according to Köbölova, Rötling, Sihelsky, 2006

In the second stage of the research, the teaching experiment was carried out: all teachers led the class meetings according to identical plans. In the experimental groups, class teachers used methods of experiential education (physical activities, visiting nature, didactic games, music, painting, etc.) as they were taught during their pre-graduate training. In the control groups, class teachers used experiential education methods (physical activities, visiting nature, didactic games, music, painting, etc.) as they learned on their own.

RESEARCH RESULTS

Phenomenon analysis, descriptive statistics (mean, mode, standard deviation, kurtosis, skewness, range, maximum, minimum, sum, median) and inductive statistics (Kolmogorov–Smirnov test – a nonparametric test of data distribution normality; Wilcoxon signed-rank test – to verify the research hypothesis).

Items no. 1, 6, 11, 16, 21 were aimed at identifying class satisfaction. Statements were focused on the pupils' interest in class activity, happiness, affection and fun in the class. The fifth year of study is a milestone for primary school pupils, because the system of teaching changes and the frequency of their contact with their class teacher are much lower. Class satisfaction is very important in this year, because students are just acquiring habits necessary for the second level of primary school (subjects suddenly taught by different teachers, etc.).

Table 3: Class satisfaction

Group	Class	Satisfaction				
		pretest		post test		change
		mean	climate	mean	climate	
EG	1EEE	12.34	Good	14.48	Excellent	2.14
	2EEE	9.88	Worse	12.29	Good	2.42
	3EEE	11.63	Good	13.85	Excellent	2.22
	4EEE	11.96	Good	14.19	Excellent	2.23
	5EEE	10.16	Good	12.88	Good	2.72
	6EEE	11.93	Good	14.17	Excellent	2.24
	Total	11.38	Good	13.69	Excellent	2.32
CG	1NEE	11.96	Good	12.00	Good	0.04
	2NEE	10.96	Good	11.04	Good	0.08
	3NEE	12.27	Good	12.31	Good	0.04
	4NEE	10.77	Good	10.88	Good	0.11
	5NEE	11.96	Good	12.00	Good	0.04
	6NEE	11.93	Good	11.96	Good	0.04
	Total	11.65	Good	11.71	Good	0.07

Source: own processing

The initial measurement showed that the overall climate in the research groups was good. In one group – 2EEE – the satisfaction component of the climate was weaker. The numerical representations of other groups did not differ significantly. However, the final measurement showed differences in the climate among different groups. The most significant change was observed in EEE – the climate changed by 2.72. Another significant change was

observed in 2EEE in which the worse climate improved for good. The overall climate – satisfaction in the EG and CG changed by 2.32 and 0.07 respectively.

Using the methods of descriptive statistics, basic characteristics of the statistical sets were identified.

Table 4: Descriptive statistics Pretest_EG

N	Valid	160
	Missing	0
Mean		11.38
Mode		13.00
Std Dev		2.21
Kurtosis		-,67
Skewness		-,34
Range		8.00
Minimum		7.00
Maximum		15.00
Sum		1820.00
Percentiles	50 (Median)	11.00

Table 5: Descriptive statistics Posttest_EG

N	Valid	160
	Missing	0
Mean		13.69
Mode		15.00
Std Dev		1.64
Kurtosis		1.23
Skewness		-1.22
Range		8.00
Minimum		7.00
Maximum		15.00
Sum		2191.00
Percentiles	50 (Median)	15.00

Table 6: Descriptive statistics Pretest_CG

	Valid	154
	Missing	6
Mean		11.74
Mode		11.00
Std Dev		2.14
Kurtosis		-,63
Skewness		-,23
Range		8.00
Minimum		7.00
Maximum		15.00
Sum		1808.00
Percentiles	50 (Median)	11.50

Table 7: Descriptive statistics Posttest_CG

N	Valid	154
	Missing	6
Mean		11.71
Mode		11.00
Std Dev		2.03
Kurtosis		-,36
Skewness		-,21
Range		8.00
Minimum		7.00
Maximum		15.00
Sum		1804.00
Percentiles	50 (Median)	11.00

Results were statistically verified. Using the Kolmogorov–Smirnov test it was found out that the data distribution was not normal in either of the groups.

Table 8: One-Sample Kolmogorov-Smirnov Test

		Pretest_EG	Pretest_CG	Posttest_EG	Posttest_CG
N		160	154	160	154
Normal Parameters	Mean	11.38	11.74	13.69	11.71
	Std. Deviation	2.21	2.14	1.64	2.03
Most Extreme Differences	Absolute	,16	,14	,30	,17
	Positive	,11	,14	,21	,17
	Negative	-,16	-,14	-,30	-,17
Kolmogorov-Smirnov Z		2.06	1.79	3.78	2.11
Asymp. Sig. (2-tailed)		,000	,002	,000	,000

Due to the results of the Kolmogorov–Smirnov test ($p < 0.05$), hypotheses were verified using the non-parametric Wilcoxon signed-rank test.

Before the teaching experiment statistical equality of the research samples (both experimental and control groups) was detected.

H0: At the beginning of the experiment there was no difference between the experimental and control groups.
H1: At the beginning of the experiment there was a difference between the experimental and control groups.

Table 9: Wilcoxon pretest_EG with pretest_CG (Paired)

Ranks

		N	Mean Rank	Sum of Ranks
Pretest_EG – Pretest_CG	*Negative Ranks*	65	68.45	4449.00
	Positive Ranks	58	54.78	3177.00
	Ties	31		
	Total	154		

TestStatistics

	Pretest_EG – Pretest_CG
Z	-1.61
Asymp. Sig. (2-tailed)	,107

Conclusion
p > 0.05 The null hypothesis was accepted: There was no statistically significant difference between the experimental and control groups at the input.

During the teaching experiment statistical differences in the classroom climate – satisfaction was detected and hypotheses verified.

H0: (Expert) use of experiential education in the position of a class teacher does not influence satisfaction in class pupils.
H1: (Expert) use of experiential education in the position of a class teacher does influence satisfaction in class pupils.

Table 10: Wilcoxon Pretest_EG with Posttest_EG (Paired)

Ranks

		N	Mean Rank	Sum of Ranks
Pretest_EG – Posttest_CG	*Negative Ranks*	123	70.52	8674.00
	Positive Ranks	12	42.17	506.00
	Ties	25		
	Total	160		

TestStatistics

	Pretest_EG – Posttest_CG
Z	-9.04
Asymp. Sig. (2-tailed)	,000

Conclusion
p < 0.05 Alternative hypothesis was accepted. (Expert) use of experiential education in the position of a class teacher does influence satisfaction in class pupils.

H0: (Non-expert) use of experiential education in the position of a class teacher does not influence satisfaction in class pupils.
H1: (Non-expert) use of experiential education in the position of a class teacher does influence satisfaction in class pupils.

Table 11: Wilcoxon Pretest_EG with Posttest_EG (Paired)

Ranks

		N	Mean Rank	Sum of Ranks
Pretest_EG – Posttest_CG	*Negative Ranks*	36	34.03	1225.00
	Positive Ranks	34	37.06	1260.00
	Ties	84		
	Total	154		

TestStatistics

	Pretest_EG – Posttest_CG
Z	-,10
Asymp. Sig. (2-tailed)	,917

Conclusion

p > 0.05 The null hypothesis was accepted: (Non-expert) use of experiential education in the position of a class teacher does not influence satisfaction in class pupils.

Statistical verification of hypotheses at the significance level of 0.05 confirmed differences in the impact of expert and non-expert use of experiential education on the classroom climate – satisfaction.

CONCLUSIONS

The aim of the research was to point out the importance of the positive relationship on the class teacher – class – pupil axis, teacher's competencies related to the use of experiential education in their work, and finally, also the importance of implementing experiential education in the pre-graduate training of future teachers. Research results confirmed that it is important to pay more attention to the pre-graduate training of future teachers and improve their competencies related to the practical use of experiential education in the educational process. The findings provided by this research have been implemented in the pre-graduate training of future teachers at Pavol Jozef Šafárik University in Košice in the selected subjects of the Teaching of Academic Subjects study programme (Experiential Education, Class Management). It can be stated that graduates of the currently running teaching courses in their Master degree studies should possess competencies related to active usage experiential education features in the educational process. Teachers play the role of class teachers and the main aim is related to upbringing. Their primary task should therefore be to create and develop a positive classroom climate. One of the tools to achieve it is experiential education and its expert use in the educational process.

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EXPLORING MIDWIVES' KNOWLEDGE ABOUT MYELOMENINGOCELE IN NORTH WESTERN INDONESIA

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ABSTRACT

Background. Myelomeningocele is a condition that still becomes a burden in third world countries. This is actually a highly preventable chronic condition and the prognosis is significantly affected by the timing of primary neurosurgical repair. Midwives have critical role in diagnosing and enhancing families' education about this condition.

Objectives. To provide insight into midwives' knowledge about (a) prevention of myelomeningocele, (b) diagnosing myelomeningocele, and (c) management of myelomeningocele.

Method. A cross sectional descriptive study was conducted using a questionnaire. A total of 74 midwives from North Western Indonesia participated in this study.

Results. This study found that vast majority of the midwives (>80%) responded correctly about the role of folic acid in prevention of myelomeningocele, but only less than a quarter of the participants knew how to diagnose and manage this condition.

Conclusion. This study suggests that new educational strategies should be developed for Indonesian midwives to improve their knowledge about diagnosis and management of myelomeningocele.

INTRODUCTION

Myelomeningocele is a highly preventable and treatable chronic condition. It has poor outcome when untreated, while aggressive treatment will allow good outcome. The incidence of this malformation has been reduced significantly in last decade, could be due to better prenatal diagnosis, genetic counseling, and mostly folic acid supplementation during pregnancy.[1] Even so, the incidence of this malformation is still around 1 per 1000 live birth.[2]

Surgery remains the main treatment modality for this condition. The goal of surgery is to stabilize the neurological status of infant and to prevent the risk of new deficit.[3] Timing of surgery is very important, since closure of the spinal lesion on the first day is proved to provide best chance of having good lower urinary tract function.[4]

Midwives are female health workers who are trained to provide prenatal, labor and delivery, postpartum and neonatal care, how to raise community awareness and understanding of abnormal labor, and provide health education. There is growing proof indicating significant contribution of midwives to the pregnancy outcome, either for women or infants.[5] Shortage or poor knowledge of midwives would give bad implications for the care of women as well as the baby. The main factors contributed to this problem include poor access to continuous education, high workload, stress, and burnout.[6]

In Indonesia, it is estimated that almost 70% of births are conducted by midwives in maternity home.[7] This fact makes midwives have significant role in detection of prenatal congenital abnormalities, including myelomeningocele. Thus, the main objective of the study was to investigate knowledge of North-Western Indonesian practicing midwives on myelomeningocele treatment. We also explored the correlation between knowledge and attitudes, years of education, and midwives training experience.

METHODS

Design and Setting

A multicentric cross sectional study was performed in three districts in Northwestern Indonesia (Asahan, Labuhan Batu, and Tapanuli Selatan) between December 2015 and February 2016.

Study Population

Data on midwives' knowledge were collected using convenience sampling: all registered practicing midwives who worked in government health centers were included. Midwives who did not accept to participate or who do not sign the informed consent were excluded. On a total of 115, 74 midwives completed the questionnaire, for an overall response rate of 64.3%.

Ethical Consideration

The study protocol was approved from the Review Board and Ethics Committee at the Universitas Sumatera Utara (blinded for referee).

Study Procedures and Data Collection

In each participating center, a trained researcher was personally responsible for participants' recruitment and information about the purpose of the study. To be enrolled all participants had been informed about the study via written information and, those who voluntarily agreed to participate in the study, had to sign the informed consent. After enrollment, the researcher personally administered questionnaires to each midwife. Participants had 30 minutes to individually fill out and return the instrument, and the researcher supervised the test's fulfillment in order to avoid other resources consultation by participants. To guarantee the confidentiality and anonymity, participants re-submitted the completed questionnaire in an envelope inside a special urn.

Instrument Description

The structured questionnaire included three parts, i.e. (i) General information. Socio-demographic information was collected: age, gender, year of practice, continuous medical education (ii) Knowledge Assessment Instrument, include: (1) etiology and development; (2) diagnosis; (3) management.

Data Analysis

Continuous variables were summarized as mean and standard deviation (SD). Categorical variables were synthesized as frequencies and percentages. In order to test for differences in scores among groups, one-way analyses of variance and independent sample t-test were performed. A correlation analysis was performed to quantify the strength of association between knowledge and attitude scores. The statistical significance was set at p value < 0.05. All statistical analyses were performed with SPSS 20.0 (SPSS Inc, Chicago, Illinois).

Result

Characteristics of Subject

74 midwives accepted to participate and completed the questionnaire. The mean age of the sample was 29.5 ± 7.3 years (range 25-45 years). All participants were female. Most participants had at least one continuous medical education in last three years (89.1%). More than half participants had less than five years' experience, and around one third had more than ten years working experience. Demographics and participants' characteristics are summarized in table 1.

Table 1
Overall characteristics of the subject.

Characteristics	
Overall subject, n(%)	74 (100)
Age (years), mean ± SD	29.5±7.3
Gender, n(%)	
Female	74 (100)
Male	0 (0)
Years of education, n(%)	
3	69 (93.2)
4	5 (6.8)
Working experience, n(%)	
>10 years	23 (31.0)
5-10 years	11 (14.8)
<5 years	40 (54.05)
Continuous medical education in 3 years (n,%)	

Yes	66 (89.1)
No	8 (10.8)

Knowledge

Multiple choice questions, response possibilities, and respective answers are shown in Table 2. Among options of the questionnaire, none achieved 100% correct answers. The mean knowledge score was 48.3%. Only 28.7% (21/74) of the participants had a mean score ≥60% (Table 3).

Table 2. Participants' answers on multiple-choice questions regarding myelomeningocele

Items	% (right)
When do the failure of neural tube closure happen that may cause meningonecele?	
1 week of pregnancy	4.0
2 weeks of pregnancy	20.2
4 weeks of pregnancy*	65.0
2 months of pregnancy	12.1
These are health issues related to myelomeningocele, except:	
Difficulty in mobility	8.1
Difficulty in controlling urine and bowel movement	24.3
Mental health issue	47.3
Difficulty in hearing*	20.3
These are the ways to reduce the risk of having spina bifida, except:	
Take 100 mcg of folic acid every day*	16.2
Avoid overheating your body, as if hot tub or sauna	52.7
Control diabetes and obesity	18.9
Just have acetaminophen to treat any fever the patient has.	12.1
When is the best time for treating myelomeningocele?	
In the first 48 hours of life*	44.6
One month	35.1
One year	20.2
Five years	0
What is the best dose of folic acid given as prevention of meningomyelocele?	
100 mcg, daily	5.8
200 mcg, daily	9.2
400 mcg, daily*	81.0
1000 mcg, daily	4.0
There are some modality treatments for meningomyelocele before birth	
True*	67.5
False	32.4
A person of meningomyelocele cannot fully participate in life	
True	32.4
False*	67.5
A woman with history of baby having myelomeningocele have to take 4000 mcg of folic acid every day, instead of usually recommended dose	
True*	22.9
False	77.0
Ruptured myelomeningocele is an emergency condition	
True*	91.8
False	8.1

Myelomeningocele patients are more prone to have hydrocephalus

True*	59.4
False	40.5

- Correct answer

The lowest scores were obtained in question "Health issues related to meningomyelocele" (20.3%) and "Folic acid supplementation in women with previous history of myelomeningocele baby" (22.9%). Almost all participants said that ruptured myelomeningocele is an emergency condition (91.8%) and know the recommended dose of folic acid supplementation (81%). Less than half participants know that the best time for treating myelomeningocele is in the first 48 hours of life (44.6%)

We found all participants that have score more than 60 have less than 5 years' working experience. There is no significant difference of knowledge between midwives that had continuous medical education with they who did not have that education (p=0.729).

Discussion
Myelomeningocele (meningomyelocele or spina bifida) is condition when the spinal cord (myelum), its covering (meninges), and vertebral arches develop abnormally early in gestation. Children born with this condition, which is one of the most complex birth defects compatible with life, have impairments of both the spinal cord and brain. Despite fortification of food with folic acid and the increased use of maternal folic acid, myelomeningocele has not been eliminated. Thus, the primary care pediatrician is likely to provide care for children who have this condition.

Women carrying fetuses found to have myelomeningocele should be referred for delivery to a tertiary medical center that specializes in the care of these children. All children who have myelomeningocele should be followed during childhood by a multidisciplinary team that includes experts in child development, neurosurgery, orthopedics, urology, orthotics, social work, nursing, physical and occupational therapies, and plastic surgery. Finally, the adolescent's care should be transferred to skilled adult medical practitioners. Since more than half labor in Indonesia was conducted by midwives, the knowledge of congenital anomaly is very crucial for midwives' practice.

Our result showed that most participants had a poor knowledge about myelomeningocele, ranged from etiology, pathogenesis, until management. The most crucial thing is about the pathogenesis and prevention for previously patient diagnosed with myelomeningocele baby. The most interesting part in this paper is either working experience or continuous medical education does not improve the midwives' knowledge. The highest score was got by fresh graduate midwives, maybe because the difference of curriculum they have.

The strength of this study is due to the multicenter design. To the best of our knowledge, this is the first research about midwives' knowledge regarding myelomeningocele. However, this study presents some limitations that need to be discussed. First, the cross-sectional design of the study did not allow to determine causal relationships but only associations in the analysis of potential predictors of knowledge. Second, with the relatively small sample size, we do not think it will represent all the midwives' knowledge about myelomeningocele.

In conclusion, our participants showed an inadequate overall level of knowledge on myelomeningocele. An insight to the curriculum implemented in midwifery schools should be performed.

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EXPLORING SECONDARY SCHOOL TEACHERS' CONSTRUCTIVIST BELIEFS USING TALIS 2013

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ABSTRACT
A variety of educational reform efforts and the urgent need to develop students' 21st century skills have prompted school administrators and educators to explore a more constructivist-oriented approach to teaching and learning. Research suggests that choices of classroom practice are associated with teachers' beliefs. The author of this study analyzed the international data set of the Teaching and Learning International Study (TALIS) 2013 to examine the relationship between lower secondary school teachers' constructivist beliefs, their self-efficacy beliefs, degree of teacher co-operation, teacher background information, and the school principals' instructional leadership. A series of hierarchical linear modelling (HLM) studies were performed to examine the data set of three countries (South Korea, Finland, and Mexico). These countries represent the high and the low achievers in the global index of cognitive skills and educational attainment. An understanding of how constructivist beliefs associate with other factors will assist curriculum developers in designing quality teacher preparation and professional development programs. Additionally, a measure of how school principals' instructional leadership associates with teachers' beliefs will provide guidelines for administrators' and implications for future study on school leadership.

1. INTRODUCTION
The Organization for Economic Co-operation and Development (OECD) introduced the Teaching and Learning International Survey (TALIS), which is the largest international survey of teachers and school principals regarding their feelings, beliefs, and pedagogical practices in 2008. The complete data collection also includes information regarding employment, classroom, and school characteristics and school principals' management and leadership. The second and most recent survey, TALIS 2013 - which was available to public in 2014, included more than 6,600 lower secondary schools and 107,000 teachers from 34 countries and sub-national entities (OECD, 2014). Researchers believe that this information could help educators and administrators across nations in shaping the effective teaching practices and policies (OECD, 2014) and could provide the opportunity to see differences or similarities of each TALIS participating countries in terms of their challenges and teaching approaches (Jensen, Sandoval-Hernández, Knoll, & Gonzalez, 2012). A clear understanding of teachers' beliefs in teaching, as one of the most important psychological constructs (Pajares, 1992), would help educators understand how these beliefs associate with their instructional practices and it would further provide guidance in strengthening innovative instructions in classroom.

The conceptual framework of this study has evolved from the integration of several theories and concepts. The author proposed five constructs including 1) teachers' constructivist beliefs, 2) teachers' self-efficacy beliefs, 3) teachers' professional activities, 4) teachers' background, and 5) principals' instructional leadership (Figure 1.1.)

2. LITERATURE REVIEW

2.1 Teachers' constructivist beliefs

According to Piaget's cognitive development theory, students construct their knowledge through assimilation and accommodation; on the contrary, Vygotsky's social constructivism concept stated that an individual constructs his or her knowledge by interacting with others (Liaw, 2004). In a range of studies, researchers explained that constructivist learning approach, which is one of the learner-centered approaches, introduces a process that allow students to develop their own meaning of things. Students are allowed to be curious. They start developing new knowledge by asking questions, interacting with friends and teachers to gain more information, and interpreting the information into a concept that make sense to them by using their previous

knowledge and experiences (Brooks and Brooks, 1999; Prawat, 1996; Thayer-Bacon, 2000; Windschitl, 1999a; Woolfolk, 2010). The process cannot be accomplished by the teacher-directed approach. It is necessary that the teacher takes a role of a facilitator who support students to explore, construct and re-construct information and finally to develop conclusions that are valid and unique to each of them (Richardson, 2003).

A number of studies investigated how science teachers adopted the constructivist instructional approach in their classrooms and how importance of this concept in the science education field (e.g., Cakir, 2008; Singer & Moscovici 2008; Taber, 2014; Witteck, Beck, Most, Kienast, & Eilks, 2014). Numerous researchers supported the transition of classroom practices from the teacher-directed approach, e.g. lecturing, to a more constructivist-oriented instruction, which ultimately enhance students' critical-thinking, problem-solving, and decision-making skills (e.g., Barak & Shakhman, 2007; Ford, 2010; Nadelson et al., 2013). As such, the constructivist instructional practices have become more dominant in public schools and teacher education programs (Bybee et al., 2006; Davis & Sumara, 2002; Fang & Ashley, 2004; Gordon & O'Brien, 2007; Marlowe & Page, 2005).

Although there is a range of empirical studies examined the influence of constructivist instruction practices on student learning achievement, there is still a gap in the body of knowledge regarding how the constructivist beliefs of the teachers associated with other factors, especially those in the educational system, and how these factors associated with each other. Few studies have reported variables that associate with constructivist beliefs, for example, teacher self-efficacy (Nie, Tan, & Liau, 2013), and administrative and community support (Beamer et al., 2008; Yore, Anderson, Shymansky, 2005).

Figure 1.1. Conceptual framework and proposed hypotheses

2.2 Teachers' self-efficacy beliefs

The teacher self-efficacy, or teacher efficacy, is defined as the degree to which a teacher believes in his or her own ability to complete an assigned goal that required several activities such as planning, organizing, and teaching (Bandura, 1977; Bandura, 2006). Consistently, Protheroe (2008) described teacher efficacy as a sense of confidence in the teachers themselves to engage students and promote the students' learning. A range of studies have reported determinants of teacher self-efficacy, such as prior teaching experience, training and development, school culture (Bandura, 1993; Protheroe, 2008), teaching practices (Vieluf, Kunter, & Vijver, 2013; Smylie, 1988), constructivist instructional practices (Nie et al., 2013), and attitudes toward the use of innovative instructional practices (Guskey, 1988).

Numerous empirical studies investigated whether there is an association between teachers' constructivist beliefs and teacher efficacy. Appleton and Kindt (2002) revealed that whenever science teachers do not feel confident in their knowledge, they tend to use a more traditional teacher-directed instructional practice, such as lecturing. On the contrary, if the teachers feel confident in their content of knowledge, they are more likely to experiment with innovative instructional practices (Protheroe, 2008).

The main goal of constructivist instruction is that it provides a safe learning environment for learners to engage in knowledge constructions. Hence, this approach relies heavily on the teacher's ability to facilitate learning with understanding. Teachers with insufficient knowledge content and sense of confidence tend to find it difficult to adopt this approach in their classrooms practices.

2.3 Teachers' collaboration and cooperation

The term "collaboration" has been defined in many ways since this term has been widely used in many fields. Schrage (1991) described collaboration as "the process of shared creation: two or more individuals with complementary skills interacting to create a shared understanding that none had previously possessed or could have come to on their own. Collaboration creates a shared meaning about a process, a product, or an event." (p. 40). According to Goddard, Goddard, and Tschannen-Moran's study (2007), teachers collaborate and cooperate, as part of their professional activities, in several ways: 1) they exchange their teaching materials, 2) they develop curriculum and lesson plans together, and 3) they discuss the progress of their students. In the educational context, teachers' collaboration can "promote the most effective teaching possible for the greatest number of students" (Pugach & Johnson, 1995, p. 178). Dewey (1963) described how teachers and school librarians collaborated at work in order to integrate their expertise with an aim to foster students to reach their full potential. In the educational context, collaboration would ultimately increase the quality of teaching since it increased the possibilities of new way of teaching (Haycock, 1998). Teachers collaborated by sharing experience, sharing responsibilities, and conceptualized together (Dewey, 1963; Goddard, Goddard, & Tschannen-Moran, 2007).

2.4 Principal Instructional Leadership

Instructional leadership was defined as the influence of a school principal on school management in terms of teaching practices and curriculum with an aim to improve student achievement (Flath, 1989). Blase & Blase (2000) explained that school principal with a high level of instructional leadership tend to initiate and support learning communities. In order to emphasize the high-quality teaching, school principals with instructional leadership would give instructional feedbacks to teachers, model an effective instructional and encourage teachers to use assessment (Blase & Blase, 2000).

A range of empirical studies have confirmed the association between school principal practices and the students' achievement. Several studies have confirmed a small to moderate effect of school principal practices on student achievements (Hallinger, 2005; Hendriks & Steen, 2012; Huber & Muijs, 2010; Leithwood, Harris, & Hopkins, 2008; Robinson, Lloyd, & Rowe, 2008). Additionally, numerous empirical studies reported that the instructional leadership has positive effect on teacher practices and student achievement (Blase & Blase, 1999; Leithwood, Louis, Anderson, & Wahlstrom, 2004; Seashore Louis, Dretzke, & Wahlstrom, 2010; Robinson, Lloyd, & Rowe, 2008). Researchers have reported a list of school principals' strategies that had a positive effect on teachers' motivation, satisfaction, sense-of-security, teacher efficacy, and self-esteem. The strategies include providing feedbacks to teachers, soliciting opinions for improvement, modeling effective teaching practices, and giving compliments to teachers (Blase & Blase, 2000). Robinson et al. (2008) further stated that the impact of instructional leadership on student achievement was three to four times larger than that of other leadership practices.

Teddlie (2005) investigated the association between instructional leadership and teacher efficacy and professional development. A recent study of Gumus, Bulut, and Bellibas (2013) examining the relationship between instructional leadership and teacher collaboration in Turkish primary schools. There are more than a hundred empirical studies investigating determinants of instructional leadership (e.g., school principal gender, experience, professional development, etc.) and the effect of instructional leadership on student achievement and the organization (e.g., school mission, curriculum) (Hallinger, 2005).

Although, researchers have concluded that school principals influenced their students' achievement through having an effect on teachers' behaviors, beliefs, and classroom practices (Hendriks & Steen, 2012; Leithwood et al., 2008), there is still a discrepancy in knowledge regarding how these variables interact to each other and whether or not the influences are mediated or moderated by other factors in school system, such as teacher practices, school environment, and national characteristics (Huber & Muijs, 2010).

This quantitative study aims to investigate the associations between teachers' constructivist beliefs, self-efficacy beliefs, professional activities, and school principals' instructional leadership. The study was guided by three research questions:

1. Do teachers' constructivist beliefs vary across schools?
2. What factors have direct relationships with teachers' constructivist beliefs?
3. Does principal instructional leadership moderate the relationships between teacher-level predictors, namely self-efficacy and teacher co-operation, and constructivist beliefs?

3. METHODOLOGY

A cross-national data set of "the Teaching and Learning International Study" (TALIS) 2013 from OECD was used to examine the associations among teachers' constructivist beliefs, self-efficacy beliefs, professional activities, and the school principals' instructional leadership. The IDB analyzer was used to generate SPSS data files and to produce unbiased descriptive data for three countries, including South Korea, Finland, and Mexico.

Since teachers were nested within schools, a series of hierarchical linear modelling (HLM) studies was employed to analyze the data. Outputs from HLM would allow researchers to understand the variations among schools (if there is any) and to test whether principals (school level) had a direct or moderating effect on teachers' beliefs and practices (individual level). Researchers specified the school estimate weights (level 2) as the product of the school base weight and the school non-response adjustment factor. According to the OECD (2014), the TALIS 2013 data set employed two-stage stratified cluster sampling. Firstly, 200 lower secondary schools per country were selected using probability proportional to size technique. Then, a minimum of 20 teachers, who teach regular classes, and a school principal were randomly selected (OECD, 2014). This study's sample consisted of 3 countries: South Korea, Finland, and Mexico.

4. RESULTS

The following tables (Tables 1.2 and 1.3) show the descriptive statistics of the main variables which consisted of 27 teacher- and principal-level measuring items. The analysis includes a sample of 2,933 teachers in 177 schools in South Korea, 2,722 teachers in 145 schools in Finland, and 3,138 teachers in 187 schools in Mexico. The teacher respondents' ages ranged from 22 to 62 years with an average age of 43 years ($M = 42.50$, $SD = 9.13$) in South Korea, 19 to 67 with an average age of 44 years ($M = 44.04$, $SD = 10.07$) in Finland, and 19 to 75 with an average age of 42 years ($M = 42.34$, $SD = 10.07$) in Mexico. Teacher respondents in South Korea reported having an average of 16.58 years ($SD = 9.83$) of working experience as a teacher, while teacher respondents in Finland and Mexico reported having an average of 15.51 years ($SD = 9.64$) and 16.37 years ($SD = 9.65$), respectively.

The researchers found a significant positive correlations between the teacher respondents' ages and their amounts of working experience as teachers in all three countries (South Korea: $r = .929$, $p < .001$; Finland: $r = .864$, $p < .001$; Mexico: $r = .832$, $p < .001$.).

Table 1.2
Descriptive Analysis of Level-2 Variable Using Teacher Weights

Scale	Item		Wording	South Korea (n = 75,056)		Finland (n = 17,015)		Mexico (n = 176,056)	
				Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Constructivist Beliefs (TCONSB)	32A	Beliefs	My role as a teacher is to facilitate students' own inquiry	3.42	0.56	3.34	0.54	3.45	0.69
	32B	Beliefs	Students learn best by finding solutions to problems on their own	3.41	0.60	2.99	0.59	3.28	0.76
	32C	Beliefs	Students should be allowed to think of solutions themselves	3.41	0.56	3.21	0.54	3.48	0.65
	32D	Beliefs	Thinking and reasoning processes are more important	3.16	0.68	3.22	0.60	2.98	0.81
Self-efficacy (TSELEFFS)	34D	To what extent	Control disruptive behavior in the classroom	2.96	0.69	3.24	0.69	3.31	0.71
	34F	To what extent	Make my expectations about student behavior clear	2.84	0.67	3.41	0.63	3.26	0.68
	34H	To what extent	Get students to follow classroom rules	3.01	0.67	3.19	0.65	3.24	0.70
	34I	To what extent	Calm a student who is disruptive or noisy	2.91	0.70	3.04	0.73	3.14	0.75
	34C	To what extent	Craft good questions for my students	2.95	0.66	3.36	0.66	3.20	0.67
	34J	To what extent	Use a variety of assessment strategies	2.79	0.67	2.83	0.75	3.18	0.69
	34K	To what extent	Provide an alternative explanation	3.03	0.66	3.05	0.72	3.40	0.61
	34L	To what extend	Implement alternative instructional strategies	2.75	0.71	2.93	0.78	3.26	0.67
	34A	To what extent	Get students to believe they can do well in school work	2.98	0.66	3.18	0.69	3.31	0.70
	34B	To what extent	Help my students value learning	2.99	0.67	3.08	0.73	3.38	0.65
	34E	To what extent	Motivate students who show low interest in school work	2.70	0.72	2.81	0.78	3.12	0.85
	34G	To what extent	Help students think critically	2.75	0.69	2.98	0.74	3.32	0.67
Teacher co-operation (TCOOPS)	33A	Frequently	Teach jointly as a team in the same class	2.55	1.60	2.96	1.88	4.52	1.85
	33B	Frequently	Observe other teachers' classes and provide feedback	2.66	0.85	1.57	1.12	2.13	1.56
	33C	Frequently	Engage in joint activities across different classes and age groups	1.83	1.10	2.48	1.25	2.89	1.59
	33H	Frequently	Take part in collaborative professional learning	2.43	1.24	2.08	1.18	3.54	1.34
	33D	Frequently	Exchange teaching materials with colleagues	3.44	1.38	3.82	1.53	3.57	1.52
	33E	Frequently	Engage in discussions about the learning development of specific students	2.59	1.38	5.24	1.06	3.68	1.42
	33F	Frequently	Work with teachers to ensure common standards for assessing student progress	2.88	1.14	3.91	1.55	3.38	1.54
	33G	Frequently	Attend team conferences	3.28	1.36	4.18	1.45	3.90	1.23

Table 1.3
Descriptive Analysis of Level-2 Variable Using School Weights

Scale	Item	Wording		South Korea (n = 707)		Finland (n = 2,824)		Mexico (n = 14,399)	
				Mean	Std. Dev.	Mean	Std. Dev.	Mean	Std. Dev.
Principal's Instructional Leadership (PINSLEADS)	21C	Frequently	Engage in - supporting co-operation among teachers	2.95	0.70	2.58	0.58	2.93	0.72
	21D	Frequently	Engage in - teachers responsibility for improving teaching skills	2.97	0.65	2.32	0.71	3.04	0.76
	21E	Frequently	Engage in - teachers responsibility for learning outcomes	3.06	0.72	2.41	0.75	3.24	0.68

Table 1.4
Results

Fixed Effect	SOUTH KOREA				FINLAND				MEXICO			
	Coefficient	Standard error	t-ratio	p-value	Coefficient	Standard error	t-ratio	p-value	Coefficient	Standard error	t-ratio	p-value
For INTRCPT1, β_0												
INTRCPT2, γ_{00}	3.3594	0.0106	318.3770	<0.001	3.1829	0.0092	344.3520	<0.001	3.2962	0.0120	273.8910	<0.001
PINSLEAD, γ_{01}	0.0268	0.0208	1.2890	0.1990	0.0112	0.0175	0.6420	0.5220	-0.0276	0.0204	-1.3500	0.1790
For YRSEXP slope, β_1												
INTRCPT2, γ_{10}	-0.0016	0.0011	-1.4920	0.1370	-0.0024	0.0008	-2.9790	**0.0030**	0.0037	0.0011	3.2740	**0.0010**
For TSELEFFS slope, β_2												
INTRCPT2, γ_{20}	0.1783	0.0255	6.9920	**<0.001**	0.1624	0.0159	10.2060	**<0.001**	0.1730	0.0256	6.7460	**<0.001**
PINSLEAD, γ_{21}	-	-	-	-	-	-	-	-	-0.1261	0.0435	-2.8990	**0.0040**
For TCOOPS slope, β_3												
INTRCPT2, γ_{30}	0.0365	0.0144	2.5260	**0.0120**	0.0242	0.0086	2.7990	**0.0050**	0.0134	0.0111	1.2110	0.2280
PINSLEAD, γ_{31}	-	-	-	-	-	-	-	-	0.0254	0.0188	1.3540	0.1770
For CLASSSIZ slope, β_4												
INTRCPT2, γ_{40}	-0.0005	0.0017	-0.3160	0.7520	-0.0013	0.0010	-1.2650	0.2060	-0.0004	0.0012	-0.3490	0.7280
For TIMETEAC slope, β_5												
INTRCPT2, γ_{50}	0.0014	0.0009	1.5720	0.1180	-0.0009	0.0006	-1.4430	0.1490	0.0014	0.0008	1.8040	0.0730
Random Effect	Variance Component	$\chi2$	p-value		Variance Component	$\chi2$	p-value		Variance Component	χ^2	p-value	
INTRCPT1, u_0	0.0007	185.5679	0.2430		0.0039	220.5164	<0.001		0.0040	244.0217	0.0010	
YRSEXP slope, u_1	0.0000	205.4071	0.0520		-	-	-		0.0000	211.0907	0.0620	
TSELEFFS slope, u_2	0.0205	198.3913	0.0990		-	-	-		0.0118	244.1260	0.0010	
TCOOPS slope, u_3	0.0057	281.2364	<0.001		-	-	-		0.0020	286.2851	<0.001	
CLASSSIZ slope, u_4	0.0000	171.2318	>0.500		-	-	-		0.0001	224.2527	0.0160	
TIMETEAC slope, u_5	0.0000	266.9844	<0.001		-	-	-		0.0000	184.7999	0.4080	
level-1, r	0.2061	-	-		0.1476	-	-		0.2419	-	-	
Criteria fit												
Deviance			3894.5034				2574.5106				4627.53	
# estimated parameters			29				9				31.00	
AIC			3952.50				2592.51				4689.53	
BIC			4126.03				2645.69				4877.13	

4.1 Do the constructivist beliefs vary across schools?

Based on the analysis results, researchers found no significant differences among South Korea teacher's constructivist beliefs, unlike teachers from Finland and Mexico. However, when looking at the school level, teachers' constructivist beliefs vary very little in all three countries, which can be interpreted that the variation in teacher's constructivist beliefs occurred within school rather than between schools. According to OECD (2009), teacher beliefs tend to be diverse within school because the teachers already formed their beliefs from previous working experience and stayed unchanged.

4.2 What factors have direct relationships with teachers' constructivist beliefs?

Teachers' self-efficacy (TSELFFS) have a significant positive relationship with the teachers' constructivist beliefs (TCONSB) (p<.001) for both high and low performing countries. Although teachers' self-efficacy was the major predictor in this study since it has the highest magnitude, researchers cannot draw conclusion that teachers' self-efficacy was the cause of the teachers' constructivist beliefs. Researchers would like to point out that for each different country the researchers used difference rating-scale items. The items that are identical among the three countries are 1) ability to craft good questions for my students, 2) ability to provide an alternative explanation, and 3) ability to help my students value learning.

The second factor that has a significant positive relationship with the teachers' constructivist beliefs is teacher co-operation (TCOOPS). However, this significant relationship only occurred in the high performing educational systems, South Korea and Finland (p = 0.012; p = 0.005, respectively). Therefore, teachers who have higher level of constructivist beliefs tend to be engaged more in professional collaboration and exchange and coordination for teaching.

The third factor is years of working experience as a teacher (YRSEXP). Researchers found it to be interesting that while years of teaching experience for teachers in Mexico has a significant positive relationship with the level of the constructivist beliefs, those in Finland found to have reverse relationship. In other words,

senior teachers in Mexico appreciated constructivist beliefs more than novice teachers. At the same time, beginning teachers in Finland have a higher attitude toward constructivist beliefs than the experienced teachers.

Surprisingly, principal instructional leadership (PINSLEAD) has no significant relationship with any variation in teachers' constructivist beliefs among teachers and schools. The researchers speculate the explanation that the variation of teachers' constructivist beliefs occurred mostly within schools. As such, any constructs at the higher level has no or very small effect the variation of teachers' constructivist beliefs.

Furthermore, the researchers found that class size (CLASSSIZ) and time spent on actual teaching (TIMETEAC) have no significant relationship with teachers' constructivist beliefs in all three countries. The level of willingness to adopt the idea of constructivist beliefs were similar among three counties regardless of their class size or actual instructional time.

4.3 Does principal instructional leadership moderate the relationship between teacher-level predictors, namely self-efficacy and teacher co-operation, and constructivist beliefs?

Blase and Blase (2000) indicated that principal instructional leadership positively influenced classroom practices and beliefs among classroom teachers. While this may be true in Blase and Blase (2000) researchers found no significant relationship between principal instructional leadership (PINSLEAD) and the teachers' constructivist beliefs, but in the case of Mexico, principal instructional leadership simply moderated a negative relationship between teachers' self-efficacy and teachers' constructivist beliefs. This implies that the action of principal instructional leadership inadvertently impeding the effect of teachers' self-efficacy on constructivist beliefs. In contrast, this case would not applicable to those in high performing countries where principal's influence have no impacts on teacher's self-efficacy. Also, this lack of impact by principal instructional leadership was found in the case of teachers' cooperation and teacher's constructivist belief as well. Indeed, the researchers found that teachers in higher performing systems are likely to be more independent in their beliefs. The constructivist beliefs among teachers in South Korea and Finland relied mainly on the individual teachers' confidence in their teaching ability and their level of co-operation with colleagues.

5. DISCUSSION AND IMPLICATIONS

According to the relationships found between self-efficacy and teachers' constructivist beliefs in this study, researchers found that focusing only on the development of content knowledge and general pedagogy is insufficient. Teacher education should develop teacher preparation program that not only increase the level of self-efficacy but also introduce the context that founded on the constructivist instructional approach. While several researchers indicated that training and development can improve teachers' self-efficacy (Bandura, 1993; Protheroe, 2008), inquiry-based learning is a fundamental of constructivist approach. Hence, teacher education program should allow pre-service teachers to be trained and to develop their own repertoire in the context of inquiry-based learning. Similarly, in the case of in-service teacher, the teacher professional development should allow teachers to have an opportunity to have a hands-on experience in student-centered environments. These will not only challenge the in-service teachers' existing beliefs, but also to increase their awareness of the innovative instructional method. Additionally, the support (e.g., time allocation for teachers) for and commitment to the innovative instructional approach by school administrators are important to ensure the prolonged engagement of the teachers in the professional development programs.

Based on the results in the high performing systems (South Korea and Finland), the level of teacher co-operation and the teachers' self-efficacy are significantly associated. The teachers who reported engaging in activities such as exchanging instructional materials with colleagues, engaging in discussion about student learning, or participating in team conference are likely to have a high level of constructivist beliefs, and vice versa. Considering this finding, teachers should participate more in professional activities. Goddard, Goddard and Tschannen-Moran (2007) suggested that these particular activities help teachers comprehending their teaching knowledge and improve their teaching practices. Additionally, school principals and administrators can help increase the level of teachers' cooperation by 1) setting a side time for teacher beyond teaching hours so that the teachers can work with their colleagues, 2) allocating budget, technology, and location to facilitate teacher collaborative work, 3) communicating goals and values so the teachers understand that collaboration is part of their regular practices, and 4) promoting collaboration plan and rewarding teachers' collaboration.

Furthermore, teachers in the high performing systems (South Korea and Finland) should be empowered and provided with high level of autonomy since the principal instructional leadership was not directly or

indirectly related with their constructivist beliefs. Interventions from school administrators should be maintained at a low degree in order to allow their high quality workforce to work on curriculum development and teaching practices effectively. On the contrary, school administrators in Mexico could help their teachers to adopt the constructivist approach faster by demonstrating a high degree of instructional leadership. As such, the critical step is to improve the quality of instructional leadership among school principals.

6. RESEARCH IMPLICATIONS

For future study, researchers should consider the possibility of introducing new covariates in order to explore the variation of teachers' beliefs within and between schools. Researchers can also explore other variable possibilities to gain a more in-depth analysis of teachers' and countries characteristics. Another possibility is to conduct a qualitative study to understand the cause and effects in these relationships.

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EXPLORING THE ROLE OF ACADEMIC HEADS IN MAINTAINING THE QUALITY OF TEACHING AND LEARNING WITHIN THEIR DEPARTMENTS: A CASE STUDY OF A PRIVATE UNIVERSITY

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ABSTRACT
Higher education institutions are generally concerned with the quality of their graduates. Many institutions put in a lot effort in ensuring quality teaching and learning experience to their students because this is a reflection on the quality of the institutions themselves. This paper reports the findings of a qualitative case study at a Malaysian private university. It explores the meaning of quality teaching and learning, form the perspectives of academics and their heads of departments. It also reviews the roles of the heads of departments in maintaining the quality of teaching and learning within their departments. Data was derived from focused group interviews with academics and individual interviews with heads of departments. Findings indicate that heads of departments play a very important role in three areas: 1. assessing the quality of teaching and learning 2. identifying academic staff development needs; 3. supporting continuous professional development activities within the departments. In addition, in efforts to improve the quality of their teaching, academics were found to be more satisfied with professional development activities at department level than activities carried out at institutional level. The paper concludes with suggestions on strategies for enhancing professional development opportunities for improving teaching and learning within the departments and the institution itself.

Keywords: CPD, quality teaching and learning, higher education

INTRODUCTION
Both public and private higher education providers in Malaysia are hard-pressed to prove that they can be held accountable to their stakeholders. Although there is a differing view of what quality and what quality teaching means to different stakeholders, there is a general consensus that quality teaching is one that results in student learning (Fenstermacher & Richardson, 2005). Especially in the case of private higher education providers, students' learning is often translated into their ability to apply their learning into real world application and employability. As stated by Henard (2010, p.4), higher education providers see the need to be responsive to students' ''demand for valuable teaching'' which leads to employment and equip them with relevant skills needed not only for the present but also the future.

One of the early public perceptions of private higher education institutions is that the education provided is substandard in quality of delivery and that they are not partial towards improving their quality (Wilkinson & Yussof, 2005). The reason could be because private higher education institutions are profit driven and quality assurance and quality enhancement efforts are costly and can cut into the profit they earn. However, in addressing these concerns, many Malaysian private institutions have strived towards complying with the various quality assurance requirements

and also subject themselves to further review of quality by other universities that they partner with. For example, Sunway University, not only ensures that it complies with requirements set by the Malaysian Qualifications Agency (MQA), but further subjects itself to assurance processes by Lancaster University, UK for many of its programmes and Le Cordon Bleu for its hospitality-related programmes, just to name two. For Taylor's University, articulation pathways to various reputable international institutions meant that it had to meet quality requirements set by these institutions, in addition to those set by MQA (Taylor's University, 2016).

MQA itself has set specific recruitment and staff development requirements to ensure quality teaching is possible. It has established guidelines for recruitment and identified specific criteria that applicants had to fulfill in order to be appointed as academics or senior academics (MQA, 2014a, p.4). Criteria for academic staff appointment are described in the Programme Standards for each programme of study. One example is the criteria for academic staff appointment for the Accounting programme (MQA, 2013, p.27). Academic staff must have academic qualifications that are at least one level higher than the level to be taught (MQA 2013, p.27). Professional qualifications and industry experience are also considered important. The variations to acceptable combination between academic and professional qualifications and industry experience are described further in the programme standard (MQA, 2013, pp. 27-29). In addition, MQA has set its expectations of academic staff development and provided guidelines on how institutions should support and develop their academic staff (MQA, 2014a, pp. 30-39). However, the onus is still on the institutions to ensure that only knowledgeable academics who can teach effectively are appointed and that professional development opportunities are sufficiently made available to them later, in accordance to the need of their field (MQA, 2014b).

In this respect, academic heads play a crucial role as they are the ones responsible for implementing institutional quality assurance processes. At the same time, they are the ones closest to the academics they supervise and therefore, should have a better understanding of the challenges that academics face in delivery quality teaching. Being in that position, they have the responsibility to identify what are the developmental needs of the academics to be fulfilled to achieve the shared goal of quality teaching and learning.

STATEMENT OF THE PROBLEM

Enhancement of quality teaching and learning for any higher learning institution can only be achieved when there is a clear picture of what is the current level of quality for that institution, whether there are systems in place to assess that quality and whether there are clear concentrated efforts by the institution to enhance that quality through specific and systematic methods. The role of academic heads is important as they could provide a 360-degree view of how well institutional systems are designed and implemented in pursuit of that goal. Despite this importance, there is limited information on it, especially information which is derived from the Malaysian private higher education scene. Currently, there is significant literature on quality enhancement of teaching and learning (D'Andrea & Gosling, 2005; Crockett, 2003; Biggs, 2001) but the U.S, U.K. and Australia are the leading sources of information. Availability of more information will enable an institution to learn from its own practices in supporting professional development and quality enhancement processes. Other institutions will also be able to learn from the best practices of others.

PURPOSE

The main purpose of this study was to explore the roles undertaken by academic heads of a private university in implementing institutional measures to assess the quality of teaching and learning. It was also intended to explore the academics' perception of the accuracy and relevance of these measures in determining teaching and learning quality. In addition, the study intended to explore the approaches undertaken by academic heads to enhance the quality of teaching and learning in their respective departments.

THEORETICAL FRAMEWORK

This study relied on two theories. The first theory is the systems theory from the field of management. Based on systems theory, an organisation is viewed as made up of   interdependent parts. Effective management can be achieved through understanding of internal as well as external factors which impact them. Essentially, an organisation needs to be viewed as a system "to design meaningful interventions" to potential problems which may prevent it from achieving its goals (Porter & Cordoba, 2009, p. 226) This theory is applicable to the case study as the study focused on the roles that academic heads play in 'connecting the dots' between academics and their specific needs, institutional aim and policies, students' expectations and satisfaction, other servicing departments in

the university which form part of the cluster enabled effective teaching and learning to take place. Examples include facilities and maintenance; another is administration involved in class scheduling.

Another relevant theory is a learning theory – social constructivist theory. Various literature point out that the professional development activities are effective when can be directly linked to instructional practices, students' learning experience and feedback (Smith, 2008; Trowler, 2005). This makes the theory is particularly relevant. Social constructivism in teacher development involves a culture of participant engagement and meaningful learning process that to a large extent, connects ideas with real life situations (Beck & Kosnik, 2006, p. 2).

METHODOLOGY

This was a qualitative case study; it was located within the boundary of one place (Merriam, 1998). The case study was conducted at a private Malaysian University. The main data collection method was through interviews with respondents selected through purposive sampling. The adoption of purposive sampling enabled the researcher to gain an in-depth understanding of the focal point of the study. There were 10 participants who came from two faculties within the institution (to be referred to as Faculty A and Faculty B). Triangulation of information gathered from the interview was achieved through documentary analysis of institutional documents.

All the 10 participants had a minimum of 6 years teaching experience. The longest teaching experience stated was 34 years. Nine of the participants had been employed by the institution between 4 to 10 years. One had been with the institution for 2 years. At the time of the interview, the academics had a varying teaching load from 9 to 19.5 hours and were teaching at pre-diploma, diploma and degree levels. Two academic heads had a teaching load of 6 hours per week. The third did not take on a teaching role but would substitute for a number of academic staff under his supervision who were away from the university. However, this was limited to "a few hours a week" and did not happen every week. Of the 10 respondents, two were PhD holders, 3 were pursuing their PhDs and 4 were masters' degree holders.

As recommended by Creswell (2013), qualitative reliability was obtained through maintaining consistency in interview procedures including the briefing and debriefing process. Interviewees were informed of the purpose of the study, how the interviews were to be conducted and assured of the maintenance of their anonymity. Permission was sought and granted to audio-record the interview sessions.Semi-structured, focused group interviews were conducted with the academics. There was one focused group interview with academics from Faculty A and another focused group interview with those from Faculty. The semi-structured interviews with the academic heads were conducted individually.   The transcribing of the interview adopted adopted a naturalised approach in order to focus on the informational contents of the sessions. "Idiosyncratic" elements such as pauses, stutters, nonverbal cues and involuntary vocalisations were removed as befitting the approach (Oliver, Serovich & Mason, 2005).

Following Creswell's (2009) recommendations, qualitative validity was achieved by checking and rechecking the accuracy of transcription followed by a review of the transcription drafts by the participants before the final agreed versions were validated.

FINDINGS AND DISCUSSION

The academic heads who participated in the interviews are labelled as HOD1, HOD2 and HOD3. The academics are labelled as A1, A2, A3, A4, A5, A6 and A7. Six participants were from Faculty A: HOD1, HOD2, A1, A2, A3 and 4.Four participants were from Faculty B: HOD 3, A5, A6 and A7.

The meaning of quality teaching and learning in higher education is stake-holder dependent (Harvey, Burrows & Green, 1992). What one perceives to be high quality teaching and learning may differ from another due to differences such as subjects, programme and students. It was important to gain an insight into what the interview respondents perceived to be quality teaching and learning within the context of their field and their teaching environment. Only when this concept had been clarified, a consensus achieved, at least among academics and academic heads within the institutions, could there be an agreement on whether there was indeed quality teaching and learning. What measures to be taken to enhance the quality of teaching and learning could then be ascertained.

1.   The meaning of quality teaching and learning

Based on the two focused group interviews, all the respondents agreed that quality teaching needed to be viewed from students' perspective and student learning. and that learning itself was incomplete if it was not accompanied by the ability to apply the learning to a real situation. As stated by A1, *"if [they] learn something but they [are] unable to apply it in the real life scenario, they [are]... learning nothing."*

In a quality teaching and learning situation, the teacher was passionate, facilitated students' learning, built a supportive classroom environment. Teaching was not confined to the classroom, was research-informed and established a connection with the real world. Learners in such a class were viewed to be engaged in the learning activities, demonstrated achievement of learning outcomes and were able to demonstrate ability to apply what they learned to real situations. These perceptions of the meaning of quality teaching and learning were similar to those found in current literature on quality teaching and learning (Devlin & Samarawickrema, 2010; D' Andrea, 2007; Fenstermacher & Richardson, 2005).

A4 added that his perception of quality teaching had "evolved over time". He said:

> *Back in those days,… quality teaching meant that I must finish teaching everything that [was] required in the syllabus and to expect the highest performance from my students… Over the years, I discovered that may not be true, or that [it] is a little bit too idealistic."*

2.   The role of academic heads as implementer of institutional teaching and learning quality assurance measures

The participants reported several quality assurance measures used to assess the quality of teaching and learning. The three mentioned were students' evaluation of subject and teaching that was conducted each semester, teaching observation and evaluation by the academic heads, and the overall Student Experience Survey conducted by the institution. Responses indicated that all interviewees were positive about student course evaluation and the student experience survey as a source of information on their teaching.   However, there were contrasting views about the usefulness of teaching observation and evaluation as a source for assessing and improving the quality of teaching and learning. All participants from Faculty A were unreceptive towards it. On the other hand, participants from Faculty B found that it was helpful but had differences of opinions over the extent of the usefulness of teaching observation by their HOD to improve teaching and learning.

HOD 1 and HOD 2 from Faculty A stated that academics in their faculty had objected to the evaluation of their teaching. As stated by HOD 1,

> *As the faculty grew, there was greater resistance to it…. The view of the teaching staff was that you should have confidence in what happens, unless in exceptional situations where students are very vocal about it and complain about a particular teacher. Only then would there be a need for that [teaching observation and evaluation] to happen…. It was considered to be extremely intrusive and it wasn't looked upon favourably because it was observation by your superior, reporting person, head of school.*

HOD 2 attributed the problem to one head of department within the faculty who had raised the objection to being observed by other academic heads. The head of department mentioned was also responsible for observing and evaluating the teaching of academic staff in her department. However, in response to her own teaching being observed and evaluated by other heads of department, HOD 2 stated that she had questioned their credibility and whether they would be able to correctly assess her teaching. As this was raised in a meeting, it set off a *"chain reaction".* HOD 2 added, *"Subsequently, many felt relieved, that's the word to use, that somebody disagreed with the idea"* of formal evaluation of teaching.

Statements by A1, A2, A3 and A4 corroborated HOD1 and HOD2's statements. They criticised the evaluation of teaching and rejected its value, either in providing accurate assessment of the quality of teaching and learning or in providing feedback to enable teaching quality to be enhanced.   They gave their reasons:

> "You just come in **once** into [my] lecture, evaluate, and then give me marks." (A1) [emphasis added]

"And you get penalised for the entire year because your marker doesn't work" (Laughs) (A4)

"I failed, you know! My mark [was] so poor." (Laughs) (A1)

A1-A4 all cited the person who observed and evaluated their teaching as the reason for their rejection. The HOD they were referring to was the same HOD who questioned the credibility of her observers, as mentioned by HOD 1 and HOD 2. In response to the objections raised, the practice had been discontinued for almost two years prior to the interview.   A1-A4 were appreciative of their immediate superiors who had listened to their opinions and feelings and then discontinued the practice.

In sum, this faculty stopped implementing one institutional measure of identifying the quality of teaching and learning as it was rejected by faculty members. The faculty then moved towards utilising other means to assess the quality of teaching and used these means in a complementary manner with each other. De Boer, Goedegebuure, and Meek (2010) viewed this to be a form of effective academic leadership. They emphasised that academic managers are more effective when their management style matched "the existing organisational unit culture."

There were several reasons why A1, A2, A3 and A4 strongly objected to the practice. The first was the link of teaching observation to their year-end appraisal and to a certain extent, their salary increment and bonus calculation. The manner in which the process was done was extremely important to ensure objectivity, fairness validity and reliability of the score attached to the teaching observed. A1, A3 and A4 reported that their strong objection stemmed from negative past experience with the same faculty. Ironically, A1, 3 and 4 pointed out that it was the academic head who objected to the observation of her teaching who was herself perceived to be judgmental, unfair and insensitive when she observed the teaching of others. A1 also pointed out that with one observation a year, the academic head came into the class, evaluated their teaching and gave them marks as if one observation could give an accurate picture of the academics' entire year of teaching.

Another reason was that the practice was open to subjectivity from one implementer to another. A4 added that she had two academic heads observing one lesson yet the scores given by the two observers were markedly different, with one score being *"very good"* but the other *"very poor"*. She added, *"We are left at the mercy of the people who come into our class who do not necessarily have complete understanding of the dynamics of the students in the class"*.

A5, A6 and A7 reported that evaluation of teaching was still a practice in their faculty. Unlike their colleagues in Faculty A, A5, A6 and A7 reported no major issues with the teaching observation and to a certain extent, understood that it had to be done because the institution needed to ensure and be able to prove that it took specific measures to maintain quality. However, both A5 and A6 added that while they understood the need, they did not necessarily believe that evaluation of teaching through yearly classroom observation linked to monetary rewards was the best way to fulfill that need. In addition, unlike their colleagues, A5, A6 and A7 found value in the feedback given by their academic heads after each observation process. A7 stated, *"You know, [you] can sit and chat with the boss and he can really explain to you and go through the whole lesson and how you fared. And that's really helpful."* This could be linked to the strategy that H3 used. H3 stated that *"observation that is linked to a kind of summative observation of teachers which is linked to other reward systems can be dangerous"*. Because of this, it had to be approached in a sensitive manner and balanced with feedback. H3 added:

> *My feedback is always on specific, changeable behaviours… It has to be behaviours that are changeable. And you usually can't present everything all at once if there are a number of issues in terms of being an effective teacher.*

A5, A6 and A7's only contention was that because of the infrequency of classroom observations, whether the yearly evaluation of teaching or observation for developmental purposes, that form of feedback was infrequent as well. This constraint was acknowledged by H3 who attributed it to the number of academic staff under his supervision and other administrative and academic concerns that needed attention.

Despite the informative nature of feedback received by A5, A6 and A7, there was a consensus among all the academics that evaluation of teaching held limited value in its ability to accurately assess whether the academics taught to the best of their ability consistently. Additionally, if there was inability to achieve this, they were

concerned whether the findings from the observation could be correctly used for developmental purposes. As A6 mentioned:

I feel that ... we are on our best behaviour when we know that the boss is around and possibly, I mean this is speaking the truth, possibly people will gear up. You know, [the] boss is coming [into the class].

All the academics felt that there was a tendency for some to put up *"a show"* for the observation and that show was not representative of what happened in class for the rest of the year. HOD3 agreed with this. He mentioned that because the procedure was to inform the academics to be observed, he realised that to a certain extent, he would get a *"show and tell"* session. He mitigated this effect by providing a time frame for when he would go into the classes and conduct his observation but would not identify a specific time. Even then, he admitted that he would still get some *"show and tell"* sessions. He stated, *"You know you're getting the best show on earth"* but that he had to implement it because *"it's part of the system."*

The situation with evaluation of teaching in both faculties was a reflection of the problems which occur with the evaluation of teaching in higher education. Henard (2010, p. 7), in his summary of 29 higher education institutions across 20 countries stressed that *"even if accepted in principle, the evaluation of quality teaching is often challenged in reality"* and added that institutions continue to struggle to come up with an instrument that could measure quality teaching and learning in a reliable way.

3.   Other measures to determine the quality of teaching

For the faculty where HOD1, HOD2, A1, A2, A3 and A4 came from, the discontinuation of the evaluation of teaching as a source of information to determine the quality of teaching and learning meant they had to rely on other sources of information. All the respondents from the faculty identified the following methods as the source of information: feedback gained from exam paper moderators, both the internal moderators and external moderators; feedback from second-markers for students' coursework and final exam scripts; student course evaluation using the institutionally-provided template; monthly student-staff committee meeting when issues about teaching and learning were raised; individual including anonymous feedback given by students.

For Faculty B where HOD3, A5, A6 and A7 came from, evaluation of teaching was still practised. However, for HOD3, because of the limitations of the process in holistically identifying whether or not quality teaching and learning occurred beyond the observation period, it was important for him to look into other means of assessment.

Like the other faculty, student course evaluation was used as one source of information. However, adjustment had been made to the course evaluation that was distributed to students enrolled in the English proficiency programme. As students from this programme were limited in their language proficiency, HOD3 felt that using the existing template would not produce a reliable finding as the students were liable to misunderstand or perhaps unable to comprehend the items in the evaluation sheet. The revised course evaluation was one that was agreed on by academics teaching that programme. How the course evaluation was conducted for this programme was also adapted. The usual practice was to distribute the course evaluation sheet, give the students general instructions and ask the students to complete the evaluation sheet on their own before returning the evaluation sheet to the administrator. In this instance, the course lecturer would go through the items one by one to ensure that students understood the items.

In addition to the student evaluation, HOD3, in collaboration with the academics teaching the English proficiency programme, put in place a "mid-term feedback session". HOD3 stated that students at Level 3 and 4 of the four-level programme were required to complete a self-evaluation feedback. Their lecturer would then put his or her own feedback on the students' skill set. This process also pushed the lecturers *"to reflect on what they've been teaching or have not been teaching"* while at the same time provided HOD3 more information about the nature of teaching and learning that had taken place. A5, A6 and A7 agreed with this. A6 mentioned that through the feedback exchange, she gained a better understanding of how students' perceived the quality of her teaching. She explained, *"Usually, I will ask them. So how [can] this class or this lesson be improved? Or this course? So that's where [when] they will say it. So you have to be bold enough to listen."*

4.   What do the academic heads do to support their academics' professional development efforts to enhance their teaching

All three academic heads agreed that soliciting feedback from their subordinates in reference to areas of needs for developmental programmes was important. This enabled them to determine how crucial the needs were and what were the best strategy to fulfill those needs. All three used the monthly staff meeting to solicit this feedback, but additionally, HOD3 also relied on what he had observed in classes to form an assessment of what developmental work was needed. Where internal expertise was available, they facilitated the organisation of professional development sessions for academics in their led by these internal experts. Where places were available, these sessions would also be opened up to academics in other faculty. HOD3 for example, mentioned that during his observations, he discovered particularly effective teaching strategies or techniques and would then organise the academic staff involved to showcase their strategies to the rest of the team. Where the expertise was unavailable, they would then look outside the institution. All three academic heads agreed that they were not dependent on both the university's Teaching and Learning Unit to meet their needs or the Human Resource Department which also organised training and workshops for the university. HOD2 felt that the faculty was happy with this approach although he did acknowledge that there faculty members wanted an increase in the activities organised. In addition, HOD3 also ensured increased opportunity in peer collaboration through team-teaching by incorporating it into the time-table but admitted that constraints of number of staff and the number of students to be taught did set a limit to how far he could organise this in one semester.

All the academics agreed that the professional development programmes organised especially for their faculty were very helpful in helping them enhance their teaching skills. In relation to enhancing the quality of their teaching, the academics found these programmes to be more helpful than those organised by external providers. As Birman, Desimone, Porter and Garet (2000) pointed out, effective professional development programmes for teaching professionals are, among others, clear in the form they take, involve collective participation of colleagues within the same setting, focus on content area, involve active learning, and are coherent with the lecturers' overall experience as well as institutional policies. Knight, Tait and York (2006) added that the reason why externally organised programmes often fail is due to lack of application to the academics' own teaching context. The situation is a reflection of social constructivism at work. Palinscar (1998, p. 345) stressed that according to social constructivism, there is an interdependence of "social and individual processes in the co-construction of knowledge."

5.   What else needs to be done?

HOD1 and HOD2 felt that observation of teaching could be very valuable in providing academics with feedback on teaching. They acknowledged that observation of teaching for evaluation purposes had stigmatised other forms of observation because of what had happened previously. They agreed that there was a need to resell the idea of observation for development purposes, either by peers or by senior academics. HOD2 specifically felt that it was an appropriate time to do so because the senior academic who raised the objection and who was herself the reason why many objections had been raised by other academics was no longer with the faculty

HOD1 also mentioned that there were still some basic issues with teaching which had consistently been raised in Students' Experience Survey. These included voice projection, monotonous voice and boring lesson. He added that issue with command of English language was also raised though significantly at a lesser degree and that the faculty was still working on what was the best approach to deal with the situation. The dilemma, as he put it: *"I mean, what do you do? Do you tell the staff to go and attend English classes and this person may actually be a PhD candidate? So it doesn't gel with that."*

HOD3 mentioned that it was crucial for many academics to improve their technological skills and he needed to facilitate this. He also pointed out that whether an academic was IT-savvy had nothing to do with age. The concern was that although a minority of students were *"digitally-out-to-lunch"*, many others were *"whizz kids"*. Some academics were willing to *"engage with new technology"* and incorporate it into their teaching but *"others…are reticent to do it."*

Institutionally, all the academic heads agreed that there were several things which required attention. The Teaching and Learning Unit was viewed to have increased the activities that it organised but at that point, most of the unit's offering catered more for the novice academics newly embarking on their teaching careers. The academic heads acknowledged that it was difficult for the unit to organise programmes which would meet the needs of all academics but were positive that given time, the unit would be able to offer a wide range of programmes which met different needs.

There was also consensus among the academic head that institutional policy regarding professional development needed to be adapted, changed or refined to fit with the institution's current status as a university and what it expects of its academics in terms of professional growth and enhancement of teaching quality. The university wass viewed as being caught in a complex situation where it had inherited the structures set up for a college and that even as changes to these structures were being made, more changes were occurring within the institution. As HOD3 commented, in relation to professional development, "We are still evolving the policy and how it is operationalised." Although the institution had been on the frontline of the private higher education industry for over two decades, it was a young university. HOD3 mentioned:

> Some of the criteria that come in for supporting staff in terms of their outcomes, from international conferences need to recognise that many of the people are young researchers, young academic writers…in terms of experience…. And need support to go through that process. So, we have a university structure. Yes we all want SCOPUS journals….ISI journals that are highly ranked and so on. Well, we need to sort of walk before we can run.

HOD2 also pointed out that the manner in which the policy was implemented also needed consistency. For example, he cited the case of one staff who submitted an application for training organised in another state within Malaysia, which met the stipulations of the policy and which he had approved. However, he stated that the Human Resource person in-charge of training and development suggested that the academic should go to a training somewhere closer for non-academic reasons. Although this problem was eventually sorted out and the academic staff obtained the final approval needed, these were examples of implementation gap that needed attention.

To add to the mix, the institution was also part of a larger, non-education-based, corporate structure. While the uniqueness of the institution had been taken into consideration, many of the management practices adopted were those which were implemented across the larger organisation which, according to the participants, did not fit well with the institution's "nature of business".

Finally, all the interview respondents agreed that there needed to be a better understanding of what it takes to deliver quality teaching. H1 summed this up clearly by saying:

> I think that there is a need for… stakeholders to understand the needs of the teaching profession. Stakeholders here not just limited to HR but would include ITS [IT Services], [and] also include Facilities and Maintenance. So for example, even in terms of the space that a teacher has. Or the allocation of time-tabling and scheduling. These are things that should not be taken lightly…. So everybody needs to get into it because I think there is a misconception by many stakeholders involved in this process that teaching is an easy thing to do.

CONCLUSION
The findings of this study reinforced the important role that academic heads, as those in the middle, played in implementing institutional policies and regulations to assure the quality of teaching and learning in the institution and implement strategies that could assist in further enhancement. In that capacity, it was found that the academic heads played a crucial role in exercising their own judgment as to what institutional measures worked and what did not work with their own faculty. It was found that all the academic heads practised a soft systems approach to assessing, maintaining and improving the quality of teaching. In the case of HOD1 and HOD2, because of the strong objections by their faculty members, discontinuing the practise and exploring other means of obtaining information about the quality of teaching and learning in the classroom was seen as the best solution. In the case of HOD3, anticipation of problems if teaching observation and evaluation was not conducted with objectivity and

sensitivity resulted in the procedure being accepted by the academic staff under his supervision. Despite this, all respondents agreed that the procedure could not accurately inform the academic heads on what academics actually do in class for the rest of the year.

All respondents agreed that multiple-source of information should be utilised in order to form a holistic evaluation on the actual quality of teaching and learning that took place. In relation to the systems theory, this scenario is one which Checkland (1994, p.80) would recognise as moving away from "hard systems thinking" in which an organisation is recognised as a set of systems which can be "systematically engineered" to achieve objectives. The movement was towards "soft systems thinking" in which an organisation is viewed to be problematic but the process of inquiry into the problematic situations... can be organised as a system."

All the respondents concurred that academics should continuously develop themselves in order achieve or maintain high quality. While they agreed that attending or presenting at conferences, seminars and workshops were valuable to their learning and helped enhance their knowledge, they felt that departmentally-organised programmes were the most effective in helping them increase the quality of their teaching as these programmes addressed specific needs and the knowledge and skills learned from such programmes could be immediately applied to their own teaching situation. All participants were highly satisfied with the departmentally-driven programmes available for them. The academics felt that this occurred because their academic heads were responsive to their needs and took the initiative to find out what specific challenges they had in their teaching and organised developmental programmes accordingly.

Although institutionally, most respondents were aware of the professional development programmes organised by the Teaching and Learning Unit, all agreed that that more concentrated effort was needed to make the unit highly functioning. All respondents agreed that as the institution was caught up in the process of change, in transforming to become a university that could be comparable to other international universities recognised for their achievement, the situation was a highly complex one. Institutional policies, regulations and implementation had to be revised and such changes were only possible with time and concentrated effort by all stakeholders to provide sufficient input into the process. This situation could be familiar to other Malaysian private universities as they may be going through similar changes. As such, future research could explore how the institution is strategising its institutional policy changes in relation to professional development and who, among the academics are involved in the process. Additionally, future research could explore strategic approaches in streamlining professional development programmes for academics within the institution to tap into what the academics had already identified as the most effective source of input to enhance their teaching.

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FACTOR AFFECTING CREATIVE PROBLEM SOLVING PERFORMANCE OF PRE-SERVICE TEACHERS IN BLENDED LEARNING ENVIRONMENT

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ABSTRACT

The aim of this study was to examine factors involved in the creative problem solving and blended learning context that can improve creative problem solving performance. Mixed-methods research with embedded design was used for collecting and analysing data. The quantitative data was analysed through structure equation model (SEM) for identifying blended learning and creative problem solving factors. Qualitative data was collected by undertaking observation and conducting semi-structured interviews, and focussed on finding appropriate techniques and learning environments in both traditional and online classrooms. The study revealed that creative problem solving performance could be significantly enhanced through blended learning instruction factors. In addition, blended learning instruction was statistically related to creative problem solving processes. The 'Learning activities' factor was the most important factor that enhanced creative problem solving performance in blended learning context. Furthermore, the results from the observation and interview process demonstrated that the instructors applied creative problem solving process through diverse strategies such as Wh-questions, brainstorming, and metaphor for enhancing the thinking skills of students in blended learning environments. Moreover, instructors organized a flexible classroom climate, which encouraged students to free to share ideas and present their opinions in the classroom and create projects in alignment with their own interests.

INTRODUCTION

Higher education not only develops learners in a specific area to work or apply practical knowledge; but it also enables learners to be experienced citizens through various environments (Longson, 1997). The instructors should undergraduate students, prepare, and plan their learning in a way that fits with their goals, time, and resources (Longson, 1997). Meanwhile, learning spaces and environments in universities are the other factors affected learning such as diverse activities, experiences, and resources (Strange & Banning, 2001). In addition, pre-service teachers who might be instructors in the future should have basic knowledge in education including: technology, pedagogy, and content knowledge for integrating the best instruction (Koehler & Mishra, 2009). Thus, instructors should have knowledge in "subject matter" for delivering the correct information and understanding the steps of delivering information in order. Instructors should also have the pedagogical knowledge to select the most appropriate strategies for their students. In the same way, technologies were integrated in instruction for improving and facilitating learning activities (Koehler & Mishra, 2009). The other goal of instructors in learning proficiency should be thinking capacity through applying knowledge and skills that learners have never learned. Such knowledge and skills might be related with prior knowledge and other perspectives. So, the pre-service teachers might organize the best classroom and improve the high quality learners if they were developed in skill of creative problem solving and ability to apply technology in instruction as blended learning.

Due to the evolution of technology, many universities around the world have integrated blended e-Learning instruction in order to solve problems related to interaction, instruction time and place, boundary of learning, environment (Garrison, D. Randy and Vaughan, 2008; Littlejohn & Pegler, 2007; Picciano, Anthony G. & Dziuban, 2007). Accordingly, this showed that blended learning instruction has grown rapidly (Allen, Seaman, & Garrett, 2007)

Blended Learning

Blended learning instruction is one type of instruction that integrates face-to-face and online instruction in various settings. For example, some instructors used online tools as a course management system (CMS) for posting assignments, course syllabi, or some documents; whereas, some used online tools or learning management system (LMS) as a communication tools for discussion, giving feedback, or interactive activities with students such as sharing ideas, brainstorming, or others (Allen et al., 2007). As a result, integrating various online learning tools to improve students' learning and enhance their creative and critical thinking has become one pedagogical strategy for instructors. (Garrison, D. Randy and Vaughan, 2008; Littlejohn & Pegler, 2007; Picciano, Anthony G. & Dziuban, 2007; Runco, 2007; Thorne, 2003). Instructors in universities applied tools on online platforms for improving instruction and learning, particularly to enhance creativity and criticality.

Although blended learning has been known as the integration between classroom and online learning environments (Picciano, Anthony G. & Dziuban, 2007), there are various instructional elements that instructors ought to realize, as follows:

1) Online learning and classroom activities that include orientation activities; the presentation of objectives; guidance for using online platforms; assignments; group discussions; collaboration; or studying online presentations, video, or other resources (Allan, 2007; Alshwiah, 2009; Bach, Haynes, & Smith, 2006; Bonk, Graham, Cross, & Moore, 2006; Chen & Cheng, 2009; Y. M. Huang, Kuo, Lin, & Cheng, 2008; Kashefi, Ismail, Yusof, & Rahman, 2011; Littlejohn & Pegler, 2007; Nel & Wilkinson, 2006; Orhan, 2008; Stacey & Gerbic, 2009; Thorne, 2003; Usta & Özdemir, 2006; Wilson & Smilanich, 2005; Zhao & Yuan, 2010)

2) Feedback that instructors could give through online and face-to-face (f2f) for improving learners' thinking skills (Bach et al., 2006; Lim, Morris, & Kupritz, 2007; Nel & Wilkinson, 2006; Orhan, 2008; Thorne, 2003; Wilson & Smilanich, 2005; Zhao & Yuan, 2010)

3) Hard/soft resources and online tools that consisted of course documents, videos, multimedia textbooks, and others. (Allan, 2007; Alshwiah, 2009; Bach et al., 2006; Bonk et al., 2006; Lim et al., 2007; Orhan, 2008; Stacey & Gerbic, 2009; Thorne, 2003; Usta & Özdemir, 2006; Wilson & Smilanich, 2005; Zhao & Yuan, 2010)

4) Communication channels to share messages between instructor-learner and learner-learner; however, interactions had to be applied with learning resources and/or online tools and moved forward in activities. (Allan, 2007; Bach et al., 2006; Littlejohn & Pegler, 2007; Orhan, 2008; Stacey & Gerbic, 2009; Wilson & Smilanich, 2005; Zhao & Yuan, 2010)

5) Evaluations, including both formative and summative evaluation. Formative assessment includes quizzes, mini project assessments, or reflection, each of which are focused on the progress of learners; while, the purpose of summative evaluation is to evaluate learning after the course as a whole. (Allan, 2007; Bach et al., 2006; Bonk et al., 2006; Orhan, 2008; Stacey & Gerbic, 2009; Thorne, 2003; Wilson & Smilanich, 2005; Zhao & Yuan, 2010)

Online Classroom

In terms of the online classroom, the Internet connection may help learners to learn at their own appropriate place and time. There were many features in online platforms such as multimedia for presenting the content, discussion board for sharing ideas, grade book for updating results, chat rooms for online talking, video or audio conferencing for online meeting. Some classrooms used learning management system (LMS) for managing online classroom (Thorne, 2003); however, some instructors implied social network for enhancing learners' idea sharing and collaborating (Mathew, 2014). In summary, online classroom features include: (1) Internet to connect with learners anywhere and anytime, (2) multimedia for presenting content, (3) discussion board for sharing ideas, (4) grade book for updating learning results, (5) chat room for classroom communication, (6) Audio and video conferencing tools for online meeting, (7) learning management system (LMS), and (8) social networking for connecting and collaborating among learners. (Littlejohn & Pegler, 2007; Mathew, 2014; Thorne, 2003).

According to blended learning feature, the instructors should examine epistemologies, theories of learning, pedagogical approaches, instructional strategies, and acts that were parts of blended environments. In addition, blended learning pedagogical approaches might be one factor to solve classroom problems through enhancing

flexibility in classroom and improving learners' thinking skills (Picciano, Anthony G. & Dziuban, 2007). For example, small group discussions that could improve critical and creative thinking might be not only in classroom but also on an online discussion board (Lim et al., 2007).

Creative Problem Solving (CPS)

Creative problem solving (CPS) is blended between problem solving and creative thinking, which helps instructors apply various strategies to improve learning activities (Treffinger, Isaksen, & Dorval, 2003). For example, learners can improve problem-solving skill through creative thinking approaches. Learners might discuss together in brainstorming sessions, share new ideas, incubate them, and then decide on the best solution (Barak, 2013). As many authors writing about 21st century skills have demonstrated, the creative thinking and problem solving skills are the most important skills that pre-service teachers should have to be effective in-service teachers in the future (Brookhart, 2010). Higher order thinking as problem solving and creative thinking was the most important skill in higher education because of the need to solve pressing problems in the future (Kirton, 2003). Therefore, undergraduate students including pre-service teachers in every academic area need to improve these skills to enhance learning in a period of limited resources, materials, amount of time, and special learners (Brookhart, 2010). Although the problem solving process was important for making solution in any field, those solutions still were not the best ways because the solutions were based on analysis step and quantitative element. As a result of solution gaps, the problem solving process was integrated with creativity to create better solutions (Higgins, 1994).

CPS is the instruction process to improve creative problem solving performance that has been investigated by Alex Osborn since 1952 (Treffinger et al., 2003). For more than five decades, many researchers conducted, developed, and updated creative problem solving (CPS) process more than 10 times. At the present, the latest version 6.1 CPS version consisted of four steps: (1) understanding the challenge, (2) generating ideas, (3) preparing for action, and (4) planning your approach. Each of these four steps consist of sub-steps as follows: (Treffinger et al., 2003).

Figure 3: Creative Problem Solving Process

CPS was the process that integrated creativity in problem solving process through generating new ideas to invent innovative solutions (Higgins, 1994). In the CPS process, the 'understanding challenge' was the first important step that enhanced learner understanding of the challenge or problems in their context and started to set up their goals through 'constructing the opportunities' process. The learners need examine the expected problems or challenges for making the clear objectives (Treffinger et al., 2003). According to analyzing the environment, the problem solvers might understand and be aware of the existing conditions. Moreover the learners could expect the possible results and advantages (Higgins, 1994). After constructing the opportunities step, the learners need to consider various data through different perspectives in the 'Exploring data' step. The learners might see the situation and create many ways to solve the problems through 'Framing problems' that may help the learners to form creative ideas (Treffinger et al., 2003).

After framing the problem step, the instructors should give the learners opportunities for generating ideas (Treffinger et al., 2003) through creative thinking techniques, including brainstorming, asking open-ended questions, comparing by metaphor process, and others because the creative techniques might enhance the generation of solutions (Higgins, 1994). In addition, the creative thinking ideas are based on the creativity factors

including: (1) fluency (presenting diverse ideas), (2) flexibility (modifying to new perspectives), (3) originality (creating new ideas or innovations) (Thorne, 2007; Treffinger et al., 2003), and (4) elaboration (describing in more detail) (Thorne, 2007). This step, which would help learners to generate in divergent thinking that extend their ideas, was important for 'preparing for action' step. The preparing for action step included two sub steps that were 'developing solution' and 'building acceptance' for creating solution in practical area (Treffinger et al., 2003). A step for applying solution in practical area might relate to the probable solving techniques in diverse perspective (Higgins, 1994) through the purposive approach to improve the possible and best solution for effective problem solving (Treffinger et al., 2003).

Creative thinking and problem solving are parts of higher order thinking skills, which could be improved through instructional strategies (Brookhart, 2010). These strategies are organized by instructors as facilitators through brainstorming (Fogler & LeBlanc, 1995; Higgins, 1994; Lumsdaine & Lumsdaine, 1995; Osborn, 1957; Proctor, 2005), metaphor (Higgins, 1994; Lumsdaine & Lumsdaine, 1995; Osborn, 1957; Proctor, 2005), asking 5W 1H questions (Fogler & LeBlanc, 1995; Higgins, 1994; Lumsdaine & Lumsdaine, 1995; Osborn, 1957), and synthesising ideas (Osborn, 1957). Additionally, these strategies could be set up in online learning sessions. For example, learners could share their ideas through a discussion board (Ajayi, 2009), social network (Perry-Smith & Shalley, 2003), or mobile application (McQuiggan, Kosturko, McQuiggan, & Sabourin, 2015).

Although research studies from 2003 – 2013 (Bahr et al., 2006; Barak, 2013; Chang, 2013; Chen & Cheng, 2009; Deininger, Loudon, & Norman, 2012; Jaarsveld, Lachmann, & van Leeuwen, 2012; Ju Lee, Bain, & McCallum, 2007; Kashefi et al., 2011; Nakagawa, 2011; Peelle, 2006; Tseng, Chang, Lou, & Hsu, 2013; Uribe Larach & Cabra, 2010; Zeng, Proctor, & Salvendy, 2011) were conducted in experimental research design showed that learning strategies in blended instruction could enhance creative problem solving skills, these research results could not identify the significance and relation between creative problem solving process and blended learning instruction.

Accordingly, this research study proposed a research framework of blended learning that enhance creative problem solving performance. The aims of this research study were (1) analyzing CPS and blending learning instruction factors that might affect problem solving skills and (2) investigating the correlation between blended learning and CPS factors.

METHODOLOGY

Mixed-methods research with embedded design was used for collecting and analyzing both quantitative and qualitative data in this study. First, questionnaires were distributed to 545 pre-service teachers who studied in a subject related either to educational innovation or instructional media. The questionnaire instrument items included: (1) demographic data, (2) learning tools and resources in blended learning instruction, (3) blended learning factors, and (4) creative problem solving factors.

Secondly, the assessment rubric was adapted from Creative Solution Diagnosis Scale (CSDS) (Cropley, Kaufman, & Cropley, 2011) to assess the participants' project. This instrument was approved by nine experts in educational field for selecting the appropriate indicators and three experts for validating the assessment rubric contents. The assessment rubrics included 14 indicators with five-level Likert scale was used to assess student projects. These indicators included: (1) performance, (2) appropriateness, (3) prescription, (4) prognosis, (5) reinitiation, (6) generation, (7) redirection, (8) pleasingness, (9) completeness, (10) gracefulness, (11) convincingness, (12) pathfinding, (13) germinality, and (14) foundationality.

Moreover, observation data was collected from one classroom as qualitative data. The researcher observed this classroom for 11 weeks. 24 learners from educational media class were observed regarding their creative thinking and problem solving skills in a blended learning environment during educational media creation. In addition, students' online participation and interaction in Moodle and Line were observed. After this class finished, the researcher conducted a follow-up interview with the class instructor and four learners through semi-structured interviews to clarify the learning context and experiences.

FINDINGS

The study revealed that the university instructors instructed not only in classroom, but also in online learning platform such as Moodle and social media. According to the process in blended instruction, the research result is described in three parts: 1) learning tools and resources in blended learning instruction 2) correlation between
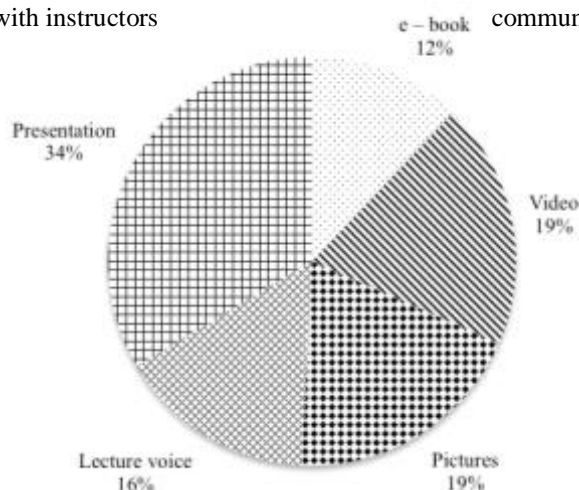
blended learning, creative problem solving, and creative problem solving abilities 3) structural equation model (SEM).

3.1 Learning tools and resources in blended learning instruction

Online tools and media that instructors used as supplemental learning tools were e-mail, blog, discussion board, and social networks such as Facebook, Twitter, Instagram, and Line application. In pre-service education program, Facebook was the most frequently used learner-instructor interaction tool, followed by the Line mobile application (see figure1). Similarly, the most frequently used learner-learner interaction tools were Facebook and Line application (see figure 2). Regarding learning resources, instructors used presentation for representing learning contents most frequently; whereas, e-book, video, pictures, and lecture voice were used as online learning resources equivalently (see figure 3). Learning resources were one important part in this subject because learners had to get the core principles and the best examples for understanding through a model or prototype. For example, the instructor in an observed class gave one opinion about instruction that "learners should perceive CAI design principle and receive the effective CAI samples". As a result, the instructor used Moodle as learning management system (LMS) for self-studying through uploaded documents and presentation samples.

Figure 2. Online tools that students used for communicating with instructors

Figure 3. Online tools that students used for communicating with other learners

Figure 4. Online learning resources

3.2 Correlation between blended learning, creative problem solving, and creative problem solving abilities

As mentioned before, this research study collected learning context data from 545 pre-service teachers with a questionnaire. To examine the relation between creative problem solving and blended learning instruction factors the correlation in table 1 indicated creative problem solving process indicators. Likewise, the creative problem solving process indicators were all significantly correlated with creative problem solving skill indicators (Relevance & effectiveness: RLVEFT, Novelty: NOVLTY, Propulsion: PRPLSN, Elegance: ELEGNC, Genesis: GNESIS). Nevertheless, some indicators of blended learning instruction were significantly correlated with

creative problem solving skill indicators. The indicator in creative problem solving process and blended learning instruction that highest correlated with creative problem solving ability was PREACT – GNESIS. It showed that the preparing for action step correlated genesis that referred to pathfinding, germinality, and foundationality of learners (adapted from (Cropley et al., 2011).

Table 1: correlation between blended learning, creative problem solving, and creative problem solving abilities

Variables	UNDCHA	GENIDEA	PREACT	PLNAPP	LRNACT	LRNRES	FEDBCK	INTINS	INTLRN	EVALUT	RLVEFT	NOVLTY	PRPLSN	ELEGNC	GNESIS
UNDCHA	1.000														
GENIDEA	0.677**	1.000													
PREACT	0.684**	0.687**	1.000												
PLNAPP	0.552**	0.500**	0.746**	1.000											
LRNACT	0.465**	0.415**	0.447**	0.396**	1.000										
LRNRES	0.429**	0.376**	0.408**	0.303**	0.644**	1.000									
FEDBCK	0.428**	0.385**	0.415**	0.297**	0.428**	0.479**	1.000								
INTINS	0.444**	0.437**	0.458**	0.329**	0.454**	0.514**	0.678**	1.000							
INTLRN	0.331**	0.301**	0.300**	0.264**	0.486**	0.514**	0.443**	0.507**	1.000						
EVALUT	0.356**	0.341**	0.345**	0.309**	0.427**	0.482**	0.459**	0.409**	0.582**	1.000					
RLVEFT	0.142**	0.125**	0.180**	0.173**	0.154**	0.062	0.078	0.090*	0.085*	0.099*	1.000				
NOVLTY	0.151**	0.132**	0.184**	0.155**	0.121**	0.051	0.106*	0.092*	0.079	0.147**	0.890**	1.000			
PRPLSN	0.149**	0.130**	0.180**	0.139**	0.117**	0.057	0.094*	0.102*	0.081	0.152**	0.877**	0.945**	1.000		
ELEGNC	0.211**	0.168**	0.212**	0.207**	0.184**	0.123**	0.147**	0.182**	0.151**	0.172**	0.827**	0.830**	0.836**	1.000	
GNESIS	0.180**	0.153**	0.216**	0.197**	0.199**	0.128**	0.137**	0.158**	0.128**	0.163**	0.835**	0.705**	0.833**	0.783**	1.000
Mean	3.792	3.789	3.793	3.839	4.163	4.121	3.650	3.741	4.151	3.936	3.745	3.464	3.201	3.835	3.413
S.D.	0.575	0.646	0.620	0.764	0.519	0.651	0.793	0.852	0.673	0.728	0.752	0.726	0.722	0.625	0.646

** p <.01, * p < .05

3.3 Structural equation model (SEM)

The hypothesized structural models were tested using the structural equation modeling analysis. The result demonstrated that the SEM fitted well with the data, suggesting adequate fit indices: χ^2 = 595.851, df = 99, GFI = .880, AGFI = .835, RMSEA = .096. The standardized path coefficients and significance of relationships of the indicators in model were depicted in figure 4.

The blended learning instruction factor (BLNLRN) was a significant direct influence on creative problem solving ability (CPSABT) (β = .19, t = 2.791, SE = .07); whereas, the effect of creative problem solving process (CPSAPP) on creative problem solving ability was mediated by the blended learning instruction. According to needs in learning improvement, instructors chose the appropriate approaches for learners who would like to improve their learning and knowledge. The research result that was from the observed classroom that based on instruction in classroom could show the effect of blended learning instruction and creative problem solving ability in detail. Owing to utilizing Moodle as a learning management system (LMS), the learners could follow

up and prepare before learning in class. The instructor determined online session in 30 percentages for engaging learning in classroom, and the traditional classroom in 70 percentages for activities because "*there were a few learning resources, learners should learn by themselves through weekly documents in LMS, and design the project in the computer room*". The documents as learning resources were one important part for learning readiness of learners because the learners had only 3 hours of f2f instruction per week; however, they could review prior knowledge and prepare for the following class through LMS. There was the instruction wrapped around online resources which were learning assignments, learning resources, additional documents, giving feedback, learning interaction, and assessment for engaging learning. Hence, the learning context in the observed class was described in these following factors.

In the traditional classroom, many learning strategies were selected to organize with learners. For instance, problem-based learning was one strategy that instructors applied in courses for encouraging learners' thinking in some cases. Instructors may apply techniques for encouraging thinking skills such as asking Wh-questions, brainstorming, or metaphor. The most important matter in problem-based learning was the challenges that would motivate and increase learners' learning through inspiring learners' ideas and suggesting the best solution. For example, learners might improve problem-solving skills through asking about the reason or cause of one topic might such as "why did you think it was important?" "What was the missing object in CAI (Computer assisted instruction)? What would you add to complete it?". Learning strategies would affect learning activities that instructors designed for improving creative thinking and solving problems skills. For instance, the instructor chose the problem-based learning

Figure 4: Structural equation model (SEM). Note: 'understanding the challenge': UNDCHA, 'generating ideas': GENIDEA, 'preparing for action': PREACT, and 'planning your approach': PLNAPP) were all significantly correlated with blended learning instruction indicators ('learning activities: LRNACT, learning resources: LRNRES, feedback: FEDBCK, learners – instructor interaction: INTINS, learners – learner interaction: INTLRN, evaluation: EVALUT

Secondly, instructors in many universities probably applied learning management systems (LMS) such as Moodle or Blackboard. Each LMS has its own features to encourage learning. For example, a discussion board that was in the LMS might encourage learner-learner interaction. Whereas learners might use social media such as Facebook or mobile applications such as Line to share ideas, information, pictures, or data sources that would be added in a semester project. These social media and applications were not only used as points of interaction between learners-learners and learners-instructor but also as an online database for collecting pictures, information, graphs, sound, and others.

Moreover, the instructor would assign learning tasks that included three topics as follows: 1) introduction, 2) global warming, and 3) CAI prototype through PowerPoint presentation. After one week, groups of learners would present their projects in front of the class; after that, there was some feedback from the instructor or

learners for improving the next projects. In order to encourage the progress of learners, students were asked to present all learning tasks from the beginning of semester in order to improve through feedback. Feedback from instructors consisted of graphic design, creative ideas, and utilization. As a consequence, feedback from instructors and learners focused on adapting and improving the next project not only based on users' perspective (by learners) and profession's perspective (by instructor).

Types of interaction in this context were learners-learner interaction and learner-instructor interaction in both face-to-face and online sessions. Communication in classroom would based on asking some questions about learning topics for improving knowledge sharing through learners' experience or finding causes of something. In addition, comments in each assignment were interactions between learner-instructor through giving feedback and learners-learner through trying to find the solution and make the projects better. Furthermore, the instructor and learners used social media and mobile application as learning communication channels frequently. For example, the instructor created a discussion group on Line application for assignments, asking some academic questions, and making announcements, whereas learners created Line and Facebook groups for sharing pictures, documents, and some information. These social media tools were used for synchronous learning interaction since learners would ask some academic questions and get immediate feedback.

The instructor divided evaluation into 2 parts, summative evaluation and formative evaluation. In formative evaluation, learners would get comments and feedback after submitting each mini project. This aimed to enhance creating and designing skills and gave an opportunity for students to improve their projects. These comments and feedback provided important as guidelines for creating better projects. The summative evaluation focused on examining a computer assisted instruction (CAI) project, which was the semester project. The CAI project integrated creative experiences in each mini project.

In f2f, the instructor created an open classroom climate, one learner in an interview responded: "*the instructor gave us an opportunity to choose our topics freely*". Furthermore, the instructors gave the learners an opportunity to share opinions or ideas in class not only in classroom environment, but outside class also. For example, learners could share their ideas through social networks, mobile applications, or on a discussion board. In accordance with give students a sense of motivation to learn and work on their project, the learners had authority to select their own project topics and styles of presentation.

CONCLUSIONS

In the present, instructors in university are attempting to apply more strategies in classrooms such as project-based learning, problem-based learning, brain-based learning, and others. However, instruction might be organized in classroom and/or online platform which instructors could use learning management system (LMS) in online platforms. The purpose of this research study was to examine factors involved in the creative problem solving and blended learning context for improving creative problem solving performance and to investigate the correlation between blended learning and creative problem solving factors. The research result indicates that there was a correlation between the creative problem solving process and blended learning instruction; furthermore, blended learning instruction affected creative problem solving ability. Moreover, the study revealed that the instructors in higher education instructed not only in the classroom, but also in online platform by using LMS or social media to enhance learning. This kind of instruction was blended learning instruction that included various important factors as follows: 1) learning activities (Allan, 2007; Bahr et al., 2006; Bonk et al., 2006; Thorne, 2003) 2) learning resources (Alshwiah, 2009; Chen & Cheng, 2009; Y. M. Huang et al., 2008; Wilson & Smilanich, 2005) 3) feedback (Bahr et al., 2006; Nel & Wilkinson, 2006; Orhan, 2008; Thorne, 2007; Zhao & Yuan, 2010) 4) learner – instructor interaction (Allan, 2007; Bahr et al., 2006; Bonk et al., 2006; Thorne, 2003; Wilson & Smilanich, 2005) 5) learner – learner interaction (Allan, 2007; Bahr et al., 2006; Bonk et al., 2006; Thorne, 2003) and 6) evaluation (Bahr et al., 2006; Bonk et al., 2006; Orhan, 2008; Stacey & Gerbic, 2009; Thorne, 2003). However, instructors integrated learning strategies such as problem-based learning (Yang, 2015) and project-based learning (Trilling & Fadel, 2009) in learning activities. One kind of learning strategy that was important for improving 21st century skills was creative problem solving process (Trilling & Fadel, 2009). This process consisted of meaningful steps for improving creative thinking and problem-solving skills; the first step was "understanding the challenge" which instructors should motivate learners to think about the current problems and find related information to frame the challenge topic. The second step was "generating ideas" that were from group of learners who could share diverse opinions through brainstorming techniques. Next step was "preparing for action" that related to develop the solution and find the acceptance in the most suitable one. And the last one step was "planning your approach" that contained the detail assessment and designing plan for solving the problems (Treffinger et al., 2003). These steps were integrated in a course and found that learning activities was the most important factors in blended learning instruction.

The implication of these analyzed factors is that instructors should plan and design instruction in classrooms and online sessions through examining the indicators in blended learning and creative problem solving process. Firstly, the instructors should examine the indicators in blended learning instruction; after that, they should analyze the context in each indicator. For example the instructors should analyze the characteristics of learners such as prior knowledge, interest, and need for creating the appropriate learning activities that could meet the needs of learners (R. Huang, Ma, & Zhang, 2008). The instructor should determine learning objectives (Alshwiah, 2009; Wilson & Smilanich, 2005), content and learning resources (Y. M. Huang et al., 2008; Lim et al., 2007; Wilson & Smilanich, 2005), learning activities (Allan, 2007; Alshwiah, 2009; Bonk et al., 2006; Chen & Cheng, 2009; Kashefi et al., 2011; Nel & Wilkinson, 2006; Stacey & Gerbic, 2009), and criteria of evaluation (Allan, 2007). These indicators should be analyzed and organized in detail and applied creative problem solving process in developing learning steps. For example, learning activities were identified the procedure or action to understanding problems or challenges through checklist or role-play activities (Higgins, 1994); whereas the gathering data step was integrated in blended learning instruction through brainstorming (Higgins, 1994) in classroom or social network group (Perry-Smith & Shalley, 2003). Moreover, the instructors should focus on implication in practical area for improving learners' ability to solve the problems creatively in working life. After that the instructors should guide learners to evaluate their solutions for improving the innovative or new solving methods again.

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FACTORS IMPACTING THE PROMOTION OF INSTRUCTIONAL DESIGN AND IN FORMATION LITERACY SKILL IN THAI TEACHER

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ABSTRACT

Information literacy is an essential tool for life-long learning. There have always been unceasing efforts to enhance teachers' ability to promote information literacy in students. However, success has rarely been made because the important factors in developing teachers' ability to design instruction for promoting students' information literacy, have not been clearly identified. Therefore, this research aimed at using a questionnaire to investigate teacher related factors which directly influence their ability to design instruction for promoting information literacy. The data were statistically analyzed by One-way ANOVA and Regression. It was found that teachers' age and working experiences influenced the level of their information literacy, while other factors did not influence the ability to design instruction for information literacy. In addition, the level of information literacy was predictive to the ability to design instruction. The findings contributed to the development of the training courses requiring the combination of information literacy and instructional design.

INTRODUCTION

Nowadays, the field of information technology has made substantial progresses. As a result, accessing the internet network systems and transferring massive information can be done with ease. These actions bring about massive amount of information, also known as "Information Explosion" (Sukanta, 2012) However, a lot of this information are incomplete, unreliable, self-contradictory, and bias. Therefore, information literacy, or the awareness of the information's selection, filtering and blocking, has become the required skills in present days. (Bellanca & Brandt, 2011) The American Library Association (1989, cited in Watts, 2008) Plattsburgh State Information and Computer Literacy Task Force (2001) , and State University of New York (1997 cited in Eisenberg, 2004) all defined the definitions of information literacy as an awareness of information demand and scope , effective evaluation of information, an ability to utilize information and present it by using various methods, and the ethnical behaviors of users. (Chartered Institute of Library and Information Professional, 2006, cited in Farmer & Henri, 2008) People equipped with information literacy skills will be able to live peacefully in the society, to adapt themselves accordingly to the rapidly changing surroundings, and to solve problems effectively. (Arp, 1990 cited in (Atthawiboon, 2008.)

Information literacy is an essential skill. However, a study by Sourayaviset (2009) found that 43.8% of Thai elementary students were equipped with the 'low' level of information literacy skills and 5.2% is equipped with the 'lowest' level of information literacy skills. This showed that nearly 50% of Thai elementary school students' information literacy skills are needed to be promoted in order to avoid being deceived and to prevent any possible damages caused by broadcasted information (Wilhelm, 2006) Moreover, if students cannot analyze or synthesize this raw information, it will be useless in terms of learning (Gavin, 2008). Therefore, it is required to promote Thai elementary students' information literacy skills by combining the learning these particular skills with the learning of other important learning skills. (Tookpimai, 2013) The problem that hindered the information literacy promotion in Thai elementary students was that Thai teachers taught core subjects with no lesson plans or instructional designs that included the teaching of information literacy skills (Ratana-Ubol, 2550; Sourayaviset, 2009). The suitable way to effectively promote students' information literacy skills was to integrate knowledge related to information literacy into other subjects, instead of teaching information literacy skills as one separate subject as in the current practice in Thailand (Sourayaviset, 2009.) If teachers were able to design their classrooms to promote information literacy, they would also see all teaching processes as one big

picture which helped ensure that the teachers would be able managing their classrooms   according to the proposes set out in the lesson plans (Fakon, 2009.) Therefore, if it was possible that teachers were able to design their instruction in their own classes by including the teaching of information literacy skills, students would both acquire the subject knowledge and develop their information literacy at the same time.

However, there has been no studies on the factors influencing teachers' ability to design instruction that promote information literacy skills in students by integrating the learning of the skills into other subjects. Therefore, this study aimed at exploring teacher related factors including age, working experience, grade level of teaching, subject areas, and information literacy of the in-service teachers, which could possibly influence the ability to design instruction that integrate the teaching of information literacy skills into the teaching of other subjects. Results obtained from this study would could lead to the development of training courses on enhancing teachers' ability in designing instruction which promoted information literacy in in-service teachers in Thailand.

LITERATURE REVIEW

In order to strengthen the theoretical supports of this studies, a literature review was conduct and is presented below:

The ability towards instructional design

All educational institutes both in Thailand and other countries have long emphasized equipping every teacher with teaching skills, the most important of which was the ability in designing instruction. Instructional design could be defined as outlining or planning so that factors, such as classroom objectives, contents, activities, instructional media, and assessment, to be systematic and in line with one other and the teachers can see the teaching process clearly (Kemp, 1985; Reigeluth, 1999; Richey, Klein, & Tracey, 2011; Smith & Ragan, 2005) Teachers who were equipped with instructional design skills would be able to see all teaching processes as one big picture which ensured them of successfully managing their classrooms according to the plan. Moreover, these groups of teachers were able to prepare meaningful materials, proper tools, and other sources of information (Fakon, 2009.) Several models of instructional designs have been proposed. Gustafson and Branch decided to synthesize the models and summarize them into one simple model with 5 main components called ADDIE model (Richey et al., 2011).The model comprised of analysis, design, development, implementation and evaluation. In this study, these 5 components were employed in order to explore ability to design instruction for in-service teachers.

Information literacy

The concept of information literacy was first mentioned by Paul Zurkowsk (1974 cited in Eisenberg, 2004), President of the Information Industry. He proposed the ideas to promote information literacy to National Commission on Libraries and Information Science (NCLIS) by describing that persons who were skillful in using information technology resources to complement their traditional work were considered as   persons with information literacy. These people learned various techniques and skills in putting information technology to use, which led to be able to solve problems. Information literacy nowadays has been considered as one of the most essential skills since there are a large amount of information circulating around. Persons should be able to evaluate and select information appropriate to their needs prior to making use of it.(Association of College & Research Libraries, 2000).

American Association of School Librarians - AASL and Association for Education Communications and Technology -AECT specified 3 standards concerning students' information literacy. Standard 1: Students with information literacy should be able to evaluate information efficiently and effectively. Standard 2: Students with information literacy should be able to evaluate information critically and competently. Standard 3: Students with information literacy should be able to use information accurately and creatively. Sachanon (2011) used the above standards to develop standards of information literacy for Thai students. There were 6 standards. Standard 1: Students should be aware of the importance of information in their learning and their lives. Standard 2: Students should be able to access information sources, to search, and to use various tools to reach desirable information. Standard 3: Students should be able to learn, to analyze, to evaluate and to select proper information. Standard 4: Students should be able to collect and synthesize the collected information systematically. Standard 5: Students should be able to learn and make use of information technology to create

and creatively present their works. Standard 6: Students should be able to be moral, follow the laws and regulations, and socially responsible regarding the use of information technology.

Teachers' Demographic

The promotion of teachers' ability to design instructions required the exploration of teacher related factors, considered as potential factors influencing teachers' ability to design instructions. Seekeow (2008) cited that teachers' age and working experiences both directly and indirectly influenced their teaching behaviors specified in the education reform policy. Similarly, (Udom, 2011.) attempted to analyze causal factors influencing teachers' capacity according to the Thai Teacher Professional Standard (Learning Development Section). The researcher found that working experience, the period that teachers were assigned to work as in-service teachers, was one of the factors influencing teachers' development. In addition, the research by Chanthakorn (2008) showed that working experience of teachers was of the factors influence teachers' development according to the Thai Teacher Professional Standard. These teaching experiences could be categorized into length of teaching services, and the subjects, and grade levels that they taught. Therefore, this study proposed to compare information literacy ability and instructional design ability by teacher related factors

PURPOSE OF THE STUDY

This research has been proposed to explore factors leading to the development of training course to enhance Thailand in-service teachers' ability to design instruction by integrating the teaching of information literacy by comparing teachers' information literacy skills and instructional design skills with age, working experiences, subjects and grade level of teaching, and training received. In addition, the study also aimed to explore the relationship between teachers' information literacy skills and the ability to design instruction that in enhance students' information literacy.

Research Hypotheses

1. Differences in teacher related factors including age, working experiences, grade and subjects that they taught, would result in the differences in the level of information literacy when comparing the average scores between groups.

2. Differences in teacher related factors including age, working experiences, grade and subjects that they taught, would result in the differences in the level of the ability to design instruction that enhances students' information literacy skills when comparing the average scores between groups.

3. Teachers' information literacy ability are related to their ability to design instruction that enhances students' information literacy skills.

METHODOLOGY

This study is an exploratory research with sampling methods, research tools and procedures as follows:

Participants

Participants recruited for this study were 262 elementary in-service teachers. G* Power Program was employed to select the subjects, by specifying the moderate effect size at 0.25, and significant level at .05. together. Multi-stage Sampling was used by classifying the areas into 5 regions including North, Northeast, Middle, West, East and South. After that, 5 provinces in each region were randomly selected and 10 schools from each province were selected by using Systematic Random Sampling. Therefore, there were altogether 250 schools, which 5 participants in each school. There were 750 questionnaires distributed and 293 were returned which was equaled to 39%.

Instruments

Instruments employed in this research included questionnaire exploring the relationship between in-service teachers' ability to promote literacy skills and ability to design instruction. This particular questionnaire consisted of 3 sections as follows; 1 teachers' information, 2 teachers' information literacy ability and 3 teachers' ability to design instruction to promote students' information literacy.

In ensuring the technical adequacy of the research instruments, 5 experts reviewed the instruments. Those experts consisted of 2 experts in information literacy, experts in 2 instructional design and 1 expert in assessment. They evaluated all the content and construct validity, and scopes and relevancy of the items. After revising the questionnaires according to the experts' suggestions, researcher launched a pilot test with 30 elementary teachersʜ who were not in the subjects in the main data collection, to establish reliability by using

Coefficient Alpha and found that in the second section (teachers' information literacy ability) had a reliability of 0.967, and in the third section (ability to design instructions to promote information literacy) had reliability of 0.961.

Collect data, along with an exploratory letter to certify that data obtained from questionnaire would remain confidential, and the questionnaire.

Data Collection

Researcher sent letters to the schools by post to ask for permission to after the schools granted their permission, the school distributed questionnaires to teachers who met the criteria identified in the questionnaire. Then, the school sent the questionnaire back to the researcher by mail.

Results

1. The comparison of the average scores on teachers' information literacy ability among different groups of teachers showed that the average scores on teachers' information literacy ability was significantly different at .001 when compared by age, working experiences and amount of training received. However, the average score on teachers' information ability was not significantly different when compared by grade levels and subjects that they taught.It is presented in the [Table 1].

Table 1 : The comparison of the average scores on teachers' information literacy ability among different groups of teachers.

	n	$\bar{x}$	source	Sum of Squares	df	Mean Squares	F	p
Age (Year)								
under 25	6	3.97	Between Groups	6.837	4	1.709	4.889	.001*
25 – 35	76	3.92	Within Groups	100.325	288	.305		
36 – 45	47	3.76	Total	107.161	293			
46 – 55	90	3.65						
over 56	74	3.53						
Total	293	3.71						
Teaching Experience(Year)								
under 5	49	3.97	Between Groups	9.155	4	2.289	36.703	.000*
5 – 10	51	3.90	Within Groups	98.006	288	.341		
10 – 15	26	3.79	Total	107.161	292			
15 – 20	29	3.72						
over 20	138	3.54						
Total	293	3.71						
Grade Level								
Grade. 1-3	105	3.70	Between Groups	.052	2	.034	.091	.931
Grade 4-6	163	3.73	Within Groups	104.426	290	.371		
Grade 1-6	25	3.69	total	104.478	292			
Total	293	3.71						
Subjects								
Thai Language	26	3.83	Between Groups	1.631	7	.133	.757	.264
Mathematics	24	3.85	Within Groups	35.085	114	.308		
Science	14	4.00	Total	36.716	121			
Art	3	3.90						
Physical Education	4	3.76						
Occupation and Technology	17	4.02						
Social Studies	18	3.65						
Foreign Language	16	3.91						
Total	122	3.86						
Training Experience								
5.1 Attended	108	3.80	Between Groups	9.043	3	3.014	8.848	.000*

	n	$\bar{x}$	source	Sum of Squares	df	Mean Squares	F	p
information literacy training courses 5.2 Attended teaching of information literacy courses	48	3.81	Within Groups	98.118	289	.341		
5.3 Attended information literacy and teaching of information literacy training courses	44	3.92	Total	107.161	292			
5.4 Never attended any information literacy training courses	98	3.46						
Total	293	3.71						

2. The average scores of teachers' instructional design ability were significantly different at 0.001 level when compared by the additional training they received and were significantly different a 0.05 level when compared by the level of teaching experiences. However, there were no significant differences between groups when compared by age of teachers, and grade levels and subject taught by teachers. [Table 2].

Table 2 : The comparison of the average scores on teachers' instructional design ability among different groups of teachers.

	n	$\bar{x}$	source	Sum of Squares	df	Mean Squares	F	p
Age (Year)								
Under 25	6	3.58	Between Groups	2.659	4	.668	1.880	.114
25 – 35	76	3.63	Within Groups	101.819	288	.354		
36 – 45	47	3.49	Total	104.478	292			
46 – 55	90	3.51						
Over 56	74	3.37						
Total	293	3.50						
Working Period (Year)								
Under 5	49	3.62	Between Groups	4.185	4	1.046	3.005	.019
5 – 10	51	3.66	Within Groups	100.292	288	.348		
10 – 15	26	3.55	Total	104.478	292			
15 – 20	29	3.54						
Over 20	138	3.38						
Total	293	3.50						
Grade Level								
Grade 1-3	105	3.49	Between Groups	.052	2	.026	.072	.930
Grade 4-6	163	3.51	Within Groups	104.426	290	.		
Grade 1-6	25	3.47	total	104.478	292			
Total	293	3.50						
Subject								
Thai Language	26	3.67	Between Groups	1.368	7	.195	.607	.749
Mathematics	24	3.65	Within Groups	36.690	114	.322		
Science	14	3.74	Total	38.058	121			
Art	3	3.40						
Physical Education	4	3.20						
Occupation and Technology	17	3.73						

	n	$\bar{x}$	source	Sum of Squares	df	Mean Squares	F	p
Social Studies	18	3.57						
Foreign Language	16	3.62						
Total	122	3.64						
Training Experience								
5.1 Joined the information literacy training courses	108	3.60	Between Groups	11.225	3	3.742	11.596	.000*
5.2 Joined the teaching of information literacy courses	48	3.65	Within Groups	93.252	289	.323		
5.3 Joined the teaching of information literacy and information literacy training courses	44	3.69	Total	104.478	292			
5.4 Never joined the information literacy training courses	98	3.22						
Total	293	3.50						

3. The relationship between information literacy ability and the instructional design ability.

The Regression Analysis was employed entering all the variable into the analysis (Enter Method). The dependent variable in the study was the ability to design instruction that promote students' information literacy skills (dd). The independent variables was teachers' information literacy ability could be categorized as follows; 1) Awareness of the needs for information (IL1) 2) access of information (IL2) 3) evaluation of information (IL3) 4) collection, analysis and synthesis of information (IL4) 5) creative use of information (IL5) and 6) ethical use of information (IL6). The results showed that the information literacy ability strongly predicted the ability to design instruction to promote students' information literacy skills with Correlation Coefficients (R) of .789 and Coefficient of determination of .623. All the 6 variables could explain 63.3 percent of the variance in the ability to design instruction in order to promote students' information literacy with a Standard Error of the Estimate at .374. Among the 6 variables, there were only 2 variables which could significantly predict the ability to design instruction to students' information literacy at .01 (p = .000> .01). The variables were awareness of the needs for information (IL1) and collection, analysis and synthesis of information (IL4) as showed the table [Table 3].

Table 3: The relationship between information literacy ability and the instructional design ability.

Model		Unstandardized Coefficients		Standardized Coefficients		
		B	Std. Error	Beta	t	Sig.
1	(Constant)	.622	.143		4.357	.000*
	IL1	.437	.055	.465	7.966	.000*
	IL2	.070	.052	.081	1.334	.183
	IL3	-.063	.058	-.076	-1.084	.279
	IL4	.276	.055	.366	5.053	.000*
	IL5	.065	.059	.077	1.093	.275
	IL6	.000	.047	.000	-.007	.994

a. Dependent Variable: dd

DISCUSSION

The promotion of teachers' instructional design skills can contribute to students' learning achievement. Therefore, if we need to improve students' information literacy skills, it is also important to improve teachers' ability to appropriately design instruction. To achieve the goal, it is necessary to explore teacher related factors which directly influence their ability to design instruction that integrate the teaching of information literacy skills. This research found that teachers' age, working experiences, grade levels and subjects that they taught had no influence on the teachers' ability to design instruction integrating the teaching information literacy skills. This is because the ability to design instruction is one of the most important skills for every teacher. It could be seen that many educational institutes both in Thailand and in other countries have specified that the ability to design appropriate instruction is one of the skills every teacher must be equipped with (Office of the Teacher Civil Service and Educational Personnel Commission, 2005) Especially, in Thailand, Professional Standard Bureau, Secretariat Office of the Teachers Council had officially announced that the ability to design desire instruction for certain groups of students is one of the most vital teachers' competencies in teacher professional standards. It is also one of the criteria to be considered in applying for teaching licenses. As a result of this, many institutes which produce teachers then need to promote their teachers' ability to design appropriate instruction. Moreover, in-service teachers also required training with this issue as much as possible in order to be ready for the renewal their teaching licenses. Therefore, no matter how long that they have worked as a teacher, how old is their age, what are they teaching or whom they are teaching for, they must be equipped with the ability to design appropriate instruction which promote information literacy.

Teachers' age, working experiences, subjects and grade levels that they taught had no effects on their ability to design appropriate instruction which promoted students' information literacy. However, this study also found that the teachers' information literacy skills had effects on their ability to design appropriate instruction which promoted students' information literacy. The reason being that the design of instruction required the analysis and selection of the content (Morrison, Kemp, & Ross, 2011, Richey et al., 2011) If the teachers reported that they had a 'high' information literacy level, it also meant that the teachers had the ability to analyze and carefully select contents to make the contents meaningful in their classrooms. Furthermore, the ability to design is also a process requiring decision making skills on how to manage and plan lessons which is most appropriate to students' needs (Reigeluth, 1999) Therefore, teachers with good information literacy could select methods of teaching which were most effective and appropriate to promote students' information literacy skills.

Therefore, we can conclude from the findings of this study that if we would like to promote teachers' ability to design instruction which integrates the teaching of information literacy skills, it is also important to promote information literacy skills in teachers. There are several ways to enhance the skills in teachers such as training courses or self-study program. In order to develop teachers' ability to design instruction, teacher's background (age, and teaching experiences) should not be the sole focus that needs to be consider since in this study it had no significant relationship with teachers' ability to design instruction which included the promotion of information literacy skills in students. However, in order to promote information literacy skills within teachers themselves, it may also be possible that teacher's background (age and teaching experiences) play an important role.

A study found that teachers aged lower than 25 years or teachers with less than 5 years of working experiences had higher information literacy skills than the other groups because one of the factors positively influence information literacy skills was the ability to skillfully access information from several sources (Paul Zurkowsk,1974 cited in Eisenberg, 2004) Teachers aged lower than 25 years or teachers with less than 5 years of working experience tended to frequently use technology which helped to promote their skills in using technological tools and in accessing information from various sources. Moreover, copyright violation has become a significant issue in Thailand. Therefore, teachers had been well-informed about the copyright issues and were encouraged to use information ethically. The findings of this study that subjects and grade levels that

they taught had no impacts teachers' information literacy skills because information literacy was a specific issue and teachers, therefore, needed more trainings. Teachers who had been trained on information literacy and instructional design had higher score than those who had no additional training. This was clear that training courses did help develop teachers' information literacy skills and promoted their ability to design instruction.

According to the results of this study, the development of a training course for in-service teacher to promote their ability to design instruction which integrating the teaching of information literacy skills needs to be initiated. The group of teachers who needed to be urgently trained on the topic is the group of teachers aged from 46 years old or the group of teachers with at least 15 years working experiences because these groups were reported, in this study, to have 'low' ability to design instruction integrating the teaching of information literacy skills.   Moreover, in terms of the contents and activities in the training course, information literacy skills must be taught to the teachers before instructional design. The training programs can be developed into 2 types of programs. The first program consists of two courses. The first course is designed to enhance information literacy skills and the second is the course to develop teachers' ability to design instruction integrating the teaching of information literacy skills. In-service teachers need to complete the first course prior to attending the second. However, for the teachers who are already equipped with good information literacy skills, they can be exempted from the first course and they can start the second one right away. This type of program would be more suitable for young teachers or teachers who had already taken a similar kind of course before. The second program is a single course which should be designed to enhance information literacy skills at the beginning of the course, and to enhance the classroom design skills afterwards in the same course. This particular course is appropriate for older teachers with more teaching experiences or teachers who have never participated in information literacy courses before. If the programs are designed to appropriately meet the needs of teachers, they will be able to designing instruction that can develop students' information literacy skills so that the students are able to successfully use their information literacy skills both in school and in life.

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FATIH UNDER PROJECT
DETERMINATION OF SCALE DEVELOPMENT OF TEACHERS 'READINESS LEVELS: SAKARYA NATIONAL EDUCATION DİRECTORATE EXAMPLE

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ABSTRACT

Today, the very rapid changes in technology, in education as in all of life is inevitable in the transition process to the new orientation. It created the idea of the 2007-2008 year, application as the Opportunity to Increase and Technology Improvement Act, Fatih Project "was launched with the slogan November 2010, and 5 years completion of targeted projects, education and training opportunities to ensure equality and is a project put forward to improve information technology in our schools. Because of their assessment needs to be done to achieve success in many aspects of the project. This assessment of the most important areas in terms of projects, the most important stakeholders and practitioners are addressed in terms of teachers. This assessment of the most important areas in terms of projects, the most important stakeholders and practitioners are addressed in terms of teachers.

In this study, teachers' presence, ready for the project, qualifications and teachers of classes in information and communication technology (ICT) opinion on the use of this project satisfaction regarding the introduction of life and a scale was developed to identify projects of their ownership. The development of this scale Likert scale 12 in addition to the demographic question in the appropriate category 7 of 45 questions were asked. The scale of the responses received validity and reliability analyzes were performed.

Teachers were saving time by project, of course they save time for transmission so that different activities faster, less physically tired they have stated that the increase and diversification of sources. However, the teachers stated that the reduction in eye contact with students and classroom management becomes difficult because of the interest in tablet computers. In addition, teachers in the use of technology in schools increased and technology proficiency with the Fatih Project that took place between stakeholders that have expressed solidarity.

Keywords: Fatih project, Increasing Opportunities and Technology Improvement Act, teacher qualifications, teacher use of ICT, computer-aided education, information technologies, communication technologies

INTRODUCTION

Meet the needs of people throughout history, various tools to facilitate their work, has invented tools and techniques (Durmus and Arıduru, 2001). Today, access to information, knowledge utilization, and faster access to development opportunities thanks to the rapid development of information and communication technologies in teaching is provided. With the introduction of technology in the educational environment has emerged as a widely used educational technology and instructional technology concepts. Educational technology and instructional technology concepts are similar and often confused. Çilenti (1988) and Uşun (2004), education technology, manpower and manpower external sources, using the appropriate methods and techniques to the specific purpose of training individuals evaluating the results are expressed as the science that studies the transportation path.

Education technology, "what" and "why" questions, while teaching technology "how" tackles the question (Kaya, 2006; Lortoğl of 2008). Karademirci (2012), the teaching of information technology, in a systematic way to approach the technology being transferred to the students and also indicates the means used in this process. Place of teachers in integrating technology in education is undoubtedly great. Improve the quality of training of teachers to include this technology in learning and training programs are one important factor. In this regard, Mahiroğlu (2007), to determine the quality of education and teachers related to the system is being successful is that they have a responsibility.

Sakallı et al. (2013) technology, the most efficient transfer of information in the preparation of teaching activities is to provide the tools, applying is important, and students in achieving the goal of teachers using these tools, the

information they have learned by experience indicates that it is more permanent. Tabancalı (2003) providing appropriate professional development for teachers of modern technology, when they adapt to changing conditions, it is that they become ready for change faced by students. Yıldız and Seferoğlu (2013) similarly in Information Technology (IT) teachers issued its ability to use a high level of education and potential benefits is noteworthy that in key positions.

The use of technology in education, the importance of teachers Callister and Dina (1992) stated as follows:

> "Technology is taking the place of the teacher efforts have been unsuccessful. Teaching the teachers instead of making another vehicle a short-term solution. Why? Because the technology leads to ignoring the basic fact. Machines, is only a tool, people make sense when they organize the effective use of these tools. In the classroom, the teacher is there to control that environment and what the nature. The tools used in the classroom, to create a rich learning environment, helping teachers. If the teacher does not know what the car would do, if misinterpreted, if afraid of him or use, tools to be used or will be used at all or very bad. "

Ministry of Education, which aims to take its place in the educational system technology (MEB) and carried out with the Ministry of Transport to Increase Opportunities and Technology Improvement Act (Fatih) project. Pre-school, interactive in all schools at secondary level to primary board and Internet network infrastructure with the Fatih project aimed to provide education and training opportunities to ensure equality and in teaching and learning of ICT tools to improve technology in schools is intended to be used actively. Fatih Project in Education: provision of hardware and software infrastructure, provision of educational e-content and managing the effective use of IT in the curriculum, in-service training of teachers, informed, secure, as ensuring a manageable and measurable bt use consists of five elements.

Figure 1.Fatih Project Elements

One of the elements that make up the Fatih Project in Education "Teachers In-Service Training" component. Fatih project with this component of the teacher in order to advance more efficient face to face and distance education through in-service training activities are planned. This training and education to create a rich learning environment, aims to ensure the active use of teachers in the classroom (Ministry of Education, 2012). Teachers' perceptions of the implementation of the Fatih project for the implementation of this project worth working on this issue because of the importance of progress has been made.

Purpose of the Study

The purpose of this study Sakarya MEM (Ministry of Education), depending on the official Anatolian High School Teachers "Fatih Project" to counter perceptions, perspectives and satisfaction of the project positively or negatively to determine what the factors affecting the validity and reliability analysis is made of the scale will be developed.

The importance of research

"Fatih Project" of teachers is one of the most important pillars for the success of the project is important to determine the angle of view of this project. determining vary depending on what the project ensuring ownership and satisfaction of teachers is one of the essential issues. Therefore, the future of the system is important in terms of teachers' attitudes towards this project

Statistical Methods for Research

The validity and reliability analysis on this scale study was conducted and confirmatory factor analysis. SPSS was used for factor analysis. Confirmatory factor analysis was utilized in the AMOS program.

Universe Research

The population of this research includes employees Sakarya National Education Directorate Teachers in High School. In this study, using data collection methods were applied to 418 teachers over the internet.

Research Survey

Because of this survey of teachers "Fatih Project" to their satisfaction and commitment of the teachers have been consulted about the factors which will affect positively or negatively. Data collection tool used in the study, the researchers examined the literature created by the teachers and the factors influencing satisfaction was assessed in five groups. Scale of 1 to 12 demographic questions have been asked in the department. The first factor to scale the content about 5 questions, 5 questions about the infrastructure on the second factor, 6 questions about the materials in the third factor, 7 questions about the Smart Board in the fourth factor, 8 questions about the Perceptions of the fifth factor was consulted by asking the teacher. 5 of 8 questions were also asked questions about ownership and about the satisfaction of teachers.

RESEARCH DATA

The data used in this study, Sakarya National Education Directorate of teachers working on the internet were obtained through a survey. Survey questionnaires were completed 2015-2016 academic year, 418 teachers over the internet. In this survey; Factors with questions about the demographic structure of the teachers answers to the questions asked in size; Agree Disagree completely from any of 5 the Likert scale was used.

Questions of Scale

Table 1. The questions used in the survey.

S1. Your gender
S2. Your Job Severance
S3. Graduated School
S4. Have you received computer training?
S5. Did you use the EBA(Education Information Network) in your class?
S6. Your smart device (tablet-phone-tablet PC) is there?
S7. Do you use social networks (Facebook, Twitter, etc.)?
S8. Have you participated in training at the Fatih project?
S9. Did you participate in the Secure Internet course?
 S10. Fatih project with training on Do you think enough?
 S11. How many your social network (facebook, Twett is ... and so on.)?
 S12. Your branches.
 Content1: EBA (Education Information Network), I can use content-related lesson.
 Content2: I prepare my own content to use the Smart Board.
 Content3: EBA content is appropriate to the level of my students.
 Content4: I've seen a shortage in teaching content.
 Content5: I can manage content associated with the class.
 Infrastructure 1: Our school has adequate infrastructure for the Internet.
 Infrastructure 2: Our school has adequate computer equipment.
 Infrastructure 3: Our school has enough internet speed.
 Infrastructure 4: In our school, I think that the hardware works seamlessly with Fatih Project.
 Infrastructure 5: I think that provides support for all kinds of infrastructure with Fatih Project management of the school.
 Materiel 1: I use the program to prepare the course materials smoothly ..

Materiel 2: Materials can plan to meet students' learning needs identified.
Materiel 3: technology used my material is sufficient.
Materiel 4: it has enough on my course materials.
Materiel 5: Smart Board can prepare the materials to be used by me.
Materiel 6: Smart Board materials can also be used to find and open Internet by me.
Board 1: I can use the smart board and off course I have prepared in advance.
Board 2: what makes a smart board (the .yu extension) can record.
Board 3: I can use animation and simulation tools in the Smart board.
Board 4: Smart board can solve all the problems I encounter in myself.
Board 5: create a new file in the Smart board.
Board 6: Smart board could have used my students.
Board 7: I do instructor about using smart boards.
Perception 1: interactive whiteboard in Word, Excel, etc. I can open the files.
Perception 2: I can improve my teaching materials based on different concepts.
Perception 3: How do I know how to use the Internet safely.
Perception 4: I respect the copyright of the material that I found from the Internet.
Perception 5: You can select the active materials to make my students and I use.
Perception 6: I believe that I get from this system success in teaching.
Perception 7: I feel prepared to use this system.
Satisfaction 1: EBA platform (on the site) feel happy as long as I found myself.
Satisfaction 2: I noticed how time passes as long as I remain in the EBA website.
Satisfaction 3: I find the EBA Platform visually interesting.
Satisfaction 4: what I find very easy call in this platform.
Satisfaction 5: I find it very dynamic design of the site.
Satisfaction 6: find the best rate access this site.
Satisfaction 7: Smart lectures on the board makes me very happy.
Satisfaction 8: I think that the students in the Smart Board lessons listening increased motivation.
Ownership 1: I feel safe in the EBA website.
Ownership 2: I visit this site when outside the school.
Ownership 3: EBA 's (Education Information Network) I would advise teachers to use.
Ownership 4: After giving Smart Board in the course I have difficulty teaching in regular classes.
Ownership 5: First choice when looking for material on this site is my lesson

Scale of Analysis
Factor Analysis Scale
Fatih Project in the Explanatory factor analysis of this scale was developed for teacher satisfaction were obtained by making the SPSS data in the table below.
Table 2: Factor Analysis Scale

| | Cronbach's Alpha=0.822 | | | | |
	Smart Board a=0.854	Perception a=0.921	Materiel a=0.904	Infrastructure a=0.892	Content a=0.926
Board 3	.768				
Board 4	.737				
Board 5	.661				
Board 6	.655				
Board 2	.633				
Board 7	.588				
Board 1	.523				
Perception 6		.677			
Perception 5		.668			
Perception 4		.650			
Perception 7		.605			
Perception 1		.602			
Perception 2		.581			
Perception 3		.548			
Materiel 3			.726		
Materiel 4			656		
Materiel 6			.635		
Materiel 2			.563		
Materiel 1			.534		
			.509		
Infrastructure 1				.804	
Infrastructure 2				.758	
Infrastructure 4				.681	
Infrastructure 5				.522	
Infrastructure 1				.512	
Content 3					.655
Content 1					.598
Content 4					.566
Content 2					.540
Content 6					.530

$0.00 \leq \alpha < 0.40$ not Reliability
$0.40 \leq \alpha < 0.60$ Low Reliability
$0.60 \leq \alpha < 0.80$ Reliability
$0.80 \leq \alpha < 1.00$ High Reliability

Table 2 related factors and all Cronbach's alpha values are observed. These values appear to be within limits acceptable to the value specified above.

Table 3. Scale KMO

Kaiser-Meyer-OlkinMeasure of SamplingAdequacy.		,822
	Approx. Chi-Square	7841,496
Bartlett's Test of Sphericity	df	351
	Sig.	,002

Table 3 shows the table of the scale of the KMO value. Table Kaiser-Meyer-Olkin value was found to be suitable for factor analysis it is close to 1. Sigma <0.005 for being small is normally distributed data.

The Confirmatory Factor Analysis(DFA) Scale
Obtained through factor analysis program Amos and interpretation of the scale illustrated in the following sections were performed.

Content Factor for DFA
Content of the scale factor in the conceptual framework of confirmatory factor analysis results are shown in Figure 1. Figure 1 Contents 1 Contents 2 Contents 3 Contents Contents 4 and 5 are codes representing questions variables observed. Located in the analysis codes for each question are located above statements and Table1.

Figure 1. Content Factor DFA
DFA in Figure 1, the values on the right directional arrows to variables observed for the content factors, each of which are used to explain the factors observed variables of the standard regression coefficients (confirmatory factor analysis loads) shows. Situated in Figure 1, the error of the observed value of a variable $(1-R \wedge 2sonuç)$ are seen on the error value of each of the observed variables, oriented towards the arrows.

Content Compliance Factor Indexes

Table 4. Content Compliance Factor Indexes

Content	Compliance Indexes					
	χ^2/df	GFI	AGFI	TLI	CFI	RMSEA
	129/5	,988	,963	,954	,977	,062

When the content of factors to fit indexes studied (Table 4), limits the desired results it is seen that the value in it. Looking at Table 0.9 <GFI, AGF, the TLI is observed that in CFI accepted limits 0.1> RMSEA of the factors is found within acceptable limits, it was decided that there was no need to remove any problems.

Infrastructure Factor for DFA

Scale Infrastructure factor in the conceptual framework of the confirmatory factor analysis results are shown in Figure 2. Figure 2 Lower yapı1 Infrastructure 2, Sub yapı3, Old yapı4 and Infrastructure 5 questions are codes representing the observed variables. Located in the analysis of each statement and question codes are located in Table 1 above.
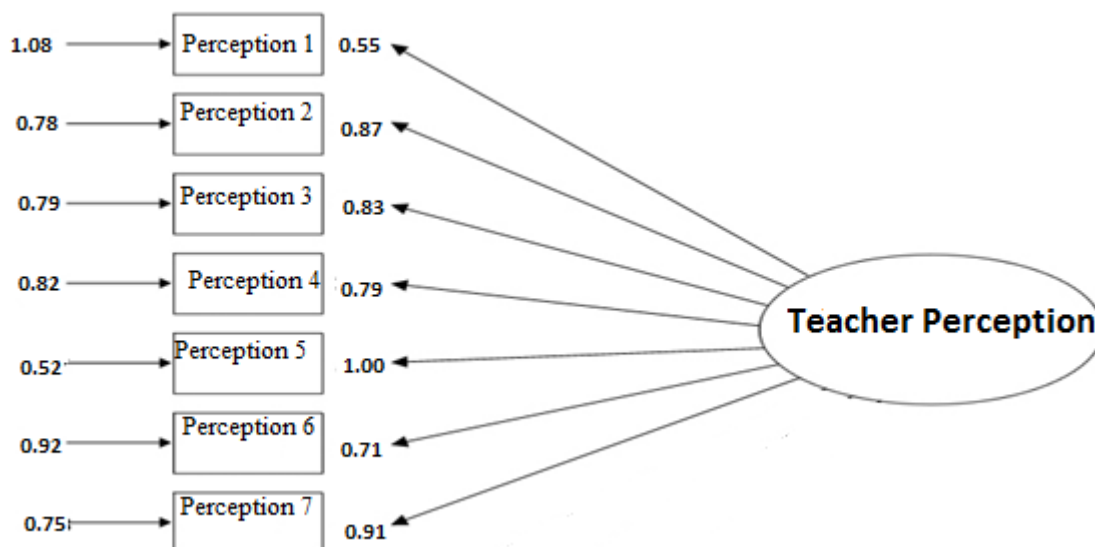

Figure 2. Infrastructure Factor DFA

DFA in Figure 2, Infrastructure factor in the observed variables directed towards the arrows value on, each utilized to explain the factors observed variables of the standard regression coefficients (confirmatory factor analysis loads) shows. Situated in Figure 2, the error of the observed value of a variable $(1-R \char`^ 2 sonuç)$ are seen on the error value of each of the observed variables, oriented towards the arrows.

Infrastructure Adjustment Factor Indexes

Table 5. Infrastructure Adjustment Factor Indexes

infrastructure	ComplianceIndexes					
	χ^2/df	GFI	AGFI	TLI	CFI	RMSEA
	14/5	,987	,961	,962	,987	,064

When the infrastructure factor of fit indexes studied (Table 5), limits the desired results it is seen that the value in it. Looking at Table 0.9 <GFI, AGF, the TLI is observed that in CFI accepted limits 0.1> RMSEA of the factors is found within acceptable limits, it was decided that there was no need to remove any problems.

Material Factor for DFA
Material factors in the conceptual framework of the scale confirmatory factor analysis results are shown in Figure 3. Figure 3: material 1, material 2, material 3, material 4, material 5 and material 6 questions are codes representing the observed variables. Located in the analysis of each statement and question codes are located in Table 1 above.
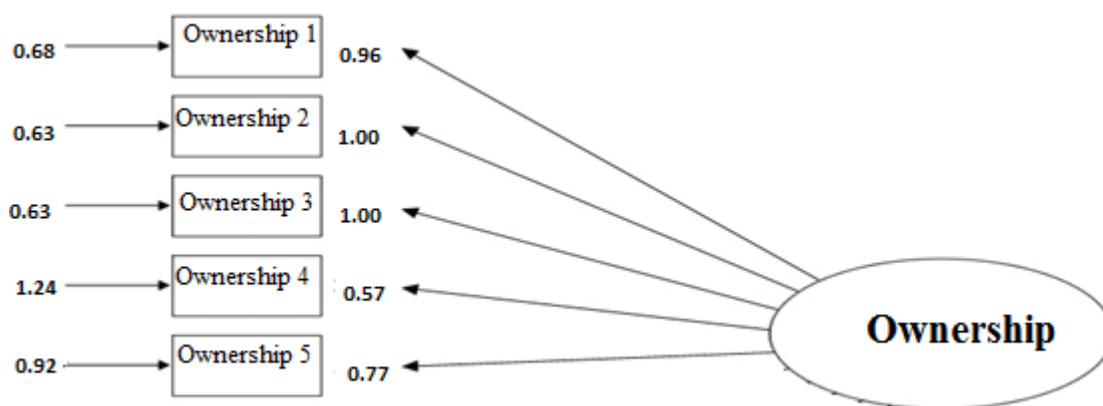
Figure 3. Material Factor DFA

DFA in Figure 3, the value on the right directional arrows to variables observed from the material factors, each nof which are used to explain the factors observed variables of the standard regression coefficients (confirmatory factor analysis loads) shows. Situated in Figure 3, the error of the observed value of a variable (1-R ^ 2sonuç) are seen on the error value of each of the observed variables, oriented towards the arrows.

Material Index of Adjustment Factor

Table 6. Material Index of Adjustment Factor

Materials	**Compliance Indexes**					
	χ^2/df	**GFI**	**AGFI**	**TLI**	**CFI**	**RMSEA**
	14/5	,987	,961	,962	,987	,064

Considering fit indices of material factors (Table 6), limits the desired results it is seen that the value in it. Looking at Table 0.9 <GFI, AGF, the TLI is observed that in CFI accepted limits 0.1> RMSEA of the factors is found within acceptable limits, it was decided that there was no need to remove any problems.

Smart Boards Factor for DFA

Scale factors in the conceptual framework of smart boards confirmatory factor analysis results are shown in Figure 4. Figure 4: Board 1, Board 2, Board 3, 4 Board, 5 Board, Board and Board 6 and Board 7 questions are codes representing the observed variables. Located in the analysis of each statement and question codes are located in Table 1 above.
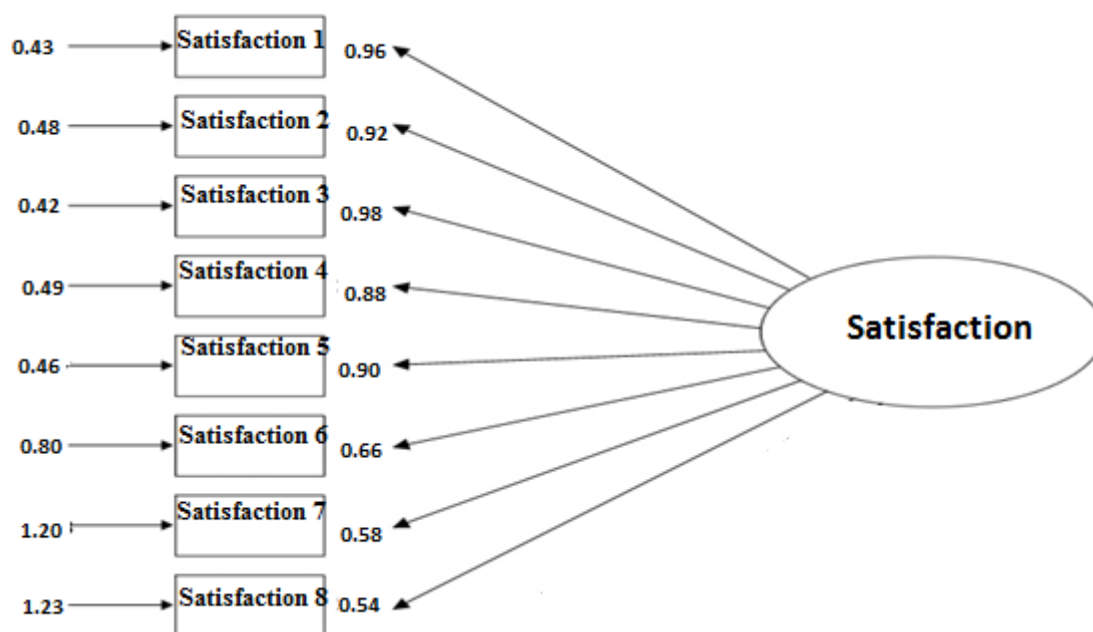
Figure 4. Smart board Factor DFA

DFA in Figure 4, is directed towards the variable observed from smart boards factors arrows value on, each utilized to explain the factors observed variables of the standard regression coefficients (confirmatory factor analysis loads) shows. Situated in Figure 4, the error of the observed value of a variable $(1-R \wedge 2sonuç)$ are seen on the error value of each of the observed variables, oriented towards the arrows.

Smart Board Adjustment Factor Indexes
Table 7. Smart Board Adjustment Factor Indexes

	Compliance Indexes					
Smart Board	χ^2/df	**GFI**	**AGFI**	**TLI**	**CFI**	**RMSEA**
	57/7	,965	,929	,956	,970	,082

When Smart Boards of factors to fit indexes studied (Table 7), it is seen that the value of the search results within the desired limits. Looking at Table 0.9 <GFI, AGF, the TLI is observed that in CFI accepted limits 0.1> RMSEA of the factors is found within acceptable limits, it was decided that there was no need to remove any problems.

Perception Factor for DFA
Scale factor in the perception of the conceptual framework confirmatory factor analysis results are shown in Figure 5. Figure 5: Perception 1, Perception 2, Perception 3, Perception 4, Perception 5, Perception 6 and Perception 7 questions are codes representing the observed variables. Located in the analysis of each statement and question codes are located in Table 1 above.

Figure 5. Perception Factor DFA

DFA in Figure 5, directed arrows value on the right to variables observed the perception factors, each of which are used to explain the factors observed variables of the standard regression coefficients (confirmatory factor analysis loads) shows. Situated in Figure 5, the error of the observed value of a variable (1-R ^ 2sonuç) are seen on the error value of each of the observed variables, oriented towards the arrows.

Perception Index of Adjustment Factor

Table 8. Perception Index of Adjustment Factor

Perception	Compliance Indexes					
	χ^2/df	GFI	AGFI	TLI	CFI	RMSEA
	38/8	,973	,947	,967	,978	,064

When the fit indices of perception factors studied (Table 8), which limits the desired results it is seen that the value in it. Looking at Table 0.9 <GFI, AGF, the TLI is observed that in CFI accepted limits 0.1> RMSEA of the factors is found within acceptable limits, it was decided that there was no need to remove any problems.

Ownership Factor for DFA

Claim it in the conceptual framework of the scale factor confirmatory factor analysis results are shown in Figure 6. Figure 6: Ownership 1, Ownership 2, Ownership 3, Ownership 4 and Ownership 5 questions are codes representing 5 observed variables. Located in the analysis of each statement and question codes are located in Table 1 above.

Figure 6. Ownership Factor DFA

Figure 6 in the DFA, directed towards the variable observed in Claim it factors arrows value on, each utilized to explain the factors observed variables of the standard regression coefficients (confirmatory factor analysis loads) shows. Situated in Figure 6, the error of the observed value of a variable $(1-R \char94 2sonuç)$ are seen on the error value of each of the observed variables, oriented towards the arrows.

Appropriation Adjustment Factor Indexes

Table 9. Appropriation Adjustment Factor Indexes

Adopt	ComplianceIndexes					
	χ^2/df	GFI	AGFI	TLI	CFI	RMSEA
	70/5	,993	,979	,988	,994	,035

When ownership factor of fit indexes studied (Table 9), limits the desired results it is seen that the value in it. Looking at Table 0.9 <GFI, AGF, the TLI is observed that in CFI accepted limits 0.1> RMSEA of the factors is found within acceptable limits, it was decided that there was no need to remove any problems.

Satisfaction Factor for DFA

Satisfaction Scale factor in the conceptual framework of the confirmatory factor analysis results are shown in Figure 7. Figure 7: Satisfaction 1, Satisfaction 2, Satisfaction 3, Satisfaction 4, Satisfaction 5, Satisfaction 6, Satisfaction 7, and Satisfaction 8 are codes questions Satisfaction representing variables observed. Located in the analysis of each statement and question codes are located in Table 1 above.

Figure 7. Satisfaction Factor DFA

Figure 7 DFA, directed towards the variable observed Satisfaction factors arrows value on, each utilized to explain the factors observed variables of the standard regression coefficients (confirmatory factor analysis loads) shows. in figure 7, the error of the observed variable value (1-R ^ 2sonuç) are seen on the error value of being directed to each observed variable arrows.

Satisfaction Factor Index of Compliance

Table 10. Satisfaction Index of Adjustment Factor

	ComplianceIndexes					
Stasfaction	**χ²/df**	**GFI**	**AGFI**	**TLI**	**CFI**	**RMSEA**
	27/8	,795	,772	,822	,894	,27

When the satisfaction factor of fit indexes studied (Table 10), it seems to yield results within the limits of the desired value.
Satisfaction 8 observed variable of error values, it is seen that a high proportion of covariance values with each other and other variables. In this context, it was decided to remove from the analysis of this variable.
DFA (1. modification to the satisfaction factor)
Due to the low values observed in Table 10, Figure 8 made in satisfaction factor (Modification 1) obtained as a result of each expression codes and values are shown.

Figure 8. Satisfaction Factor DFA (1. modification)

Satisfaction Factor (1.modification) Compliance Indexes

Table 11. Satisfaction Factor (1. modification) Compliance Indexes

Stasfaction	Compliance Indexes					
	χ^2/df	GFI	AGFI	TLI	CFI	RMSEA
	32/7	,901	,898	,905	,926	,098

Required changes resulting fit indices of factor after performing, as shown in Table 11, were observed to be in the desired range. The relationship between variables is shown in Figure 8.

RESULTS AND RECOMMENDATIONS
In this research, a scale has been developed to determine the point of view of teachers to "Fatih project" in the beginning and the end of academic year of 2015-2016, who works in Anatolian high schools in Sakarya. Kayaduman (2011), As concerns the accomplishment of this project, it is important to investigate their competence and existing states of teachers as a part of this project. Adıgüzel (2007), no matter how much an effort be made for the proliferation of this project, the works relating to scaling the attitudes of teachers and of students show that the fact that smart whiteboards are not put in the classes do not serve the object of this project.

Teachers' expectations from this project, and the determination of on what grounds their pleasures, counter-anxieties and their appropriation of this project show alterations, and mutual questions constitute the parts of this projects. To ensure that the scale developed at the end of the investigation be used effectively for later investigations, 55 questions have been prepared under 8 titles (Demographical 12), Content (5), Infrastructure(5), Material (6), Smart board (7), Teacher's perception (7), Ownership (5), Satisfaction (8).

In the scale developed at the end of the investigation, it is determined that the evaluations obtained from tests done for reliability and validity as for literature are acceptable. In the confirmatory factor analysis done, because the evaluation (of displeasure) is the lowest in a factor, the modification that is made by extracting the question from the actor, whose evaluation is the lowest one.

Cronbach's alpha values of all of the factors and Scale (Content A = 0.926, Infrastructure α = 0.892, α = 0.904 Reading, Perception α = 0.921, α = 0.854 and Smart Boards all sizes α = 0.822) It is the desired limits.KMO values (SamplingAdequacy=0.822, Chi-Square=7841.496, df=351, Sig.=0.002) Acceptable limits were observed. Confirmatory Factor Analysis (DFA) results. (GFI, AGFI, TLI, CFI, RMSEA) with modifications made in all of the factors are within the required limits.

RECOMMENDATIONS

As a result, developed and tested to become a tool that can be used in further studies of this scale it has emerged as a result.

Teachers who are practitioners of the Fatih project, this project should be adopted and applied at the appropriate time should be given in-service training to improve satisfaction levels.

Work should be done in a quick way to eliminate the shortage of software used in the use of smart boards

Psychological motivation, efforts should be made to enable teachers and students to be positive in terms of his approach to the project.

To provide content of the Fatih EBA project, teachers must have an economic incentive system to enable content developers can participate in.

The EBA material developer tools more effectively to ensure the use by teachers must be given the training of these vehicles.

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FATİH PROJESİ KAPSAMINDA PİLOT UYGULAMANIN YAPILDIĞI BİR OKULDA UYGULAMA SÜRECİNİN VE ÇIKTILARININ ANALİZİ

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ÖZET

Bilgi ve iletişim teknolojilerindeki yenilikler, diğer tüm alanlarda olduğu gibi eğitim sektörünü de büyük ölçüde etkilemeye başlamıştır. Bu bağlamda, geleceğin eğitim ve öğretim ortamlarının bugünkünden çok farklı olacağı üzerinde uzlaşılmaktadır. Bu yeni teknolojiler kullanılarak yapılacak öğrenci merkezli faaliyetlere birçok öğrenci aynı anda katılabilecek ve bu şekilde eğitim küresel bir yapıya dönüşebilecektir. Bu açıdan gelecekte sınıfların içinde tamamen bireysellik ön plana çıkacak; öğrenciler, bireysel olarak ihtiyaçlarını ve yeteneklerini ön plana çıkarabilecektir. Bu süreçte öğrencinin kazanacağı yeni araştırma yetenekleri ön planda olacak; öğrenciler öğrenmeye karar verdikleri bilgileri kendi başlarına araştıracak, uygulayacak ve bu yolla yeni bilgiler sentezleyebilecektir. Bu noktaya kadar açıklanan tüm hususlar, 21. yy eğitim ve öğretim ortamlarında yeniliklerin yapılmasını zorunlu hale getirmektedir.

Türkiye, 2000'li yıllardan bugünlere eşitlikçi bir sistem kurma alanında önemli kazanımlar elde etmiştir. FATİH Projesi, e-okul sistemi ve eğitim teknolojileri alanında yapmış olduğu yeniliklerle, diğer ülkelerle eşzamanlı olarak yenileşme sürecine girmiştir. Eğitimde FATİH Projesi, sınıf ortamında teknoloji kullanımı açısından eğitim felsefesinde değişmenin önemli bir yansımasıdır. Esas paradigması eğitimde yeni bir çağ açma ve fırsat eşitliği sağlama olarak açıklanan projenin tam açılımı "Fırsatları Artırma ve Teknolojiyi İyileştirme Hareketi"dir. Bu Proje kapsamında ülke genelindeki 620 bin dersliğin eğitim standardı tamamen değişecek; eğitim programı kitaplı-defterli eğitim yerine, bilişim teknolojilerinden faydalanılan bir şekle dönüştürülecektir. Bu dönüşümde Projenin, (i) donanım ve yazılım altyapısı, (ii) eğitsel e-içeriğin sağlanması ve yönetilmesi (iii) öğretim programlarında etkin bileşim teknolojilerinin kullanımı, (iv) bilinçli, güvenli, yönetilebilir ve ölçülebilir bilişim teknolojileri ve internet kullanımı ve (v) öğretmenlerin hizmet içi eğitimi olmak üzere beş bileşeni bulunmaktadır.

Projenin pilot uygulaması, 2011 yılında yapılarak 2015 yılından itibaren ülke geneline yayılmıştır. Bu süreçte ise, Türk Eğitim Sisteminin yeni paradigmalarından biri olan FATİH Projesi hakkında hem olumlu hem de olumsuz yönde çeşitli tartışmalar başlamıştır. FATİH Projesinin, sınıf ortamında teknoloji kullanımını sürekli hale getirerek her öğrencinin kullanımına sunabilmesi; Türkiye'nin en ücra köşesindeki öğrencilerin bile tablet bilgisayar aracılığıyla bireysel öğrenme hızına göre öğrenmesinin gerçekleştirebilecek olması; teknoloji kullanımının ilkokul seviyesine çekilerek öğrenmenin tablet bilgisayar aracılığıyla; bölge, şehir ve kırsal kesimdeki öğrenciler arasındaki seviye farklılıklarını kapatarak eğitimde fırsat eşitliğinin her toplumsal katmanda sağlanmasına yönelik bir girişim olması; Projenin, bilgi toplumu yolunda atılmış bir adım olup geleceğin bilgi toplumu bireylerinin yetiştirilmesinde öncü olması olumlu eleştiriler arasında sayılabilir. Diğer taraftan Akıncı, Kurtoğlu ve Seferoğlu (2012) projesi planlanmadan, paydaşlarıyla ve konunun uzmanlarıyla tartışılmadan, hedeflerinin sorgulanmamış ve yeterli açıklıkta olmadığı; Kaya ve Uslel (2011) Projenin eğitim sistemine sağlayacağı katkı açısından maliyetinin yüksek ancak yararının düşük bir Proje olarak anılma riski olduğunu; Ekici ve Yılmaz (2013) ise Projenin, proje geliştirme mantığına göre tasarlanmadığını ve bu nedenle eğitim sistemi ile bütünleştirilemeyeceği şeklinde sıralanan olumsuz eleştirilerini yöneltmiştir.

Projenin, bilgi toplumu yolunda geleceğe yönelik atılmış önemli bir adım olduğu bilgisi tarafımızca da paylaşılan bir görüş olması karşın, uygulamada çok sayıda sorunlarla karşılaşıldığı da bilinmektedir. FATİH Projesiyle ilgili karşılaşılan sorunlara yönelik 2011-2015 yılları arasında çok sayıda çalışma yapılmıştır. Bu çalışmalar ve sayıları tematik olarak analiz edildiğinde yedi başlık altında toplanmıştır:

(i) FATİH Projesine yönelik paydaşların görüşleri (63),

(ii) Etkileşimli tahta kullanımına yönelik görüşler (35),

(iii) FATİH Projesini değerlendirme (32),

(iv) FATİH Projesi üzerine bilgilendirme (30),

(v) Öğretmen yeterlikleri (14)

(vi) Eğitsel içerik (5),

(vii) Donanım altyapısı (4)

Literatürde, Projeyle ilgili çok sayıda araştırma bulunmasına karşın Proje sürecinin uygulamasıyla ilgili az sayıda çalışma yer almaktadır. Paydaş görüşleri alınarak yapılan çalışmalarda; Altan ve Tüzün (2011) FATİH Projesi uygulaması yapılan bir okuldaki sorunlar nedeniyle, BİT sınıflarının öğrenci sayısına göre düzenlenmesi gerekliliğini belirtilerek Türkiye'de sınıfların kalabalık olmasının göz önünde bulundurulduğunda fırsat eşitliğinin çok mümkün olmadığını vurgulamıştır. Gürol, Donmuş ve Arslan (2012) sınıf öğretmenlerinin FATİH Projesiyle birlikte karşılaşılacak problemleri; bilgi eksikliği, disiplin sorunları, zaman yönetimi, alt yapı yetersizliği, ekonomik problemler, seminer yetersizliği, adaptasyon sorunu ve proje ile ilgili zamanlama sıkıntısı ve birçok öğretmenin teknolojiye ayak uyduramayacağı şeklinde sıralamıştır. Dursun, Kuzu, Kurt, Güllüpınar ve Gültekin (2013) Projede kullanılan tablet ve etkileşimli tahtanın aynı anda kullanılabileceği etkinliklerin bulunmadığını, donanımdaki soruna müdahale edecek uzman personelin eksikliğine ve radyasyon konusundaki endişeleri ortaya koymuşlardır (Çiftçi, Taşkaya ve Alemdar, 2014). Kıranlı Güngör ve Yıldırım (2014) öğretmen ve öğrencilerin ve bilişim teknolojisi kullanım düzeyinin yetersiz olduğunu ve bu yeterlik düzeylerinin de FATİH Projesinin başarıya ulaşmasında olumsuz etkiye sahip olduğunu belirtmişlerdir. Karabacak (2015) Türk Eğitim Sistemindeki FATİH Projesinin CIPP modeline göre incelenmesi isimli çalışmasında, Proje hakkında paydaşların olumlu görüşlerden çok olumsuz görüşler taşıdığını ve ülke genelinde uygulanabilirliğinin planlanmadığını ortaya koymuştur.

Literatür incelemesi sonucunda Projeyle ilgili yapılan çalışmaların ortak ve baskın temalarından birinin, Projeyle ilgili olumsuz görüşlerin yansıtılmasının olması üzerinde önemle durulmalıdır. Bu eleştirilerin yerinde olup olmadığı ise, en iyi Proje çıktıları üzerinde yapılacak bir çalışmayla irdelenebilir. Bu çalışma, alanda bahsedilen eksikliği doldurmak üzere planlanmıştır. Bu bağlamda çalışmanın amacı, FATİH Projesi kapsamında pilot uygulamanın yapıldığı bir lisede uygulama sürecinin ve çıktılarının analizidir.

Çalışmanın yöntemi niteldir. Çalışmanın amacına ulaşabilmek için yarı yapılandırılmış görüşme ve gözlem tekniği uygulanmıştır. Çalışmada "amaçsal örnekleme" yöntemlerinden "ölçüt örnekleme" yöntemi kullanılmıştır. Verilerin analizinde, bilgisayar destekli nitel veri hazırlama NVivo 11 programından yararlanılarak içerik analizi yapılmıştır. Katılımcı grubunu farklı branşlardan yedi öğretmen oluşturmakta olup, mesleki kıdemleri 11 ve 20 yıl arasında değişmektedir. Katılımcılarla yapılan görüşmeler 2016 eğitim yılı ikinci dönem Nisan ayında çalışma izni alındıktan sonra gerçekleştirilmiştir.

Çalışmadan elde edilen ve bu çalışmaya özgü olup literatürde yer almayan dikkat çekici bulgulara ulaşılmıştır. Bu bulgulardan bazıları; (i) öğrencilerin etkileşimli tahtayı ders dışı araştırma amaçlı kullanımı, (ii) teknoloji destekli olarak öğrencilere araştırmacı olma niteliği kazandırma, (iii) teknolojinin öğrenciler arasındaki sosyal etkinlik ve paylaşımları arttırması, (iv) teknoloji kullanılarak öğrencilerin araştırma yarışmalarına katılımı (ii) öğrencilerle bilgi paylaşımı için Whatsapp'ın kullanımıdır. Bu bulgular öğrenciler açısında olumlu sonuçlar olarak yer alırken öğretmenleri için üç dikkat çekici bulgu; (i) etkileşimli tahtanın radyasyon (SAR) yaymasına karşın öğretmenlerin olumlu bakış açısıyla yaklaşması, (ii) alandaki materyal ihtiyacının uzmanlar tarafından karşılanması, (iii) Projeyi destekleyecek Akıllı defter-kitap uygulamasının başlatılmasıdır.

Bu çalışma sonucunda, katılımcılar farklı branşlardan olmasına karşın tamamının Projeye yönelik olumlu bakış açısına sahip oldukları ve Projenin devamını istedikleri ortaya çıkmıştır.

Anahtar kelimeler: Bilgi Toplumu, Pilot Uygulama, FATİH Projesi, Süreç Analizi

ANALYSIS OF IMPLEMENTATION AND OUTPUT PROCESS OF A PILOT STUDY IN A SCHOOL IN THE CONTEXT OF FATİH PROJECT

ABSTRACT

Innovations in information and communication have influenced education on a large scale like in other fields. In this context, a consensus is arrived on future´s teaching and learning environments would be different from today´s. Several students will be able to participate in student-centered activities using these new technologies and education will have a global nature. From this angle, individualism in classrooms will be completely prominent; students will be able to express their needs and skills. İn this process, students´ gained skills will be in the foreground, students will learn and implement information that they decide to learn and in this way they will synthesize new information. All explanations at this point requires making innovations in teaching and learning environments in the 21st century obligatory.

Turkey from 2000´s to today has gained important objectives for an equity-based system. FATİH Project has gone under development simultaneously with other countries by means of innovations on e-school system and educational technologies. FATİH Project in education is an important reflection of changes in education philosophy of using technology in classroom environments. The Project whose fundamental paradigm was expressed as opening a new era in education and providing equality of opportunities stands for "Movement on Increasing Opportunities and Improving Technology." In the scope of this project the educational standards of 620,000 classrooms nationwide will completely change; curriculum will become a system in which information systems are used instead of education with books-notebooks. This transformation has the following five components: (i) infrastructure of hardware and software, (ii) providing and implementing educational e-content, (iii) using efficient information technology in curricula, (iv) conscious, confident, manageable and measurable use of information technology and Internet and (v) in-service teaching program for teachers.

The first pilot study was implemented in 2011 and it has become more common nationwide since 2015. In this process, positive and negative debates over FATİH Project a new paradigm of Turkish Educational System have started. Some of the praises are: availability for every student by sustaining use of technology in classroom environments, learning occurs according to individual learning speed by means of tablet computers even in the rural areas in Turkey, being an attempt towards allowing students use technology in their elementary years and closing among students in regional, urban and rural areas by providing equality of opportunities for each class in society, the Project is an attempt for information society pioneering growing individuals in information society. On the other hand, Akinci, Kurtoğlu and Seferoğlu (2012) debated the project is not planned and discussed with the shareholders and experts, its objectives are not questioned and it is not clear enough, Kaya and Usluel (2011) debated the project has a high financial cost with regard to the contribution it could make to education, however, there is a risk of being mentioned about it has low benefits, Ekici and Yilmaz (2013) debated the project was not designed with regard to its logics of development and thus it will not be able to integrated into educational system.

It is known that a number of difficulties were encountered during implementation although the project is thought of an attempt for future information society. Between 2011 and 2015, there is numerous studies about difficulties encountered related to FATİH Project. These studies are classified under seven categories when their numbers are analyzed thematically.

 (i) Views about FATİH Project by its shareholders (63),
 (ii) Views about using interactive board (35),
 (iii) Evaluation of FATİH Project (32),
 (iv) Informing about FATİH project (30),
 (v) Competencies of teachers (14)
 (vi) Educational content (5),
 (vii) Infrastructure of hardware (4)

There is few studies about the process of implementing the project while there are a number of studies about the project. In the studies consulted with the views of shareholders: Altan and Tuzun (2011), taking into consideration of crowded classroom in Turkey, emphasized equality opportunities were not possible because of difficulties in a school in which implementations of FATİH Project was made and stressed BİT classrooms must be organized by the number of students. Gurol, Donmus and Arslan (2012) order the difficulties of classroom teachers that are encountered in FATİH Project as follows; lack of information, discipline problems, time management, lack of infrastructure, financial problems, lack of seminars, lack of adaptation and lack of time. Dursun, Kuzu, Kurt, Gullupinar and Gultekin (2013) stressed about there are no activities in which tablet computers and interactive boards are used simultaneously, lack of staffs who can reach out on a hardware problem and concerns about radiation (Ciftci, Taskaya & Alemdar, 2014). Kiranli Güngör and Yildirim (2014) stated teachers and students have insufficient level of use information technology and their level of competencies

(ii) Etkileşimli tahta kullanımına yönelik görüşler (35),

(iii) FATİH Projesini değerlendirme (32),

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Çalışmanın yöntemi niteldir. Çalışmanın amacına ulaşabilmek için yarı yapılandırılmış görüşme ve gözlem tekniği uygulanmıştır. Çalışmada "amaçsal örnekleme" yöntemlerinden "ölçüt örnekleme" yöntemi kullanılmıştır. Verilerin analizinde, bilgisayar destekli nitel veri hazırlama NVivo 11 programından yararlanılarak içerik analizi yapılmıştır. Katılımcı grubunu farklı branşlardan yedi öğretmen oluşturmakta olup, mesleki kıdemleri 11 ve 20 yıl arasında değişmektedir. Katılımcılarla yapılan görüşmeler 2016 eğitim yılı ikinci dönem Nisan ayında çalışma izni alındıktan sonra gerçekleştirilmiştir.

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Anahtar kelimeler: Bilgi Toplumu, Pilot Uygulama, FATİH Projesi, Süreç Analizi

FEN BİLİMLERİ LABORATUAR BAŞARI TESTİNİN GELİŞTİRİLMESİ: GEÇERLİK VE GÜVENİRLİK ÇALIŞMASI

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ÖZET

Bu çalışmanın amacı, üniversite öğrencilerinin fen bilimleri laboratuvar dersine yönelik kavramsal anlamalarını ölçebilecek geçerli ve güvenilir bir kavramsal anlama testi geliştirmektir. Kavramsal anlama testinin geliştirilme aşamasında öncelikle konuya ilişkin mevcut başarı testlerinden, kavramsal anlama testlerinden ve konuya ilişkin ilgili alanyazında yer alan öğrencilerin sahip oldukları alternatif kavramlardan yararlanılmıştır. Araştırmacı tarafından hazırlanan Fen Bilimleri Laboratuvar Dersi Başarı Testi, uzman görüşüne sunulmuştur. Dönütler sonucu gerekli düzeltmeler yapıldıktan sonra, 30 madde ve her bir madde de 5 seçenekli olacak şekilde çoktan seçmeli sorulardan oluşan başarı testi, Ankara ilinde bulunan bir üniversitenin 3. sınıfında öğrenim gören toplam 75 öğretmen adayına uygulanmıştır. Başarı testinin kapsam geçerliliği için konuya ilişkin ilgili alanyazında yer alan kazanımlara uygun sorular hazırlanmıştır. Elde edilen verilerin analizi sonucu, Cronbach α güvenilirlik katsayısı 0,704 olan ve 25 maddelik çoktan seçmeli sorulardan oluşan Fen Bilimleri Laboratuvar Dersi Başarı Testi geliştirilmiştir.

ABSTRACT

The purpose of this study is to develop an achievement test with validity and reliability study to measure a science laboratory lesson knowledge for pre-service science teachers. This achievement test developed by the researchers includes 30 items in the form of 5 multiple-choice. This achievement test was implemented in totally 75 pre-service science teachers who studying at third grade of a university education faculty located in Ankara. For the content validity, the researchers has formed questions in accordance with an attainment on the litarature about science laboratory and the test examined by a group consists of science educators. The reliabilty of test was found as .70 according to Cronbach α. At the end of the reliability and validity analysis, an achievement test that consists of 25 multiple choice questions is improved.

GİRİŞ

Bilimsel bilginin sürekli değiştiği ve geliştiği günümüzde, ülkelerin yaşanan gelişmelerden uzak kalmayarak bilim ve teknolojide söz sahibi olabilmeleri için, fen ve teknoloji okuryazarı olan bireyler yetiştirmesi gerekmektedir (Saraçoğlu, Böyük & Tanık, 2012). Bu açıdan, ülkelerin sadece bilimsel bilgiyi sahip olan bireyler yerine, araştıran, sorgulayan, eleştirel düşünen, problem çözme ve karar verme becerilerine sahip olan, yaşam boyu öğrenen bireylere ihtiyaçları vardır (Kaptan & Kuşakçı, 2002). Bu amaçla 2005-2006 yılında uygulamaya konulan ve 2013 yılında güncellenen Fen öğretim programının vizyonunda da, "Bireysel farklılıkları ne olursa olsun bütün öğrencilerin fen ve teknoloji okuryazarı olarak yetişmesi" olarak yer almaktadır (MEB, 2006). Bu amaçla bilimsel bilgiyi araştırarak-sorgulayarak keşfetmelerini sağlayabilmek için, bireylere gerekli imkanların sağlandığı araç-gereç ve materyallere sahip yerlere ihtiyaç vardır. Eğitim kurumlarında bu imkanların sağlanabileceği ilk yer olarak laboratuvarlar ön plana çıkmaktadır (Alkan, Çilenti & Özçelik, 1991). Okul ortamında öğrencilerin fen ile ilgili bilgi, beceri ve tutumların yapılandırılmasında, analiz, sentez ve problem çözme gibi üst düzey bilimsel süreç becerilerin geliştirilmesinde etkili laboratuvar çalışmalarının önemi büyüktür (Tatar, Korkmaz & Şaşmaz Ören, 2007). Bu nedenle fen eğitiminde laboratuvarların araştırmaya dayalı öğrenme ortamları haline getirilmesi son derece önemlidir. Laboratuvar çalışmalarının fen ve teknoloji okuryazarı bireyler yetiştirmede etkili olabilmesi, hedeflenen kazanımların istenilen düzeyde gerçekleştirilip gerçekleştirilmediğine bağlıdır. Öğrencilerde istenen laboratuvara yönelik kavramsal anlama durumlarının tespit edilebilmesi için güvenirliği ve geçerliği kanıtlanmış ölçme araçlarına ihtiyaç vardır (Çepni ve Ayvacı, 2008). Bu çalışmanın amacı; fen bilimleri öğretmen adaylarının fen konularıyla ilgili laboratuvar çalışmalarına yönelik bilgi ve becerilerini ölçmeyi hedefleyen çoktan seçmeli soruların yer aldığı geçerli ve güvenilir bir 'Fen Bilimleri Laboratuvar Başarı Testi (FBLBT)' geliştirmektir.

YÖNTEM

Bu araştırma, tarama modelinde olup fen bilimleri öğretmen adaylarının laboratuvar bilgi ve becerilerini ölçmeye yönelik bir ölçek geliştirme çalışmasıdır. Geliştirilen 30 maddelik Laboratuvar Başarı testi, Gazi

Üniversitesinde öğrenim gören toplam 75 fen bilimleri öğretmen adaylarına uygulanmıştır. Ölçeğin geliştirilmesinde öncelikli olarak ölçülmek istenen yapı belirlenmiş ve ölçek maddeleri yazılarak bir havuz oluşturulmuştur. Daha sonra uzman görüşünden gelen dönütlere bağlı olarak ölçek maddelerinde düzeltmeye ya da maddeleri ölçekten çıkarmaya gidilmiştir. Yapılan değişikliklerden sonra pilot uygulama ve ardından madde analizleri yapılmıştır. Elde edilen sonuçlar doğrultusunda ölçeğe son şekli verilmiştir. İlgili yapı belirlenirken ilk olarak Fen Bilimleri dersi öğretim programı detaylı bir şekilde incelenmiş ve laboratuvarda öğrencilere kazandırılması gereken öncelikli davranışlar ön planda tutulmuştur. Yapının belirlenmesinden sonra ölçülmek istenen kazanımlara uygun sorular yazılmıştır. Kapsam geçerliliği açısından çok sayıda ve çeşitli soru sormaya olanak sağlayan, puanlanmasında ve madde istatistiklerinin hesaplanmasında objektifliği yüksek olan çoktan seçmeli testlerin (Bayrak, 2005) ölçme aracı olmasına karar verilmiştir. Öğretmen adaylarına kazandırılması planlanan laboratuvara yönelik beceri ve davranışların, istenilen düzeyde kazanılıp kazanılmadığının belirlemek amacıyla geliştirilen Fen Bilimleri Laboratuvar Başarı Testi'nin (FBLBT) hazırlanmasında şu aşamalar yer almıştır:

i. Araştırmada Fen Bilimleri öğretmen adaylarının Laboratuvara yönelik bilgi ve becerilerini ölçmek için beş seçenekli çoktan seçmeli sorular oluşturulmuştur. Sorulardaki çeldiricilere, belirlenen alternatif kavramlar yerleştirilmiştir.

ii. Araştırma doğrultusunda geliştirilen Fen Bilimleri Laboratuvar Başarı Testi'nde yer alan soruların tümü, bilimsel açıdan uygunluk, kapsam geçerliği açısından konuyla ilgisi olan Fen Bilgisi Eğitiminde görevli iki öğretim elemanı tarafından, ayrıca dil ve anlatım açısından Türkçe eğitiminde görevli bir öğretim elemanı tarafından değerlendirilerek, gerekli düzeltmeler yapılmıştır.

iii. Fen Bilimleri Laboratuvar Başarı Testi'ndeki 30 çoktan seçmeli sorunun testteki yeri belirlenirken içerdiği kavramlar bakımından birbirine benzer olan soruların arka arkaya gelmemesine özen gösterilmiştir.

iv. Hazırlanan Fen Bilimleri Laboratuvar Başarı Testi'nin kapsam geçerliliğini sağlamak amacıyla belirtke tablosu oluşturulmuştur. Tablo 1'de testte yer alan soruların Bloom taksonomisine göre sınıflandırılması yer almaktadır.

Tablo 1.
Fen Bilimleri Laboratuvar Dersi Kazanımlarının Bloom taksonomisine göre sınıflandırılması

	Bilgi (Hatırlama- Tanıma)	Kavrama (Açıklayabilme Yorumlayabilme)	Uygulama (Kullanabilme- Problem çözebilme)	Analiz (Parçalara Ayırma, İlişkileri Belirleyebilme)	Sentez (Yeni bir şey yaratma)	Değerlendirme (Eleştirme, Karşılaştırma)
1. Laboratuvar yöntemini uygulamada kullanılan, öğretim yöntem ve teknikleri bilir.	3, 19					
2. Laboratuvardaki güvenlik sembollerini bilir.	2, 8, 15					
3. Fen laboratuvarındaki araç gereçleri ve kullanım amaçlarını tanır.	1					
4. Verilen bir deney düzeneği için uygun araç gereçleri seçer.		12, 29, 30				
5. Laboratuvarda araç-gereçleri kullanırken uyulması gereken kurallara göre kullanır.	13	17				
6. Laboratuvarda kimyasallar ile karşılaşılan sorunlarda, kullanılacak güvenlik önlemlerini bilir.	9, 16, 18, 22					
7. Laboratuvar uygulamalarında bilimsel süreç becerilerini kullanır.		5, 6, 7, 10, 11, 20, 23,	4, 14, 21, 26			

24, 25,
27, 28

Tablo 1'e göre fen eğitimindeki laboratuvar çalışmalarına yönelik gerçekleştirilmesi beklenen 7 hedef belirlenerek, bu hedeflere uygun çoktan seçmeli sorular hazırlanmıştır. Hazırlama sürecinde sorular Bloom taksonomisinin bilişsel alan basamakları dikkate alınarak hazırlanmıştır. Ancak çoktan seçmeli ölçme aracının sınırlılığından dolayı uygulama basamağına kadar sorular hazırlanabilmiştir. Geliştirilen Fen Bilimleri Laboratuvar Başarı Testi'nde yer alan soru örneği Şekil 1'de verilmiştir.

Şekil 1. Fen Bilimleri Laboratuvar Başarı Testi'ne İlişkin Soru Örneği

Fen Bilimleri Laboratuvar Başarı Testi'nde yer alan sorular için ITEMAN programı ile madde analizi yapılmıştır. Madde analizlerinde Nokta Çift Serili korelasyon katsayısından faydalanılmıştır. Maddelerin korelasyon katsayısı -1 ve +1 arasında değerler alabilir. Hesaplanan değerlerden katsayı değeri 0,19 ve daha küçük olan maddeler kesinlikle teste alınmamalı ya da tamamen düzeltilmelidir; 0,20 ile 0,29 arasındaki maddeler sınırdaki maddelerdir ve gerekirse düzeltilerek teste alınabilir; 0,30 ile 0,39 arasındaki maddeler düzeltme yapmaksızın ya da küçük düzeltmelerle teste alınabilir; 0,40 ve daha yüksek maddeler çok iyi işleyen maddelerdir ve teste olduğu gibi alınabilir (Turgut & Baykul, 2012). Maddeler korelasyon katsayıları +1'e yaklaştıkça testin tümünden yüksek puan alan bireylerin maddeden aldıkları puanların da yüksek olduğunu, yani testin tümünden başarılı olan öğrencilerin maddeyi de doğru yanıtladıkları ve maddenin ölçmesi beklenen özellik bakımından bireyleri ayırt edebildiğini gösterir. Maddeler korelasyon katsayıları -1'e yaklaştıkça ise, testin tümünden yüksek puan bireylerin maddeden aldıkları puanların düşük olduğunu, yani testin tümünden başarılı olan öğrencilerin maddeyi daha az doğru yanıtladıkları ve maddenin ölçmesi beklenen özellik bakımından bireyleri ayırt edemediğini, bilenle bilmeyeni birbirine karıştırdığını gösterir. Ayrıca madde seçiminde madde güçlük indeksinden de faydalanılmıştır. Madde güçlük indeksine göre; 0,00-0,20 (Çok Zor), 0,20-0,40 (Zor), 0,40-0,60 (Orta Güçlük), 0,60-0,80 (Kolay), 0,80-1,00 (Çok Kolay) olarak değerlendirilmektedir (Turgut & Baykul, 2012). Teste alınması gereken maddelerin seçiminde, öncelikli olarak madde ayırıcılık gücü yüksek olan maddeler tercih edilmiştir. Tercih edilen maddelerden oluşan testin ortalama güçlük değerinin de orta güçlüğe yakın olmasına (p≅0,50) dikkat edilmiştir (Turgut & Baykul, 2012). Ölçme aracında bulunması gereken özelliklerden biri olan güvenirlik için Cronbach Alfa güvenirlik katsayısının kullanılması tercih edilmiştir. Çünkü araştırmanın amacı doğrultusunda geliştirilen ölçme aracı, çoktan seçmeli maddelerden (1-0) oluşmaktadır. İç tutarlılık yöntemlerinden alfa katsayısına göre, 0,00 ile 0,39 arasında değer alan test güvenilir değildir; 0,40 ile 0,59 arasında değer alan testin güvenirliği düşüktür; 0,60 ile 0,79 arasında değer alan test oldukça güvenilirdir; 0,80 ile 1,00 arasında değer alan test yüksek güvenirliğe sahiptir (Alpar, 2014).

BULGULAR
Fen konularıyla ilgili laboratuvar çalışmalarında bilgi ve becerileri ölçmek amacıyla geliştirilen Fen Bilimleri Laboratuvar Başarı Testi'nin (FBLBT) analiz sonuçlarına göre elde edilen test istatistikleri Tablo 2'de yer almaktadır.

Tablo 2.
FBLBT için test istatistikleri

Madde Sayısı	30	Standart Sapma	3,592
Uygulanan Kişi Sayısı	75	Çarpıklık Katsayısı	-0,435
Ortalama	14,387	Basıklık Katsayısı	-0,583
Ortanca	15,000	Cronbach Alpha	0,613
Tepe Değer	17,000	Ortalama Madde Güçlüğü	0,480
Varyans	12,904	Ortalama Madde Ayırt Ediciliği	0,401

Tablo 2'ye göre, 75 öğretmen adayına uygulanan 30 maddelik FBLBT'nin ortalaması 14,387, testin varyansı 12,904, standart sapması da 3,592'dir. Çarpıklık katsayısının -0,435 bulunması, yani negatif olması (Ky<0); dağılımın sola çarpık olduğunu gösterir. Bu durum dağılımda ortalamanın üstündeki puanların sayıca çok, ölçme sonuçlarının ortalamadan yüksek puanlara yığılmış ve sınavın orta güçlükte olduğu anlamına gelmektedir. Basıklık katsayısının -0,583 bulunması, yani negatif olması (Bs<0); dağılımın normalden biraz basık ve ölçülen özellik açısından grubun biraz heterojen olduğu anlamına gelmektedir. Elde edilen bu katsayıların ±1,0 sınırları içinde kalmasından ve ortalama, ortanca ve tepe değerin birbirine yakın olmasından dolayı, puanların normalden aşırı bir sapma göstermediği yani puanların normal dağıldığı söylenebilir. FBLBT'nin uygulanması sonucu elde edilen veriler doğrultusunda hesaplanan Cronbach α güvenilirlik katsayısı 0,61 olarak bulunmuştur. Yapılan madde analizi ile testin ortalama madde güçlük ve ayırt edicilik indeksleri sırasıyla 0,480 ve 0,401 olarak hesaplanmıştır. Testte yer alan madde ve seçenek istatistikleri Tablo 3'te özetlenmiştir. Tablo 3'te verilen değerler, tüm grubun %27'lik alt ve üst gruplara ilişkin madde seçeneklerini cevaplama oranlarıdır.

Tablo 3.
Fen Bilimleri Laboratuvar Başarı Testi madde ve seçenek analizi

M	G	A	B	C	D	E	Güçlük (p)	Ayırt edicilik (d)	Cevap Anahtarı
1	Üst	1.00	.00	.00	.00	.00	.99	.17	A
	Alt	.95	.00	.00	.00	.00			
2	Üst	.37	.00	.33	.00	.30	.23	.39	A
	Alt	.05	.00	.65	.00	.30			
3	Üst	.15	.15	.07	.07	.56	.29	.43	E
	Alt	.15	.50	.10	.10	.10			
4	Üst	.04	.00	.41	.52	.04	.36	.04	C
	Alt	.00	.00	.40	.60	.00			
5	Üst	.07	.07	.07	.11	.67	.57	.27	E
	Alt	.25	.10	.20	.15	.30			
6	Üst	.00	.07	.00	.04	.89	.85	.30	E
	Alt	.05	.00	.10	.20	.65			
7	Üst	.00	.00	.07	.22	.70	.71	.23	E
	Alt	.05	.10	.20	.15	.50			
8	Üst	.04	.00	.00	.00	.96	.88	.42	E
	Alt	.30	.00	.00	.05	.65			
9	Üst	.63	.04	.00	.26	.07	.15	.14	D
	Alt	.65	.05	.10	.15	.05			
10	Üst	.44	.26	.00	.04	.26	.24	.38	A
	Alt	.05	.40	.20	.05	.30			
11	Üst	.07	.04	.00	.89	.00	.68	.54	D
	Alt	.10	.30	.25	.30	.05			
12	Üst	.15	.59	.22	.04	.00	.15	-.02	A
	Alt	.15	.25	.20	.25	.15			
13	Üst	.00	.81	.11	.04	.00	.71	.31	B
	Alt	.15	.45	.15	.15	.10			
14	Üst	.00	.00	.00	.67	.33	.39	.35	D
	Alt	.05	.20	.15	.20	.40			
15	Üst	.04	.04	.00	.07	.81	.67	.41	E
	Alt	.30	.30	.00	.05	.35			
16	Üst	.00	.78	.15	.04	.04	.73	.25	B
	Alt	.05	.55	.15	.20	.05			
17	Üst	.56	.00	.26	.04	.11	.11	.32	C

M	G	A	B	C	D	E	p	d	Cevap
	Alt	.40	.05	.05	.20	.30			
18	Üst	.56	.00	.41	.04	.00	.21	.42	C
	Alt	.60	.15	.05	.15	.05			
19	Üst	.41	.07	.30	.19	.04	.20	.37	A
	Alt	.10	.05	.35	.40	.10			
20	Üst	.04	.67	.30	.00	.00	.55	.40	B
	Alt	.00	.25	.40	.15	.20			
21	Üst	.07	.00	.52	.07	.33	.05	-.06	A
	Alt	.10	.05	.35	.10	.40			
22	Üst	.04	.00	.11	.67	.15	.17	-.09	C
	Alt	.00	.25	.25	.35	.15			

Tablo 3. (Devamı)

M	G	A	B	C	D	E	p	d	Cevap
23	Üst	.00	.04	.93	.00	.04	.84	.33	C
	Alt	.00	.10	.65	.00	.25			
24	Üst	.85	.00	.15	.00	.00	.63	.40	A
	Alt	.35	.05	.60	.00	.00			
25	Üst	.37	.07	.04	.41	.11	.25	.24	D
	Alt	.45	.20	.20	.15	.00			
26	Üst	.00	.04	.15	.37	.41	.31	-.01	D
	Alt	.00	.05	.10	.35	.50			
27	Üst	.00	.96	.00	.00	.04	.80	.45	B
	Alt	.20	.50	.05	.00	.25			
28	Üst	.30	.00	.19	.00	.52	.41	.17	E
	Alt	.20	.05	.50	.00	.25			
29	Üst	.00	.00	.00	.00	1.00	.81	.58	E
	Alt	.15	.05	.20	.10	.50			
30	Üst	.67	.00	.07	.04	.19	.45	.32	A
	Alt	.15	.10	.10	.20	.45			

(M: Madde, G: Grup, Madde Seçenekleri: A,B,C,D,E)

Fen Bilimleri Laboratuvar Başarı Testi'ndeki maddelere ilişkin alt ve üst grubun cevaplama oranları incelendiğinde, üst grupta yer alan öğrencilerin daha çok doğru cevabı işaretlemeleri, alt grupta yer alan öğrencilerin ise daha çok yanlış cevap olan çeldiricileri işaretlemeleri beklenir. Çünkü maddelerin ayırt edicilik düzeyi, o maddenin alt ve üst grupta yer alan öğrencileri birbirinden yüksek oranda ayırabilmesine bağlıdır. Bu durumda testte yer alan maddelerin ayırt edicilik katsayıları incelendiğinde, 9 maddenin (3, 8, 11, 15, 18, 20, 24, 27, 29) ayırt ediciliği yüksek çıkmıştır ve bu maddeler teste olduğu gibi alınabilir (d≥40), 9 madde de (2, 6, 10, 13, 14, 17, 19, 23, 30) düzeltme yapmaksızın ya da küçük düzeltmelerle teste alınabilir (0,3≤d≤0,39), 4 madde (5, 7, 16, 25) sınırdaki maddelerdir ve gerekirse düzeltilerek teste alınabilir (0,2≤d≤0,29), 8 madde (1, 4, 12, 21, 22, 26, 28) kesinlikle teste alınmamalı ya da tamamen düzeltilmelidir (0,2>d). Testte yer alan maddelerin güçlük düzeyleri incelendiğinde ise, 5 maddenin (9, 12, 17, 21, 22) çok zor (0,00≤p<0,20), 9 maddenin (2, 3, 4, 10, 14, 18, 19, 25, 26) zor (0,20<p<0,40), 4 maddenin (5, 20, 28, 30) orta güçlükte (0,40<p<0,60), 6 maddenin (7, 11, 13, 15, 16, 24) kolay (0,60<p<0,80) ve 6 maddenin (1, 6, 8, 23, 27, 29) çok kolay (0,80<p≤1,00) olduğu tespit edilmiştir.

Araştırmanın amacı doğrultusunda geliştirilen ve 30 maddeden oluşan *Fen Bilimleri Laboratuvar Başarı Testi'nin (FBLBT)* analiz sonuçlarına göre, ayırt edicilik katsayısı 0,20'nin altında olan 1 maddede (soru 1) düzeltme yapılması ve 5 maddenin ise (soru 4, 12, 21, 22, 26) testten çıkartılmasına karar verilmiştir. Bu aşamada aynı özelliği ölçen başka maddelerin testte yer alıp almadığı incelenerek, kapsam geçerliğini düşürmeyecek şekilde ayırt ediciliği düşük maddeler testten çıkarılmıştır. Madde ayırt edicilik katsayısı 0,20'nin altında olan 9. madde incelendiğinde, sorunun madde güçlük değerinin çok zor (0,15) olmasının, üst gruptan doğru seçeneği işaretleyen sayısının az olmasına neden olduğu düşünülmektedir. Dolayısıyla bu durum madde ayırt edicilik katsayısının olumsuz etkilenmesine neden olsa da, başarısı çok yüksek olan öğrencileri de tespit edebilmek için bu maddenin testte kalmasına karar verilmiştir. 28. madde incelendiğinde ise, madde ayırt edicilik katsayısının düşük olmasının, öğrencilerin bu maddeye ilişkin kavramsal anlamalarından kaynaklandığı düşünülmektedir. Çünkü bir konu ile ilgili kavram yanılgısı, sadece başarısı düşük olan öğrencilerde değil, başarısı yüksek olan öğrencilerde de görülebilir. Kavram yanılgısı, öğrencilerin konu ile ilgili eksik ya da yanlış bilgiye sahip olmasının dışında kavrama ilişkin gerekçeleriyle beraber bilimsel açıklamalarla örtüşmeyen alternatif açıklama getirebilmesidir. Dolayısıyla bir öğrencinin kavrama ilişkin yeni bir yapı ortaya koyabilmesi için çeşitli zihinsel süreçleri gerçekleştirebilmesi gerekmektedir (Kumlu, 2012). Bu nedenle kavramsal anlamayı

ölçmeye yönelik sorulardaki çeldiricileri, konu ile ilgili eksik ya da yanlış bilgiye sahip olabilecek alt gruptan öğrencilerin seçebildiği gibi, gerekçelerini ortaya koyabilen ancak bilimsel doğrularla örtüşmeyen açıklamalara sahip üst gruptan öğrenciler de seçebilmektedirler. Kavramsal anlamayı ölçen maddelerdeki çeldiricileri üst gruptan çok fazla işaretleyenlerin olması, maddenin alt grup ve üst grubu birbirinden ayıramamış gibi görünmesine neden olarak, maddeye ilişkin ayırt edicilik katsayısının düşük olmasına neden olmaktadır. Bu durumda kavramsal anlamayı ölçen maddelerin testten çıkarılması yerine, bu tür maddelerle kavram yanılgısına sahip öğrenciler tespit edilerek, kavram yanılgılarını gidermeye yönelik çalışmalar yapılması önerilebilir. Bu açıdan ele alındığında 28. maddenin testte kalmasına karar verilmiştir. Elde edilen verilere göre yapılan düzeltmeler sonucunda 25 maddelik *Fen Bilimleri Laboratuvar Başarı Testi* elde edilmiştir. Maddelerin atılmasından sonra elde edilen 25 maddelik nihai kavramsal anlama testine ilişkin test istatistikleri Tablo 4'de yer almaktadır.

Tablo 4.
Nihai FBLBT İçin Test İstatistikleri

Madde Sayısı	25	Standart Sapma	3,75
Uygulanan Kişi Sayısı	75	Çarpıklık Katsayısı	-0,407
Ortalama	13,5	Basıklık Katsayısı	-0,454
Ortanca	14,00	Cronbach Alpha	0,704
Tepe Değer	16,00	Ortalama Madde Güçlüğü	0,534
Varyans	14,04	Ortalama Madde Ayırt Ediciliği	0,503

Tablo 4'e göre, 75 öğretmen adayına uygulanan 25 maddelik FBLBT'nin ortalaması 13,35, ortancası 14 ve tepe değeri 16 olarak bulunmuştur. Testin varyansı 14,04, standart sapması da 3,75'dir. Çarpıklık katsayısının -0,407 bulunması, yani negatif olması ($K_y<0$); dağılımın sola çarpık olduğunu gösterir. Bu durum dağılımda ortalamanın üstünde olan puanların sayıca biraz fazla, ölçme sonuçlarının bir miktar ortalama üstü puanlara yığılmış olduğu anlamına gelmektedir. Basıklık katsayısının -0,454 bulunması, yani negatif olması ($B_s<0$) dağılımın normalden biraz basık ve ölçülen özellik açısından grubun biraz heterojen olduğu anlamına gelmektedir. Elde edilen bu katsayıların ±1,0 sınırları içinde kalmasından ve ortalama, ortanca ve tepe değerin birbirine yakın olmasından dolayı, puanların normalden aşırı bir sapma göstermediği yani puanların normal dağıldığı söylenebilir. FBLBT'nin 5 madde atıldıktan sonra 25 madde üzerinden hesaplanan Cronbach α güvenilirlik katsayısı 0,704 olarak bulunmuştur. Yapılan madde analizi ile testin ortalama madde güçlük ve ayırt edicilik indeksleri sırasıyla 0,534 ve 0,503 olarak hesaplanmıştır.

SONUÇ

Elde edilen verilerin analizi sonucu, Cronbach α güvenilirlik katsayısı 0,704 olan 25 maddelik Fen Bilimleri Laboratuvar Dersi Başarı Testi geliştirilmiştir. Testin ortalama madde güçlük ve ayırt edicilik indekslerinin sırasıyla 0,534 ve 0,503 olarak hesaplanmasıyla, genel olarak testin öğrencilerin laboratuvara yönelik başarılarını ayırt edebilmede iyi olduğu ve testte her düzeyde öğrenciye uygun soruların yer aldığı söylenebilir. Bu sonuçlar, geliştirilen FBLBT'ye ilişkin geçerli ve güvenilir sonuçlara ulaşıldığını göstermektedir. Bu çalışmada, çoktan seçmeli test türünün sınırlılıklarından dolayı Bloom taksonomisinin uygulama basamağına kadar sorular hazırlanabilmiştir. Gelecek çalışmalarda farklı test türleri kullanılarak laboratuvar becerilerine ölçmeye yönelik daha üst düzey soruların yer aldığı ölçme araçları geliştirilebilir.

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FİZİK EĞİTİMİ ALANINDA YAPILAN DOKTORA TEZLERİNİN İNCELENMESİ

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ÖZET

Bu çalışmanın amacı, Türkiye'de 2010-2015 yılları arasında fizik eğitim alanında yapılmış doktora tezlerinin yıl, üniversite, dil, araştırmacının cinsiyeti, danışman unvanı, kullanılan model ve yöntemler, örneklem sayısı ve özellikleri, çalışılan üniteler, kullanılan veri toplama araçları ve tematik dağılımlarının belirlenmesini oluşturmaktadır. Nitel araştırma yönteminin kullanıldığı bu çalışmada, durum çalışması modeli benimsenmiştir. Çalışmanın evrenini 2010-2015 yılları arasında Türkiye'de yapılan doktora tezleri oluşturmaktadır ve bu tezlere Yüksek Öğretim Kurumu tez arama motoru sayesinde ulaşılmıştır. Çalışmada bu yıllar arasında yayınlanan toplam 78 doktora tezine ulaşılmış ve hepsi incelenmiştir. Çalışmada veri toplama aracı olarak, araştırmacı tarafından oluşturulan ve bütün bağımsız değişkenleri içeren yapı belirleme formu kullanılmıştır. Çalışmada verilerin çözümlenmesinde içerik analizi türlerinden frekans analizi ve kategorisel analiz tekniği kullanılmıştır. Bulgular fizik eğitim alanında 2010-2015 yılları arasında yapılan doktora çalışmalarında başarı ve tutum temalarında yoğunlaşıldığını göstermiştir.

GİRİŞ

Bilimsel bilginin tarihsel gelişiminin incelenmesi yeni araştırmaların önünü açması ve bilginin o zamana kadar geldiği noktanın ortaya konması açısından gereklidir. Tarihsel gelişimin incelenmesi yeni araştırmalar için kaynak teşkil etmesi yanında yapılacak yeni çalışmalara fikir vermesi açısından da önemlidir (Bağ, Kara ve Uşak, 2002).

Doğru, Gençosman, Ataalkın ve Şeker (2012) tarafından yapılan çalışmada fizik eğitimi alanında yapılan ilk çalışmanın 2001 yılında yayınlandığı görülmektedir. Öyle ise, Türkiye de fizik eğitim alanında yayınlanan doktora tezlerinin tarihi yaklaşık 15 yıllık geçmişe dayanmaktadır. Ülkemizde alan eğitiminde araştırma yapmak ve kendinden önce gelen çalışmaları incelemek isteyen araştırmacılar için yapılan çalışmalara ulaşmada sınırlılıklar olduğu görülmektedir (Karamustafaoğlu, 2009). 2001-2009 yılları arasındaki doktora tezlerinin incelemesi Doğru ve arkadaşları tarafından yapılmıştır. Fizik eğitimi alanında yeni araştırmalara yol göstermek ve fizik eğitimi alanında gelinen noktanın belirlenmesi için 2010 yılından sonra yayınlanan doktora çalışmalarının incelenmesine ihtiyaç duyulmaktadır.

AMAÇ

Bu çalışmanın amacı, Yüksek Öğretim Kurumu tez merkezinde bulunan 2010-2015 yılları arasında yayınlanmış fizik eğitimi alanındaki doktora tezlerinin incelenmesidir. Tezlerin incelenmesi sırasında kullanılacak bağımsız değişkenler: yayınlandığı yıl, yayınlayan kurum, yayın dili, yayın yapanın cinsiyeti, danışman unvanı, kullanılan model ve yöntem, örneklem sayısı ve özellikleri, alanlara göre çalışılan üniteler, kullanılan veri toplama aracı türleri ve tercih edilen temalar.

YÖNTEM

2010-2015 yılları arasındaki tezlerin incelenmesi için nitel araştırma yöntemlerinden doküman analizi kullanılmıştır. Doküman analizi araştırması hedeflenen olgu veya olgular hakkında bilgi içeren yazılı materyallerin analizini kapsar ve (1) dokümanlara ulaşma, (2) orijinalliği kontrol, (3) dokümanları anlama, (4) veriyi analiz etme ve (5) veriyi kullanma aşamalarını içerir (Yıldırım ve Şimşek, 2013).

BULGULAR

- Yıllara göre yayınlanan doktora tezlerinin dağılımı nasıldır?

2010-2015 yılları arasında toplam 78 doktora tezi yayınlanmıştır. Bu tezlerin yıllara göre dağılımı incelendiğinde 2010 yılında en fazla doktora tezinin yapıldığı, 2015 yılında ise sayısının oransal olarak çok azaldığı görülmüştür. Bu düşüşün sebebi olarak 2015 yılında hazırlanan bazı tezlerin Tez arama merkezi veritabanına henüz yüklenmediği düşünülmektedir. Yıllara göre üretilen doktora tezlerinin ortalaması 13 tür.

- Kurumlara (üniversitelere) göre yayınlanan doktora tezlerinin dağılımı nasıldır?

Doktora tezlerinin 16 farklı üniversitede yayınlandığı görülmüştür. Karadeniz Teknik Üniversitesi 16, Orta Doğu Teknik Üniversitesi 15, Gazi Üniversitesi 9, Atatürk Üniversitesi 8, Balıkesir üniversitesi 7, Marmara Üniversitesi 6, Dicle üniversitesi ve Dokuz Eylül Üniversitesi 3, Ankara, Selçuk ve Hacettepe Üniversiteleri 2, Celal Bayar, Dumlupınar, Ege, Fırat ve Trakya Üniversiteleri 1 doktora tezi yayınlamıştırlar.

- Yayınlanan doktora tezleri hangi dillerde yayınlanmıştır?

78 doktora tezinin 15 tanesi İngilizce 63 tanesi Türkçe olarak yayınlanmıştır. Sadece Orta Doğu Teknik Üniversitesinde yayınlanan tezler İngilizcedir.

- Yayınlanan doktora tezlerinin araştırmacılarının cinsiyet dağılımı nasıldır?

Araştırmacıların 45 (%58) tanesi erkek ve 33 (%42) tanesi bayandır. Erkeklerin bayanlara göre daha fazla sayıda olduğu görülmüştür.

- Çalışmalara katılan danışmanların unvanlarına göre dağılımı nasıldır?

Profesörler 35 (%45), doçentler 23(%30) ve yardımcı doçentler 13 (%17) doktora tezine danışmanlık yapmışlardır. 4 doktora tezi ise ikili tez danışmanları tarafından yürütülmüştür. Bu çalışmalarda, profesör/doçent, doçent/yardımcı doçent, doktor/yardımcı doçent, yardımcı doçent/öğretim görevlisi birlikte çalışmışlardır.

- Yayınlanan doktora tezlerinde kullanılan araştırma deseni/analiz şekli nelerdir?

2010-2015 yıları arasında yayınlanan 78 doktora tezinde 16 farklı araştırma deseni kullanılmıştır. Bunlar: Ön-test/son-test kontrol gruplu (42), durum çalışması (12), tek gruplu ön-test/son-test (6), içerik analizi (4), faktör analizi (3), anket çalışması (2), doküman incelemesi (2), meta-analiz, fenomenografik araştırma, örnek olay tarama, aksiyon, boyuna gelişimci, didaktiksel mühendislik araştırma teorisi, eylem araştırması, materyal geliştirme, test geliştirme.

- Yayınlanan doktora tezlerinde kullanılan araştırma yöntemleri nelerdir?

Yayınlanan doktora tezlerinin 38 tanesinde karma yöntem, 20 tanesinde nicel ve 20 tanesinde nitel yöntemler kullanılmıştır.

- Çalışmalarda kullanılan örneklem sayısı ve örneklem grubunun özellikleri nelerdir?

Fizik eğitimi alanında yapılan doktora çalışmalarında lise öğrencileri, öğretmen adayları, öğretmenler, veliler, makaleler, doktora tezleri, doktora öğrencileri, idareciler ve ders kitapları örneklem grubu olarak seçilmiştir. Yapılan doktora çalışmalarında en fazla öğretmen adayları örneklem grubu olarak belirlenmiştir, ancak çalışmalara toplamda katılan lise öğrencilerinin sayısı diğer katılımcılara göre daha fazladır. Veliler, makaleler, doktora tezleri, doktora öğrencileri, idareciler ve ders kitapları ile yapılan çalışmalar ise 1'er tanedir. Bu örneklem grupları ile yapılan çalışmaların çok az olduğu görülmektedir.

- Yayınlanan doktora tezlerinde çalışılan üniteler nelerdir?

Doktora tezlerinde fizik dersi ile ilgili hemen bütün alanlarda çalışma yapıldığı görülmektedir. Elektrik ve mekanik üniteleri 14 er çalışmada kullanılarak en fazla çalışma yapılan üniteler olmuşlardır. Modern fizik, iş ve enerji, manyetizma, ısı-sıcaklık, optik, dalgalar, elektrostatik, itme ve momentum, Newton'un hareket yasarlı, radyoaktivite, ses, tork ve yeryüzünde hareket konularında çalışmalar yapılmıştır.

- Yayınlanan doktora tezlerinde hangi veri toplama araçları kullanılmıştır?

Doktora tezlerinde toplam 183 veri toplama aracı kullanılmıştır. Başarı testi (48), görüşe formu (39), tutum ölçeği (22) ve gözlem formu (21) çalışmalarda en fazla tercih edilen veri toplama araçları olmuşlardır. Bunların dışında

özel gereçler, anket, bilimsel süreç becerileri testi, diğer ölçekler, diğer testler ve kavram yanılgısı testleri de kullanılmıştır.

- Yayınlanan doktora tezlerinde hangi temalar tercih edilmiştir?

Yayınlanan doktora tezlerinde 66 tema toplam 195 kez çalışılmıştır. Başarı (41) ve tutum (22) en fazla kullanılan temalar olmuşlardır. Bunların dışında bilgisayar destekli eğitim (9), materyal geliştirme (8), 7E öğretim modeli (6), 5E öğretim modeli (5), bilimsel süreç becerisi (5), modern fizik (5), probleme dayalı öğrenme (5) ve web destekli eğitimde (5) kullanılan temalar arasındadır.

SONUÇLAR ve TARTIŞMA

Doğru, Gençosman, Ataalkın ve Şeker (2012) tarafından yapılan 2009 yılına kadar olan doktora çalışmaları incelenmesinde 2001-2009 yılları arasında ortalama yayınlanan doktora tezi sayısı 2,6 iken bu sayının sevindirici şekilde 2010-2015 yılları arasında 13'e yükseldiği görülmüştür. %21 ile en fazla doktora tezi Karadeniz Teknik Üniversitesinde daha sonra %19 ile Orta Doğu Teknik Üniversitesinde en fazla sayıda tez yayınlanmıştır. Doktora tezlerinde daha çok ön-test son-test kontrol gruplu desen karma araştırma yöntemi ile birlikte kullanılmıştır. Çalışmalarda örneklem grubu olarak lise öğrencileri ve öğretmen adayları örneklem grubu olarak seçilmiştir. Veliler, idareciler, doktora öğrencileri, makaleler, doktora tezleri ve ders kitapları ise çok az sayıda çalışma için örneklem olmuştur. Elektrik ve mekanik üniteleri en fazla çalışılan konular iken, fizik dersindeki diğer ünitelerle ilgili yapılan çalışmalar oldukça sınırlıdır. Veri toplama aracı olarak sürekli başarı testi, görüşme formu ve tutum ölçeği kullanılmaktadır. Ayrıca tema olarak da en fazla başarı ve tutum temaları seçilmiştir. Ancak daha önce Doğru ve arkadaşları tarafından yapılan çalışmada toplam 20 tema üzerinde çalışmaya rastlanmışken şimdi bu sayı 66 ya çıkmıştır.

Bu sonuçlar fizik eğitim alanında yapılan çalışmalarda tekrarın yavaş yavaş ortadan kalktığını ve geniş bir yelpazeye dağılmaya geçildiğini göstermektedir. Bu sonuç Karadağ (2009) tarafından yapılan tezlerin tematik incelenmesi ile ilgili çalışmaya ters düşmektedir. Çünkü yıllar içerisinde fizik eğitim alanı gelişmiş ve üretilen tema sayısı artmıştır. Bilgisayar destekli öğretim, web destekli öğrenme ve simülasyonların tema olarak karşımıza çıkmasının Türkiye'de teknolojinin eğitime adapte edilmesini amaçlayan FATİH projesinin başlamasının etkili olduğu düşünülebilir. Türkiye'de fizik eğitim alanında çalışan araştırmacılar, yeni ve orijinal temalara yönelmeli ve daha önce yapılan bir çalışmanın evren ve örneklemini değiştirerek tekrarlanmasından kaçınmalıdırlar. Ayrıca doktora tezi tarama çalışmaları 5 yılda bir tekrarlanmalıdır çünkü her yıl üretilen doktora tezi sayısının artacağı öngörülmektedir.

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FORMASYON EĞİTİMİ ALAN ÖĞRETMEN ADAYLARININ SINIF YÖNETME KAYGILARININ ÇEŞİTLİ DEĞİŞKENLERCE YORDANMASI

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ÖZET

Çalışmanın amacı formasyon eğitimini sürdüren öğretmen adaylarının sınıf yönetme kaygılarının cinsiyet, öğretmenlik deneyimi, genel yetkinlik ve mesleki yetkinlik açısından yordanıp yordanmadığının incelenmesidir. Araştırma ilişkisel bir çalışmadır. Çalışma Mehmet Akif Ersoy Üniversitesi Eğitim Fakültesinde formasyon eğitimi alan 305 öğretmen adayı üzerinde gerçekleştirilmiştir. Öğretmen adaylarından 236'sı kadın, 69'u erkektir. Katılımcıların yaşları 21 ile 44 arasında değişmektedir. Katılımcıların 128'inin öğretmenlik deneyimi olmakla birlikte 176'sının yoktur. Verilerin analizinde çoklu regresyon analizi kullanılmıştır. Yapılan regresyon sağaltımında 14 uç veri veri gözlem setinden atılmış, Durbin Watson değerine bakıldığında değerin 1.815 olduğu ve regresyon uygulamak için bu değerin en fazla 2,50 olması gerektiği bizim analizimizde çıkan bu değerin oldukça uygun olduğu görülmüştür. Yapılan analizlerde araştırmada kurgulanan modelin anlamlı olduğu, adayların sınıf yönetme kaygısının cinsiyet, öğretmenlik tecrübesi, genel yetkinlik ve mesleki yetkinlik değişkenleri tarafından hep birlikte %31,5 yordandığı görülmüştür. Hangi değişkenin modele anlamlı katkı sağladığını incelemek için t ve beta değerlerine bakıldığında modele anlamlı katkı veren değişkenlerin negatif yordama gücü ile genel yetkinlik ve mesleki deneyim olduğu görülmüştür. Yani bu sonuç, adayların öğretmenlik tecrübesinin olması ve genel yetkinlik düzeylerinin yüksek olması ile sınıf yönetme kaygısının düşeceği ya da tam tersi olarak genel yetkinliği düşük olan ve öğretmenlik deneyimi olmayan öğretmen adaylarının sınıf yönetme kaygısının yükseleceği anlamına gelebilir.

Anahtar Sözcükler: Sınıf yönetimi, kaygı, sınıf yönetme kaygısı

ABSTRACT

The aim of this research is to examine whether class management anxiety among teacher candidates attending the formation training is predicted in terms of gender, teaching experience, general competence and professional competence. Research is a relational study. The research was carried out with 305 teacher candidates receiving formation training in Faculty of Education in Mehmet Akif Ersoy University. Teacher candidates consist of 236 females, 69 males. Ages of participants vary between 21 and 44. Although 128 participants have teaching experience, 176 of those do not have teaching experience. As for data analysis, multiple regression analysis was used. In the regression treatment applied, 14 extreme data were removed from observation set, and considering Durbin Watson value, it was observed that this value was 1,815 and this result is quite suitable since the value should be 2,50 at the most to carry out regression analysis. In analyses, it was observed that the constructed model was significant and teacher candidates' class management anxiety was predicted by 31.5% all together by variables including gender, teaching experience, general competence and professional competence. Considering t and beta values to analyze which variable provides significant contribution to the model, it was observed that variables providing significant contribution to the model were general competence and professional experience with negative predicting power. In other words, this result can be assumed as the fact that teacher candidates' having teaching experience and high level of general competence will decrease class management anxiety or, on the contrary, teacher candidates with low level of general competence and lacking teaching experience tend to have higher level of class management anxiety.

Keywords: Class management, anxiety, class management anxiety

GİRİŞ

Sınıfta, öğrenme ortamının ve yaşantılarının oluşumu, sürdürülmesi ve yönetilmesi öğretmenlerin sorumluğundadır. Dolayısıyla, programın yürütücüsü olarak kabul edilen öğretmenlerden öğrenme sürecini etkili ve verimli hale getirmesi beklenir. Bu da ancak öğretmenin sınıf yönetimi açısından yeterli bilgiye sahip olması ve bu bilgiyi kullanabilme becerisinin bulunması ile mümkündür.

En basit haliyle sınıf yönetimi, uygun öğrenme ortamın oluşturulması ve sürdürülmesidir. Sınıfta hedeflenen öğretim ve öğrenmenin meydana gelmesi için öğretmen ve öğrencilerin çalışmasının önündeki engellerinin giderilmesidir. Öğretim zamanının etkili kullanılmasından, öğrencilerin etkinliklere katılımının sağlanmasına, sınıftaki maddi ve insan kaynaklarının yönetilmesi gibi etkinlikler bütünüdür (Erdoğan, 2001). Diğer bir ifadeyle, sınıf yönetimi olumlu bir öğrenme ortamının oluşturulmasını etkileyen öğretim stratejileri ve sınıf içi düzenlenmeler ile ilgili tüm öğelerin bir kombinasyonudur (Brophy ve Good, 1994). Bu bakımdan etkili bir sınıf yönetimi için öğretmenin, sınıfta aynı anda, çok yönlü, hızlı ve öngörülemeyen olayları sınıfın amaçları doğrultusunda bütünleştirebilmesi gerekir (Önder ve Karataş, 2015). Tıpkı bir orkestra şefinin yaptığı gibi farklı seslerden bir armoni oluşturması beklenir (Lemlech, 1988). Bu sebepten, etkili sınıf yönetimi kolay bir iş değildir. Öğretmenler mesleğin hangi döneminde olursa olsun zorluk yaşadıkları işlerinin en başında sınıf yönetimi ile ilgili problemleri göstermektedir (Demirtaş, 2012). Özellikle aday ve mesleğe yeni başlayan öğretmenler, enerji ve çabaların çoğunu sınıfı kontrol etmek için harcamakta, öğretim sürecinin yaklaşık %50'sini sınıf içi düzenin sağlanması için kullanmaktadır (Jones, 1987) ve sınıf yönetimini en önemli kaygı verici sorun olarak algılanmaktadırlar (Evertson ve Weinstein, 2006; Jones ve Jones, 2007; Wagner, 2008).

Sınıf yönetimi kaygısına çeşitli nedenler yol açabilir. Araştırmalara göre, sınıf yönetimi kaygısı öğretmenin kişilik özelliğinin yanı sıra sınıf yönetimi konusundaki bilgi eksikliği, yeterli uygulama deneyimine sahip olmaması ve alan bilgisindeki yetersizliğinden kaynaklanmaktadır (Oral, 2012). Bunların yanında, öğretmenlerin düşük öz yetkinlik inancına sahip olmaları da sınıf yönetimi kaygısını artıran durumlardan birisi olarak gösterilmektedir (Pajares, 2002). Öğretmenlerin sınıf yönetimi başarısı ile öz yetkinlik inancı arasında yüksek ilişki olduğu belirtilmektedir (Celep, 2004; Enochs, ve dig., 1995; Henson, 2001; Ramey ve Shroyer, 1992; Woolfolk ve Hoy, 1990).

Bandura tarafından 1970'li yıllarda dile getirilen öz yetkinlik, bireyin kaşı karşıya kaldığı durumlarla başa çıkabilmelerine yardımcı olacak eylemleri ne kadar iyi yapabildiklerine yönelik inancıdır. Bireyin kendisine ilişkin farkındalığı, neyi yapmaya yeterli olduğuna ilişkin düşüncesidir (Bandura, 1997). Doğrudan olmasa da bu inanç, yani, öz yetkinlik algısı, insanların davranışları, düşünce biçimleri ve seçimleri üzerinde belirleyici olan önemli etkenlerden biridir (Schunk, 1985). Bireylerin herhangi bir alana karşı sahip oldukları öz yetkinlik inançları ile davranışları arasında yakın bir ilişki söz konusudur (Bandura, 1997; Schunk, 1990). Bu durumda, öğretmenlerin öz yetkinlik inancının; öğretimin öncesi, esnası ve sonrasında yapacaklarını etkileyeceği söylenebilir (Tschannen-Moran vd., 2001).

Temel görevi öğrenmeyi sağlamak olan öğretmenlerin, görev ve sorumluluklarını etkili bir biçimde yerine getirebilmeleri için öz yetkinliklerinin yüksek olmasının yanında mesleki yeterliklerinin yani öğretmen öz yeterliğinin de yüksek olması gerekmektedir. Genel bir ifade ile öğretmen özyeterliği, mesleğin gereği görev ve sorumlulukları başarıyla yerine getirebilmek adına sahip olunması gereken bilgi, beceri ve tutumları vurgular (Tschannen-Moran ve Woolfolk Hoy, 2001). Başka bir anlatımla öğretmen öz yeterliği, bir öğretmenin görev ve sorumluluklarımı yerine getirmemde etkili olacak düşünceleri ve davranışları planlayıp uygulayabilir miyim? sorusuna verdiği cevaptır (Goddard, Hoy ve Woolfolk- Hoy, 2004). Öğretmenin öğretimsel yeterliğine olan güveni, hedeflenen davranışları öğrencilere kazandırma gücüne yönelik inançlarıdır (Atıcı, 2001) ve bu inanç kısaca, öğretmenlerin mesleki bilgilerini öğretim faaliyetlerinde uygularken kullandıkları temel araç olarak değerlendirilmektedir (Raudenbush vd. ,1992). Yüksek özyeterlik algısına sahip öğretmenler çok stresli olmayan mesleklerine bağlılığı yüksek kişilerdir (Schmitz, 2000). Öğretim zamanı etkili kullanırlar, onlar için kişisel ve mesleki gelişim önemlidir, ulaşılabilir hedefler koyarlar, öğretimsel yenilikleri kullanmaya daha açık ve isteklidirler, öğrencilerine yönelik beklentileri yüksektir, sınıflarında karşı karşıya kaldıkları zorluklar karşısında yılmazlar, daha kararlı ve dirençli olurlar ve öğrencilerde olumlu öğrenme güdüsü oluşturabilirler. (Bandura, 1997, Demirtaş, Cömert ve Özer, 2011; Tschannen-Moran ve Hoy, 2001; Pajares, 1996; Woolfolk Hoy ve Spero, 2005).

İlgili alanyazından elde edilen bilgiler ışığında bir değerlendirme yapıldığında, nitelikli öğretmenler yetiştirebilmek için öğretmen adaylarının, öz yetkinlik ile öğretmenlik öz yeterlik inançlarının ve sınıf yönetimi kaygılarının değerlendirilmesinin oldukça önemli olacağı düşünülmektedir. Alanyazında, gerek öz yeterlik gerekse öğretmen öz yeterliği çok farklı değişkenlerle ele alınmış ve incelenmiş olmasına karşın bu kavramların birlikte ele alındığı ve bunların sınıf yönetimi kaygısına etkisinin araştırıldığı çalışmaya ulaşılamamıştır. Ayrıca yapılan araştırmanın Türkiye'de öğretmen yetiştirmede ikinci bir alternatif olarak uygulanılan ve süresinden

içeriğine, yönteminden, yetişen aday öğretmenlerin mesleki yeterliklerine kadar birçok yönden eleştirilen formasyon öğrencilerinin sınıf yönetimi kaygılarını ortaya çıkarmak bir anlamda şahsi ve öğretmenlik mesleği açısından kendilerini ne kadar yetkin gördüklerini ve verilen eğitimin niteliği hakkında fikir yürütülebilmesi açısından önemli olarak görülmektedir. Bu araştırmanın sonuçlarının ayrıca, öğretmen yetiştiren kurumlara, program geliştirme uzmanlarına, özellikle de pedagojik formasyon sertifika programını düzenleyen kurumlara katkı sağlayabileceği umulmaktadır. Bu bağlamda araştırmada, pedagojik formasyon eğitimi alan öğretmen adaylarının, mesleki yeterlik ve öz yetkinlik algılarının sınıf yönetimi kaygısı üzerindeki etkisini tespit etmek amaçlanmıştır.

YÖNTEM

Araştırma Modeli

Araştırmada formasyon eğitimi alan öğretmen adaylarının sınıf yönetme kaygısının cinsiyet, öğretmenlik deneyimi, genel yetkinlik ve mesleki yetkinlik tarafından ne derece yordanıp yordanmadığının incelenmesine yönelik ilişkisel tarama modeli kullanılmıştır.

Çalışma Grubu

Araştırma çalışma grubunu, Burdur Mehmet Akif Ersoy Üniversitesinde formasyon eğitimi alan İlahiyat, Matematik, Biyoloji-Fizik-Kimya, Hemşirelik ve Türk Dili ve Edebiyatı, Grafik ve Tasarım bölümlerinden 236 (%77,4) kadın, 69 (%22,6) erkek toplam 305 öğretmen adayı oluşturmuştur. Katılımcıların yaşları 21 ile 44 arasında değişmektedir. Katılımcıların 128'inin öğretmenlik deneyimi olmakla birlikte 176'sının yoktur.

Veri Toplama Araçları

Sınıf Yönetme Kaygısı Ölçeği; Önder ve Karataş (2015) tarafından geliştirilen sınıf yönetme kaygısı ölçeği 25 maddeden oluşmaktadır. Beş boyuttan oluşan ölçekten toplam puan alınabilmektedir. Ölçek varyansın % 54.14'ünü açıklamaktadır. Ölçeğin madde-toplam korelasyonları .30 ile .62 arasında değişmektedir. %27'lik alt ve üst grupların madde puanlarındaki farklara ilişkin t değerlerinin anlamlı olduğu ve 8.17 ile 15.19 arasında değiştiği görülmüştür. Ölçeğin cronbach alpha iç tutarlık katsayısı mesleki yetersizlik algısı alt boyutu için .84, motivasyonu sağlama alt boyutu için .82, beklenmedik durumlarla karşılaşma alt boyutu için .77, zor grupların yönetimi alt boyutu için .64, olumlu öğrenme ortamı oluşturma alt boyutu için .61 ve geneli için .89 olarak hesaplanmıştır. Bu araştırmada ölçeğin geneli için cronbach alpha değeri .89 olarak hesaplanmıştır.
Genel Yetkinlik İnancı Ölçeği: Jerusalem ve Schwarzer (1992) tarafından geliştirilen ölçek Çelikkaleli ve Çapri (2008) tarafından Türk kültürüne uyarlanmıştır. Geçerlik için yapılan faktör analizi sonucunda öz-değeri birden büyük tek faktör elde edilmiştir. Bu faktörün öz-değerinin 4.57 olduğu, varyansın ise % 45.78'sini açıkladığı görülmüştür. Ölçüt bağıntılı geçerlik çalışmasında GYİÖ ile AÖKİYAÖ arasındaki korelasyonun .46 (p<.05) olduğu; yapı geçerliği için yapılan çalışmada öğrencilerin genel yetkinlik inançları düzeyine göre mesleki yeterlik algılarının farklılaştığı (F= 52.90; p<.000); madde toplam test korelasyonlarının ise .47 ile .66 arasında değiştiği gözlenmiştir. Ölçeğin güvenirliği için yapılan çalışmalarda ise, iç tutarlık katsayısı .92; test-tekrar test korelasyon katsayısı .92 ve eşdeğer yarılar yöntemi ile elde edilen korelasyon katsayısı ise .83 olarak hesaplanmıştır. Ölçeğin bu araştırmadaki cronbach alpha değeri .86 olarak hesaplanmıştır.
Öğretmen Özyeterlik Ölçeği: Bu ölçek, Tschannen-Moran ve Hoy (2001) tarafından geliştirilmiş ve Çapa, Çakıroğlu ve Sarıkaya (2005) tarafından Türkçe'ye uyarlanmıştır. Geçerlik için yapılan Rasch analizi sonucunda, maddelerin tamamının kabul edilebilir uyum değerlerine sahip olduğu anlaşılmıştır. Doğrulayıcı faktör analizi sonucunda ise orijinal ölçeğin üç faktörlü yapısını destekleyen uyum iyiliği indeks değerlerine ulaşılmıştır. 24 madde ve üç alt faktörden oluşan ölçeğin iç tutarlık katsayısı öğrenci katılımını sağlama alt boyutu için .82, sınıf yönetimi alt boyutu için .84, öğretim stratejileri alt boyutu için .86 ve ölçeğin geneli için .93 olarak bulunmuştur. Bu araştırmada ölçeğin alt boyutlarının cronbach alpha değeri sırasıyla .83, .86, .85 ve geneli için .94 olarak hesaplanmıştır.

Verilerin Analizi

Araştırmada katılımcıların dağılımı hakkında bilgi sahibi olmak amacıyla yüzde, frekans gibi betimleyici analizler kullanılmıştır. Öz yetkinliğin ve öğretmen öz yeterliğinin sınıf yönetimi kaygısı üzerindeki etkisi ise çoklu regresyon ile analiz edilmiştir. Yapılan regresyon sağaltımında 14 uç veri, veri setinden çıkarılmış, Durbin Watson değerine bakıldığında değeri 1.815 olduğu ve regresyon uygulamak için bu değerin en fazla 2.50 olması gerektiği (Kalaycı, 2009), dolayısıyla ulaşılan değerin oldukça uygun olduğu görülmüştür. Bunun yanı sıra varyans büyütme faktörüne (VIF) ve durum indeksine (CI) bakılmış ve bu değerlerinin (VIF<10 ve CI< 30) çoklu doğrusallık varsayımını karşıladığı düşünülmüştür (Büyüköztürk, 2010).

BULGULAR

Sınıf Yönetme Kaygısının Yordayıcılarına ilişkin Bulgular

Regresyon analizi öncesinde bağımlı ve bağımsız değişkenler arasında çoklu bağlantının olup olmadığını incelemek üzere bağımlı ve bağımsız değişkenler arasındaki ikili korelasyon katsayıları hesaplanmış ve sonuçlar Tablo 1'de verilmiştir.

Tablo 1. Öğretmen adaylarının sınıf yönetme kaygısı ile yetkinlik inancı ve mesleki yetkinlik (öğrenci katılımını sağlama, öğretim stratejileri ve sınıf yönetimi) puanları arasındaki ilişkileri gösteren basit doğrusal korelasyon katsayıları

Değişken	N	X	Ss	1	2	3	4	5
1-SYK	305	56.38	14.78	-	-.478**	-.438**	-.444**	-.396**
2-Y	305	30.37	5.12	-.487**	-	.565**	.572**	.534**
3-ÖKS	305	53.22	7.64	-.438**	.565**	-	.782**	.778**
4-ÖS	305	54.31	7.98	-.444**	.572**	.782**	-	.711**
5-SY	305	54.17	8.36	-.396**	.534**	.778**	.711**	-

**p<.001

1) SYK (sınıf yönetme kaygısı), 2) Y (yetkinlik inancı), 3) ÖKS (öğrenci katılımını sağlama), 4) ÖS (öğretim stratejileri), 5) SY (sınıf yönetimi)

Tablo 1'e göre öğretmen adaylarının sınıf yönetme kaygıları ile yetkinlik inançları ve öğretmen öz yeterlikleri arasında negatif anlamlı bir ilişki vardır. Bununla birlikte bağımsız değişkenler arasında orta düzeyde anlamlı ilişkiler bulunmuştur. Ancak bu ilişkinin Büyüköztürk'e (2010) göre çoklu bağlantı sorunu yaratacak düzeyde olmadığı söylenebilir. Ayrıca modelde otokorelasyonu test etmede kullanılan Durbin Watson değerine bakıldığında 1.5 ile 2.5 arasında olması arzulanan değerin (Kalaycı, 2006), 1.815 olduğu da saptanmıştır. Bu değer modelde otokorelasyon olmadığını göstermektedir. Regresyon analizi öncesi verilerin çoklu regresyon analizine uygunluğu ispat edildikten sonra yapılan Çoklu Regresyon Analizinden elde edilen sonuçlar Tablo 2'de sunulmuştur.

Tablo 2. Çoklu regresyon analizi sonuçları

Değişkenler	B	Sh	β	t	p	R	R²
Sabit	112.160	5.756		19.478	.000		
Y	-.847	.177	-.293	-4.792	.000		
ÖKS	-.294	.176	-.152	-1.673	.095	.561	.315
ÖS	-.189	.153	-.102	-1.235	.218		
SY	-.064	.142	-.036	-.448	.654		
Kız olma	1.960	1.730	.055	1.133	.258		
Deneyim	-5.230	1.478	-.175	-3.538	.000		

Birinci aşama: F(6-297)=22.747; p<.001

Tablo 2'de, varyansa katkılarına göre genel yetkinlik inancının ve deneyimin sınıf yönetme kaygısının anlamlı yordayıcıları olduğu, öğretmen öz yeterliği alt boyutlarının (öğrenci katılımını sağlama, öğretim stratejileri ve sınıf yönetimi) ise sınıf yönetme kaygısı ile anlamlı negatif korelasyon göstermesine rağmen modelde sınıf yönetme kaygısının anlamlı bir yordayıcısı olmadığı görülmektedir. Genel yetkinlik inancı ve deneyim toplam varyansın %31.5'ini açıklamaktadır (R=.561, R2=.315 F (6-297)= 22.747, p<.001). Yordayıcı değişkenlerin regresyon katsayılarının işaretlerine bakıldığında; genel yetkinlik ve mesleki deneyimin olması ile sınıf yönetme kaygısı arasında negatif anlamlı bir ilişki olduğu görülmektedir. Standardize edilmiş regresyon katsayıları incelendiğinde (β), yordayıcı değişkenlerin sınıf yönetme kaygısı üzerindeki önem sırası genel yetkinlik ve mesleki deneyimin olması şeklindedir.

TARTIŞMA VE SONUÇ

Araştırmada genel yetkinlik inancının ve deneyimin sınıf yönetimi kaygısı üzerinde anlamlı yordayıcı olduğu, mesleki deneyime sahip ve genel yetkinlik algısı yüksek öğretmen adaylarının sınıf yönetme kaygılarının azaldığı tespit edilmiştir. Araştırmanın sonuçlarına göre, mesleki tecrübenin veya deneyimin öğretmen adaylarının sınıf yönetimi kaygılarını olumlu anlamda etkilediği söylenebilir. Bazı çalışmaların bulguları bu yorumu desteklemektedir. Örneğin Oral (2012) tarafından yapılan araştırmada mesleki tecrübe kazanılması amacıyla yapılan okul deneyimi uygulamalarının öğretmen adaylarının sınıf yönetimi kaygı düzeylerini azaltmada önemli bir rol oynadığı tespit edilmiştir. Saban ve diğerleri (2004) tarafından yapılan bir diğer araştırmada ise herhangi bir deneyimi olmayan birinci sınıf öğrencisi ile en azından okul deneyiminde bazı uygulamaları yerinde görmüş dördüncü sınıf öğretmen adaylarının kaygıları karşılaştırılmış ve hiçbir deneyimi olmayan birinci sınıf eğitim fakültesi öğrencilerinin kaygılarının daha yüksek olduğu anlaşılmıştır. Bu durumda, sınıf yönetimine ilişkin deneyimin öğretmen adaylarının bu yönlü kaygılarını azaltıcı bir etkiye sahip olduğu ve ulaşılan bulguların alan yazınca desteklendiği söylenebilir.

Araştırmanın bir diğer önemli bulgu, yüksek genel yetkinlik inancına sahip öğretmen adaylarının sınıf yönetimi kaygılarının düşük olduğudur. İlgili alanyazına göre, mesleki kaygıların oluşumunu etkileyen değişkenlerden birisi bireylerin kendi öz yeterlik algılarıdır (McCormack, 1996; Meek and Behets, 1999; Özer ve diğ. 2009). Bireylerin öz yeterlik inancının, strese, sıkıntıya ve endişeye neden olan düşüncelerini düzenlemede, kontrol altına almada büyük önem taşıdığını vurgulamaktadır. Kişilerin algıladıkları bireysel öz yeterlik seviyeleriyle, görevleri başardıklarında endişe ve strese bağlı tepkileri düşmektedir. (Bandura, 1995). Bu durumda, ulaşılan bu sonucun alanyazınla paralelelik gösterdiği söylenebilir.

Sonuç olarak, hem bu çalışmanın hem de bu alanda yürütülen araştırmaların sonuçları, deneyimin ve öz yetkinliğin öğretmen adaylarının sınıf yönetimi konusundaki kaygılarının azaltılmasına hizmet ettiğini ortaya koymaktadır. Bu bağlamda, öğretmen adaylarının tecrübe eksikliğinden kaynaklanan sınıf yönetimi kaygılarını azaltmak ve ayakları üzerine sağlam basarak mesleklerine başlayabilmeleri için sağlam bir teorik bilginin yanında gerçek durumlarla karşılaşmalarına fırsatlar verecek uygulama faaliyetlerine yer verilmesinin faydalı olabileceği düşünülmektedir. Ayrıca, bu araştırmada öğretmen adaylarının algılarına dayalı olarak sınıf yönetimi kaygıları değerlendirilmiştir. Yapılacak araştırmalarda, görüşme tekniğinin de dahil edildiği farklı araştırma desenleriyle konunun değerlendirilmesi önerilmektedir.

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FOURTH GRADE STUDENTS' METAPHORIC PERCEPTIONS ABOUT MATHEMATICS AND MUSIC

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ABSTRACT

The aim of this study is to explore fourth grade students' perceptions about the concept of "mathematics" and "music" through the use of metaphors. The participants for this study included 158 fourth grade students enrolled in a public primary school in the spring semester of 2015-2016. To collect data, each participant was asked to complete the prompt "if math/music was a color (a type of game and a season), it would be.... Because..." This data was collected in one lesson hour by researchers. Phenomenological design was used in this study. The content analysis technique was used to analyze the data.

Key words: metaphor, music, mathematics, fourth grade students

INTRODUCTION

Examining the perception of the students plays an important role in revealing their thoughts. When the students' perceptions are known, it allows them to get a chance to evaluate and change their misperceptions. Modell (2009) mentioned that metaphor is not simply a figure of speech and it can be thought as the currency of the emotional mind. According to Lakoff and Johnson, 1980 *"Metaphor is principally a way of conceiving of one thing in terms of another, and its primary function is understanding.* One of the instruments used to discover the perceptions of the individual is metaphors (Şahinkaya and Yıldırım, 2016). Metaphors are good mirrors, and also they can be used as powerful and educative tools for reflection of the personal images and help us to make sense of our world (Perry and Cooper, 2001).

In related literature, there are several studies on metaphorical perceptions of pre-service teachers, high school students, elementary students towards mathematics and music (Babacan, 2014; Schinck, Neale, Pugalee, and Cifarelli, 2008; Güveli, İpek, Atasoy & Güveli, 2011; Reeder, Utley & Cassel, 2009; Güler, Akgün, Öçal and Doruk, 2012; Sahinkaya & Yıldırım, 2016; Sengül & Katrancı, 2012). Although there are many metaphorical perception researches, studies examined on primary students' perceptions are less.

The main purpose of this study is to explore fourth grade students' perceptions about the concept of "mathematics" and "music" through the use of metaphors. The research questions are;
1- What are the metaphors about mathematics of fourth grade students'?
    a) If it's a color, what are the metaphors and categories?
    b) If it's a game, what are the metaphors and categories?
    c) If it's a season, what are the metaphors and categories?
2- What are the metaphors about music of fourth grade students'?
    a) If it's a color, what are the metaphors and categories?
    b) If it's a game, what are the metaphors and categories?
    c) If it's a season, what are the metaphors and categories?
3-What are the similarities and differences between metaphors and categories about mathematics and music?

THE STUDY

Phenomenological model was used in this qualitative study. 158 fourth grade students enrolled in a public primary school in the spring semester of 2015-2016. Data was collected in two days, one lesson hour by researchers. To collect data, each participant was asked to complete the prompt "if math/music was a color (a type of game and a season), it would be.... Because..." Collected data were analyzed and some of them were eliminated in terms of (1) the subject of the metaphor, (2) the source of the metaphor and (3) the relationship between the source and the

subject of the metaphor (Saban, 2004). For validity, each prompt was asked by experts. In order to test the reliability, all the points given by the researchers were analyzed using the formula reliability=agreement/ (agreement+disagreement) x100 (Miles & Huberman, 1994). The agreement between the two researchers was calculated as 85-90%. The metaphors and categories obtained from the data were presented in the frequency-distribution tables.

FINDINGS

Fourth grade students' metaphoric perceptions related to mathematics are categorized under the headings of the color, game and season. These data are shown at Table 1, Table 2, Table 3 and Table 4.

Table 1. Fourth grade student's metaphors to the question "if math was a color (a type of game and a season), it would be.... Because..."

COLOR			GAME			SEASON		
Metaphor	**f**	**%**	**Metaphor**	**f**	**%**	**Metaphor**	**F**	**%**
Blue	**32**	**31.7**	**Hide and Seek**	**35**	**26.7**	**Winter**	**72**	**54.5**
Red	26	25.7	Memory Games	16	12.2	Summer	34	25.8
Yellow	14	13.9	Puzzle	14	10.6	Autumn	16	12.1
White	8	7.9	Blindfolded	11	8.3	**Spring**	**10**	**7.6**
Green	6	5.9	Chess	10	7.6			
Black	4	3.9	Football	7	5.4			
Brown	3	2.9	Dodge ball	6	4.6			
Turquoise	3	2.9	Computer Games	6	4.6			
Pink	2	1.9	Jumping Ropes	5	3.8			
Grey	2	1.9	Sudoku	5	3.8			
All colors	**1**	**0.9**	**Maze**	**4**	**3.1**			
			Knowledge Games	**4**	**3.1**			
			Hopscotch	**4**	**3.1**			
			To play tag	**4**	**3.1**			
TOTAL	**101**	**100**		**131**	**100**		**132**	**100**

Table 1 show that; 101, 131 and 132 metaphors are created by students within three titles. Under the title of color, metaphors about mathematics of fourth grade students', the most widely used color is "blue" and the least one is "all colors". Under the title of game, the most widely used game is "hide and seek", and the least are "maze", "knowledge games", and "hopscotch" and "to play tag". Under the title of season, the most used season is "winter" and the least one is "spring".

Table 2. Categories and Metaphors belong to the "color" (Math)

CATEGORY	METAPHOR (f)
Existence	**Blue (6), Green (2), White (2), Yellow (2)**
Energetic	**Blue (2), Red (10)**
Affection	**Blue (2), Green (4), Turquoise (3), Yellow (2)**
Informative	**White (2), Yellow (8)**
Boring	Black (2), Brown (3), Grey (2), Red (2)
Relaxing	Blue (8)
Joyous	All Colors (1), Blue (2), Pink (2), Red (2)
Guiding	Red (2), White (2), Yellow (2)
Gender	Blue (6)

Difficulty	Black (2), Red (2)
Important	Blue (2), Red (2)
Appealing	Red (3)
Freedom	Blue (2)
Eternal	Blue (2)
Integration	White (2)
Intelligence	Red (2)
Thoughtful	**Red (1)**

According to Table 2, metaphors which belongs the color were listed under 17 categories according to their common features. Most of the metaphors are centered under the heading of "existence", "energetic", "affection" and "informative". "Thoughtful" category is formed only one metaphor.

Table. 3 Categories and Metaphors belong to the "game" (Math)

CATEGORY	METAPHOR
Problem Solving	**Memory Games (2), Hide and Seek (15), Sudoku (3), Puzzle (5), Blindfolded (4), Football (1), Maze (4), Computer Games (2)**
Joyous	**Hide and Seek (8), Dodge ball (3), Puzzle (2), Blindfolded (3), Football (3), Jumping Ropes (3)**
Intelligence	Memory Games (13), Puzzle (3), Chess (6)
Difficulty	Hide and Seek (4), Sudoku (2), Dodge ball (3), Blindfolded (4), Jumping Ropes (2)
Strategic	Chess (3), Computer Games (4)
Significant	Hide and Seek (4), Knowledge Games (4)
Tiring	To play tag (4)
Continuing	Hopscotch (4)
Rules	Football (3)
Knowledge	Puzzle (3)
Affection	**Hide and Seek (2)**
Process	**Hide and Seek (2)**
Complicated	**Memory Games (1), Puzzle (1)**

Table 3 shows that, metaphors were listed 13 categories. Most of the metaphors are centered under the heading of "problem solving" and "joyous". "Affection", "process" and "complicated" categories are formed two metaphors.

Table 4. Categories and Metaphors belong to the "season" (Math)

CATEGORY	METAPHOR
Difficulty	**Summer (9), Autumn (6), Winter (48)**
Joyous	**Summer (16), Winter (10)**
Affection	Spring (6), Summer (4), Winter (6)
Existence	Autumn (6), Winter (4)
Process	Spring (2), Autumn (3), Winter (2)
Relaxing	Spring (2), Summer (2)
Boring	Summer (2), Winter (2)
Informative	**Autumn (1)**
Tiring	**Summer (1)**

According to Table 4, 9 categories were listed. Most of the metaphors are centered under the heading of "difficulty" and "joyous". "Informative" and "tiring" categories are formed only one metaphor. Some interesting metaphor examples related to mathematics are given at Table 5.

Table 5. Some examples of metaphors related to mathematics

COLOR	**Blue…** "Mathematics is an ever-lasting adventure like blue, it represents perpetuity."
	Yellow… "They shine like yellow ray of light, they lead us, and Mathematics leads us like yellow ray of light."
GAME	**Jumping robes…** "Solving Mathematical problems is fun like jumping ropes."
	Footballs match… "Mathematics is like football game. They both contain tactics."
SEASON	**Spring…** "Flowers blossom slowly in spring and Mathematics is being learnt slowly."
	Winter… "Mathematics is like winter, you should keep calm and use all the right information and wait for the sun to rise up."

Fourth grade students' metaphoric perceptions related to music are categorized under the headings of the color, game and season. These data obtained from students are shown at Table 6, Table 7, Table 8 and Table 9.

Table 6. Fourth grade student's metaphors to the question "if music was a color, a type of game and a season, it would be.... Because..."

COLOR			GAME			SEASON		
Metaphor	**f**	**%**	**Metaphor**	**f**	**%**	**Metaphor**	**f**	**%**
Yellow	**44**	**30**	**To play tag**	**38**	**27.5**	**Summer**	**56**	**39.7**
Blue	**18**	**12.2**	**Hide and Seek**	**19**	**14**	Spring	40	28.4
Pink	15	10.2	Grab a rag	15	10.9	Autumn	19	13.5
All Colors	14	9.5	Dodge ball	13	9.5	Winter	14	9.9
White	14	9.5	Dance	8	5.8	**All Seasons**	**12**	**8.5**
Green	11	7.5	Singing above the ground	8	5.8			
Red	8	5.5	Karaoke	4	2.9			
Black	8	5.5	Computer Games	4	2.9			
Purple	6	4.1	Blindfolded	4	2.9			
Orange	3	2	Singing chair	4	2.9			
Rainbow	2	1.3	Make-up Song	4	2.9			
Silver	2	1.3	Playing house	3	2.2			
Turquoise	**1**	**0.7**	**Hopscotch**	**2**	**1.4**			
Colorless	**1**	**0.7**	**Swimming**	**2**	**1.4**			
			Sudoku	**2**	**1.4**			
			Basketball	**2**	**1.4**			
			Memory Games	**2**	**1.4**			
			Chinese whispers	**2**	**1.4**			
			Fish net	**2**	**1.4**			
TOTAL	**147**	**100**		**138**	**100**		**141**	**100**

According to Table 6; 147,138 and 141 metaphors are created by students within three titles. Under the title of color, metaphors about music of fourth grade students', the most widely used colors are "yellow" and "blue" and the least are "turquoise" and "colorless". Under the title of game, the most widely used games are "to play tag" and "hide and seek", and the least are "hopscotch", "swimming", "sudoku", "basketball", "memory games", "Chinese whispers" and "fish net". Under the season title of season, the most used season is summer and the least one all seasons.

Table 7. Categories and Metaphors belong to the "color" (Music)

CATEGORY	METAPHOR
Joyous	**Purple (6), White (2), Green (2), Blue (4), Red (2), Yellow (10), All Colors (2), Pink (6), Colorless (1), Turquoise (1)**
Peaceful	**Orange (1), White (4), Green (4), Blue (4), Red (4), Yellow (8), All Colors (4), Pink (6)**

Nature	White (4), Green (2), Blue (2), Yellow (6), Black (8), All Colors (4)
Relaxing	White (2), Green (2), Blue (6), Yellow (8), Rainbow (2)
Lively	Green (1), Blue (2), Yellow (8), All Colors (2), Pink (1)
Affection	Orange (2), Yellow (4), All Colors (2), Pink (2)
Spiritual	**White (2), Red (2), Silver (2)**

According to Table 7, metaphors which belongs the color were listed 7 categories according to their common features. Most of the metaphors are centered under the heading of "joyous" and "peaceful". "Spiritual" category is formed only six metaphors.

Table.8 Categories and Metaphors belong to the "game" (Music)

CATEGORY	METAPHOR
Joyous	**Dance (2), Karaoke (2), Hide and Seek (19), Dodge ball (9), Blindfolded (2), Hopscotch (2), Grab a rag (12), To play tag (8), Make-up Song (4), Singing chair (4), Fish net (2), Singing above the ground (2)**
Process	Grab a rag (1), To play tag (20)
Aural	Swimming (2), To play tag (4), Playing house (3), Singing above the ground (6), Chinese whispers (2), Grab a rag (2)
Lively	Dodge ball (2), Blindfolded (2), Computer Games (4)
Dance	Dance (6), Karaoke (2)
Continuing	To paly tag (6)
Inner Hearing	**Basketball (2)**
Intelligence	**Memory Games (2)**
Difficulty	**Sudoku (2)**
Affection	**Dodge ball (2)**

According to Table 8, ten categories were listed most used metaphors are "joyous". "Inner hearing", "intelligence", "difficulty" and "affection" categories are formed only two metaphors.

Table 9. Categories and Metaphors belong to the "season" (Music)

CATEGORY	METAPHOR
Nature	**Spring (18), Summer (10), Autumn (11), Winter (6), All Seasons (5)**
Joyous	**Spring (8), Summer (19), Autumn (4)**
Relaxing	Spring (5), Summer (10), Autumn (4)
Happy	Spring (5), Summer (6), All Seasons (7)
Existence	Summer (5), Winter (4)
Affection	Summer (3), Winter (4)
Lively	Summer (3)
Sensitive	**Spring (2)**
Inspiring	**Spring (2)**

Table 9 shows that, 9 categories were listed. Most used metaphors are centered under the heading of "nature" and "joyous". "Sensitive" and "inspiring" categories are formed only two metaphors. Some interesting metaphor examples related to music are given at Table 10.

Table 10. Some examples of metaphors related to music

COLOR	**Yellow…** "Music is yellow like sun because it ignites ones' senses"
	All colors… "Each note represents different color, and thus music should consist of all colors."
GAME	**Hide and Seek…** "We should know the following melody just like a game of hide and seek"
	Tag… "Notes in Music come together and follow each another is like a game of tag."
SEASON	**Autumn…** "Notes fly just like leaves in Autumn."
	Summer… "Music just like summer warms people."

The similarities and differences between metaphors and categories about mathematics and music were examined and listed at Table 11. The most used metaphors and categories were written bold and italic.

Table 11. Similarities and differences between metaphors and categories about mathematics and music

| | **MATH** | | **MUSIC** | |
	Metaphor	**Category**	**Metaphor**	**Category**
Color	*Blue* All colors	*Existence, Energetic Affection, Informative* Thoughtful	*Yellow, Blue* Colorless, Turquoise	*Joyous, Peaceful* Spiritual
Game	*Hide and Seek* Maze, Knowledge Games, Hopscotch To play tag	*Problem Solving, Joyous* Affection, Process Complicated	*To play tag, Hide and Seek* Hopscotch, Swimming Sudoku, Basketball Memory Games	*Joyous* Inner Hearing, Intelligence, Difficulty, Affection
Season	*Winter* Spring	*Difficulty, Joyous* Informative, Tiring	*Summer* All seasons	*Nature, Joyous* Sensitive, Inspiring

Table 11 shows that, under the title of color, the most used metaphor in both disciplines is "blue". Metaphors related to mathematics are mostly listed in the categories of "existence", "energetic", "affection", "informative". However; in music, metaphors are grouped under "joyous" and "peaceful" categories. "Hide and seek" is mostly common answered metaphor for both, and, "to play tag" is also another preferred metaphor in music for the game. "Joyous" is also the common category for mathematics and music for game. Additionally, mathematics has "problem solving" category. Under the title season, the most used metaphor is "winter" for mathematics, "summer" for music. "Joyous" is also the common category for mathematics and music for season. Another listed category is "difficulty" in mathematics and "nature" in music.

CONCLUSIONS

The most preferred metaphors in colors is "blue" and in games is "hide and seek". In addition "winter", "summer", "yellow" and "to play tag" are among the most preferred metaphors. "Joyous" category stands out in both disciplines.

Students grasp music better than mathematics when categories are considered. For those who consider mathematics informative perceive music fun and to be seen in nature. Similar study hasn't been encountered with and observed. And therefore various studies have been analyzed in numerous samples for example the study performed amongst teacher candidates by Güveli, İpek, Atasoy and Güveli (2011) shows that hide and seek metaphor is commonly used in mathematics and also teacher candidates consider mathematics difficult which parallel the thesis presented with the study. Babacan (2014), Umuzdaş and Umuzdaş (2013) and Sözbir Acay and Çakmak Çamlıbel (2016)'s study is very similar to this study as music is considered as enjoyable.

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FROM MOOCs TO TOOCS
SMALL_SIZED LEARNING FOR EVERYONE

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ABSTRACT
Massive Open Online Courses (MOOCs) recently demonstrate that e-learning often fails to support interactivity and collaboration. In the worst case scenario, learners are left alone on their own. This may also explain the high dropout rate on such courses (Holton 2012).
However, since knowledge workers in the post-modern society are forced to develop "fluid intelligence" as the ability to re-learn, apply and adapt knowledge (Petrova et al. 2015), learning is expected to include all kinds of knowledge activities such as using, creating, sharing etc. Based on Bettoni & Schneider's knowledge wheel (2002), the authors therefore design Tiny Open Online Courses (TOOCs) as a new didactic concept of e-learning. Considering that, learners have to invest only little time for a TOOC and they do not have to travel or to bring in any prior knowledge, more learners are expected to complete their courses successfully.

INTRODUCTION: MOOCS VERSUS TOOCS
Many e-learning formats ignore the fact that learners in virtual settings have special and different needs. E-learning is often misunderstood as learning by *reading* (books or articles) and posting task solutions in a forum from time to time. However, learners in online settings need more respectively different support. E-learning ideally takes place in interactive learning communities, both in synchronous and asynchronous formats. It needs supportive experts who continuously and actively lead this community of learners. In other words, e-learning should avoid to leave learners abandoned. In this context, take-holders should become aware of the high motivation and discipline students have to bring in online courses. Thus, more important is to offer learning content, which is of interest for students and to keep the duration of a course as short and focused as possible. Herein, MOOCs often fail with the result of high drop-out rates.

In this paper, an alternative format of MOOCs is presented and discussed. Tiny Open Online Courses (TOOCs) take into account the learner's personal interests and give him the freedom to choose among short-term courses on different aspects and topics. In an interactive synchronous learning setting, students discuss, collaborate and directly apply what they (want to) know.

To this end, we explain in a first chapter the core characteristics of the TOOCs concept before we share our first experiences with real-time TOOCs under the joint umbrella of VIS (virtual & interactive sessions). Finally, we close with an outlook on future TOOCs in various modes and a brief summary.

TYPICAL CHARACTERISTICS OF A TOOC
Realizing that MOOCs often lack of interactivity and collaboration, followed by a high drop-out rate, the authors of this paper developed an alternative e-learning model called TOOCs. TOOCs stand for Tiny Open Online Courses, focusing on the learners' personal needs and interests.

TOOCs:

- create an *interactive* learning setting with knowledge in all its variations. Different form many e-learning formats, which leave learners on their own (asking them to read books or articles and to write texts), TOOCs bring learners and experts together. By creating a learning community, TOOCs offer a wide range of interactive learning activities such as collaboration, projects, experiments, discussions, games, stories etc.). Learners directly test and apply what they have learnt and share and discuss their insight in the community.

- are *short-term courses* with a clear beginning and end. Learners normally do not have the time to run a course of several weeks. Further, in most cases, learners will not be interested in all learning contents provided in a course. TOOCs are addressing these facts by offering short courses, which are limited to a single virtual learning event of a few hours. TOOCs cover a specific aspect of a topic and thus address more likely the learner's attention and increase therefore his or her learning motivation. This way, the authors hope to tackle the high drop-out rate found in MOOCs (Figure 1).

- are self-contained. TOOCs do not rely on each other; they cover a specific aspect within a topic. At the end of each TOOC learners are expected to know this aspect in its various dimensions and to be able to transfer it into practice. With the concept of TOOCs, learners get the freedom to put together their own course portfolio. Similar to a mosaic, they connect these different learning pieces.

- offer learning elements *for everyone* who is interested in the given learning content. Learners of all areas and backgrounds are free to choose the TOOCs they like with respect to their needs, passions and interests. Learners decide on their own, which learning offers might be of interest for them, regarding what they want and need to know in their professional or private lives. Example: If someone wants to know how to blanch an egg, (s)he doesn't need to run a full cooking course. TOOCs are able to take into account these selective, personal passions and interests of potential learners. They are open to everyone. There are no restrictions or limitations except for the numbers of participants (to ensure a close connection high interactivity).

	MOOC	TOOC
- Duration	weeks	< 2 hours
- Participants	massive	< 20
- Dropout	high	very low
- Interactivity	rather low	high
- online-mode	async	sync, async, mixed
- Content	plenty	little

Figure 1: Characteristics of TOOCs compared to MOOCs

EXAMPLE OF A TOOC SERIE

In a first pilot, we have organised a set of real-time TOOCs under the joint umbrella of VIS (virtual & interactive sessions) on the topic of storytelling in higher education (www.ffhs.ch/vis). During five online sessions in March 2016, up to 20 participants could learn how to apply different narrative methods in class. Each session lasted

about 2 hours, including collaboration and exchange among participants.

Figure 2: Example of a serie of five TOOC-courses about storytelling

As an example, the course "Collaborative Gamebooks" (Figure 2) is taken here for further explanation. For this course no previous knowledge is necessary, neither storytelling nor Gamebooks. After the 2-hour online course, learners experienced what a gamebook is and how it works in classroom and in e-learning settings. They have also seen the didactical model behind and they created their own Gamebook in group-work. For the creation of the Gamebook, they worked with an online-software not known before. At the end of the TOOC-course, every participant is able to create and use Gamebooks for learning purposes.

All VIS TOOC-courses were made with the web-conference software Adobe-Connect (Figure 3).

Figure 3: Adobe-Connect learning environment for the VIS online-TOOCs

Adobe-Connect allow teachers to interact with participants in several ways. Participants can see and hear the teacher, they can also speak and draw to all other participants, if the teacher (or moderator) allows it. Participants also have a chat-function, where they can write messages to the whole group or to a specific person. Other windows give access to links for further information provided by documents or web-pages. A main window is also reserved for the teacher for the presentation of learning material, examples and other demonstrations.

Transfer of knowledge through the teacher is only one part of a TOOC, another important part for the participants is solving tasks in group work. For this reason, Adobe-Connect allows the configuration of working-groups (Figure 4). In group-mode, all participants are member of one group. Every group has its own environment with chat, speak, information and documentation possibilities. Like in a real classroom, the teacher can jump from group to group for assistance or just for information reasons. Also, every group can ask for teachers-help at any time and the teacher can join specific groups or send messages to all groups (for example: for letting them know about the time left for specific tasks until next meeting of all participants).

Figure 4: Adobe-Connect learning environment for working in group-mode

The feedbacks on the first implementation of a TOOC were consistently positive. The first round of the workshops were immediately booked out (the number of places were limited to 10) so that all workshops were offered a second time. Finally, 10 fully booked sessions on storytelling were run in March 2016. Participants especially liked the interactive format of these sessions. They found it "inspiring", "new", "innovative" and "application-oriented". Participants felt well-supported and guided by the experts and facilitators. Each single participant was actively contributing in discussions, collaborative tasks etc. and there was no participant dropping out of the sessions. Considering that every session was lasting only 90-120 minutes, learners had to invest only little time. Further, they did not have to travel or to bring in any prior knowledge. This helped to keep their motivation high.

Our lesson learnt: e-learning has to provide an added value, participants cannot find that just by reading a book on their own and by getting in touch with classmates and teachers from time to time in a forum. Here, interaction seems to be a key to success: e-learning has to create a lively learning community of interested and passionate learners in order to keep them motivated. Learning content must be of interest and the didactic format has to be fast and self-contained to allow learners to agilely create their own learning portfolio.

OUTLOOK AND FUTURE DEVELOPMENTS

Currently we continue to develop the concept by adding asynchronous courses as well as mixed-mode options for synchronous/asynchronous participation. As the pilot-serie of TOOCs was successful and free of charge, future courses may be offered for little money.

A mixed mode TOOC course can be build by splitting a synchronous TOOC course into two parts, a self learning part and group work part. The self learning part allows you to experience the rough basics of a theme where the synchronous part gives you the possibility to learn and practice with others in group-work.

Another possibility of a mixed mode course could be, to start with a synchronous part and to continue the course with a specific part, for which each participant or each group has to create a solution on its own. For this case, a learning community can be build, which can help and learn in asynchronous mode like in forum-discussions.

SUMMARY

Tiny Open Online Courses (TOOCs) are highly interactive online-courses, its short duration makes it easy for a small group of participants to follow and to complete the course in one piece. Sharing practical knowledge can be focused with learning communities and group workshops in synchronous or asynchronous mode.

Unlike a conventional school curriculum, It's the learner who chooses what TOOC he wants to join. Therefore, the learner can choose based on his own gaps and interests, according to his needs.

TOOCs don't have to be free of charge. Because they are short in time, a small charge is acceptable and could cover the expenses for such a course well. A variety of TOOCs could also allow a school to provide individual diplomas based on leaner-selected compilations.

TOOCs foster a new kind of learning, which is more based on the promotion of individual learning-needs and not on the compulsive completion of prescribed courses. TOOCs also contribute for lifelong learning, which sooner or later always must be initiated by the learner itself.

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FUZZY DETECTING THE EFFECT OF MOBILE GAME-BASED LEARNING FOR UNIVERSITY STUDENTS

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ABSTRACT

This study aims to establish the relationship between university students' motivation and how they actually practice when learning English vocabulary using apps downloaded onto mobile devices. The focus group, comprising 30 freshman students at Yuan Ze University, Taiwan, participated in this empirical study during the first semester of 2015 academic year. The data were collected from the questionnaires and analyzed by fuzzy nonparametric tests, including the Wilcoxon Sign Rank Test, the Wilcoxon Rank-Sum Test, and the Kruskal-Wallis Test. The findings show how the focus group learned English vocabulary with the new model. First, we found the participants were willing to use smart phone apps for academic purposes. Secondly, the gender and faculty did not demonstrate differences in terms of how much time spent and learning effect on these two games. Finally, this study reveals that the more time students spent on playing English vocabulary games, the better progress in their English learning.

Keywords: apps, mobile-learning, game-based learning, fuzzy nonparametric test

INTRODUCTION

Most universities and colleges in Taiwan require their students to attain certain level of English before graduation, usually the equivalent of CEFR A1 or B2 (the Common European Framework of Reference for Languages), as assessed by English proficiency tests. This has presented a challenge to non-English major students whose English ability ranks below average. In addition, many students find that they have difficulty learning English or understanding the content of English textbooks due to their limited vocabulary. An adequate vocabulary is essential when acquiring a language as it helps students to understand the content and as well as express themselves (Cameron, 2001). Various studies have displayed the importance of vocabulary learning, for example, Wilkins stated that "…while without grammar very little can be conveyed, without vocabulary nothing can be conveyed" (1972, pp. 111–112). Lewis points out that "Lexis is the core or heart of language" (1993, p. 89), and that any serious learner of a language would understand the importance of building an adequate vocabulary. Schmitt (2010) pointed out that "Learners carry around dictionaries and not grammar books" (p. 4). Harmon, Wood and Kiser (2009) and Lines (2005) indicated that increasing vocabulary is an important aspect of learners' language development. Therefore, in this study, the students focused on extending their English vocabulary as well as improving their overall understanding of English.

People born after 1980 have been characterized as "digital natives" (Prensky, 2001a) or the "net generation" (Tapscott, 1998) because of their familiarity with and reliance on information and communication technology (ICT). The current university students in Taiwan are digital natives, they are used to receiving information by using their mobile devices rather than through structured learning environments. This shift of learning styles offers great opportunities for learners to develop a predisposition for lifelong education or independent learning. In this study, two game-based educational apps were installed on participants' smart phones to develop their English vocabulary learning. The testing design includes fuzzy questionnaire to determine student's motivation, time spent by using the apps. This study will answer the following questions: (1) Why were the students willing to learn English vocabulary through apps? (2) Were they using the apps mainly for their own interest or for academic purposes? (3) Over a period of ten days, did the students' English vocabulary improve? (4) Did men spend more time than that of women on playing the games? (5) Did students from the College of Engineering spend more time on learning through apps than those from the College of Humanities and Social Sciences?

LITERATURE REVIEW

Mobile learning leads to learner autonomy

Mobile learning refers to "the use of mobile or wireless devices for the purpose of learning while on the move" (Park, 2011, p.79). Thanks to on-going improvements in the design of mobile devices, these technologies have gradually come to be essential in everyday life (Evans-Cowley 2010). University students today seem to constantly have their mobile devices at hand. It is easy to assume that many of them only use their devices for personal use and social networking

purposes (McQuiggan, Sabourin & Kosturko, 2015) and rarely for learning (Farley et al., 2015). If students were to use their device productively for individual learning, the benefits would be enormous. One of the most significant advantages of mobile learning is that it can be used to encourage autonomy, especially in learning language (Robert Godwin-Jones, 2011).

Over the past decades, the concept of learner autonomy, which was first proposed by Henri Holec (1981) for the Council of Europe in the late 1970s, has gained momentum in the ESL/EFL field. Learner autonomy refers to students' ability to take charge of their own learning in terms of setting realistic goals and working towards attaining them (Holec, 1981; Dickinson, 1987; Holec, 1988; Little, 1991; Dam, 1995; Smith, 2000; Benson, 2001; Palfreyman & Smith, 2003; Lamb & Reinders, 2006; Benson, 2007; Little, 2007; Lamb & Reinders, 2007; Barfield &Brown, 2007; Murphy, 2008; Burkert & Schwienhorst, 2008; Little, 2009). Our EFL students are usually somewhat introverted and concerned about privacy. Therefore, the use of virtual worlds such as apps for mobile devices to encourage knowledge acquisition is a viable learning alternative (Nowlan, 2008). In this study, the participants were encouraged to learn English vocabulary independently by using two games apps installed on their smart phones. The learning outcomes and length of time they spent playing the games were analyzed.

Game-based learning
According to game-based learning model, there are three knowledge structures: declarative, procedural and conditional knowledge. The process of learning a foreign language is usually considered to be procedural. The concept behind the use of language games is that they can be used in a targeted and challenging way to encourage the player to use the foreign language being learned. The games encourage the repetition of grammar structures and vocabulary in an enjoyable way (Macedonia, 2005). Because acquiring a foreign language takes effort and time, games can help students to stay motivated and involved in learning the language, as well as create a useful and meaningful learning environment (Wright, Betteridge & Buck by 2005).

Game-based learning and how digital educational games can facilitate students' learning attracted the attention of many researchers in the field of educational technology (Hwang & Wu, 2012; Gee, 2007; Oblinger, 2004; Prensky, 2001; Squire & Jenkins, 2003). Many studies on game-based learning have focused on evaluating learning achievement, learners' motivation, gaming satisfaction and gaming experience, e.g., flow experience (Hou & Li, 2014). It has been found that flow experience affects learning achievement, either directly or indirectly (e.g. Choi, Kim& Kim, 2007; Ho & Kuo, 2010, Schuler 2007). Researchers have defined games as "an immersive, voluntary and enjoyable activity in which a challenging goal is pursued according to agreed-upon rules. The games can be designed a safe platform for players to take chances to develop the knowledge and skills to succeed" (Kinzie & Joseph, 2008, p. 644). Combining games with educational goals would increase students' motivation and create more interactive learning opportunities (Prensky, 2001).

Despite educational games being mainly designed for K-12, some university educators are beginning to implement this form of technology, and it is increasingly becoming an important tool for training students to become doctors, educators, or even businesspeople (Chiong & Shuler, 2010). For instance, Paul Howard-Jones at Bristol University in the UK has adopted TWIG (Teaching with Immersive Gaming) in his teaching and believes that mobile devices should not be banned in the classroom. He practices what he preaches in several of his graduate-level courses in the field of neuroscience (Howard-Jones & Fenton, 2012). In addition, video games have been used by Bryan Bergeron, a researcher in Health Science and Technology at Harvard University. He has developed several games related to health care that are used by students at Harvard and at other medical schools in the United States. Bergeron (2006) points out that educational games cut costs while getting students excited about learning, thus improving learning outcomes. According to Bergeron's method, the results of this study indicate that the students actually spent the anticipated time when they were immersed in challenging games and flow experience.

METHODS

Questionnaire with fuzzy set theory
After research on the Fuzzy Graphic Rating Scale (FGRS (Hesketh et al., 1988), Costaset et al. (1994) selected 100 university students as a sample for their research and found that FGRS suits human psychology. Herrera et al. (2000) presented the steps of linguistic decision analysis using linguistic information. They indicated that there are certain degrees of possibility by which to express linguistics based on fuzzy numbers. However, there should be reconsideration if the response produces an identical fuzzy number. Liu and Song (2001) developed one type of measurement with similar linguistics in terms of semantic proximity. Based on the concept of similarity of linguistics, they presented a formula of the degree of fuzzy association. Carlssonand Fuller (2000a and b), Chiang et al. (2000), and Herrera, Herrera-Viedmaand Martinez (2000) have discussed many concepts about the computation of fuzzy linguistics. These concepts warrant further publication.

Traditional surveys require respondents to choose fixed answers to questions in the survey. However, this method does not take into consideration normal human indecisiveness. For instance, when people are offered five options including

"very satisfactory," "satisfactory," "normal," "unsatisfactory" and "very unsatisfactory," the nature of the question may actually demand greater flexibility in the answer and choosing only one option could be difficult. Based on previous research, we can make the following inferences: (1) The traditional methods used for statistical analysis and measurement of public opinion are incomplete and limited. Based on the way of humans make decisions (often on the basis of fuzzy logic), the measurement of opinion using fuzzy numbers should be seriously considered and discussed. (2) In recent years, the measurement of attitudes and feelings followed the fuzzy set theory has become increasingly important. If people use the membership function to express the degree of their feelings based on their own choices, the answer will be closer to their authentic thinking. Therefore, collecting in formation according to the fuzzy model would be reasonable to support this study.

The nature of fuzzy answering
Replies to sampling surveys are often vague, unreliable or incomplete. The information itself can be grouped into two types: continuous and discrete. In this section we will give brief definitions of fuzzy data. Continuous fuzzy data can be classified into several types: interval, triangular, trapezoid numbers and exponential. The logic of interval analysis is one of certain containment. For example, the sum of two intervals certainly contains the sums of all pairs of real numbers, one from each of the intervals. We draw the definitions of interval arithmetic, based on simple properties of the order relation $\leq$ on the real line.

Trapezoid data can be seen as the generalized form for the interval and triangular form. A fuzzy number $A = [a, b, c, d]$, defined on the universe set U of real number R with its vertex $a \leq b \leq c \leq d$, is said to be a trapezoidal fuzzy number if its membership function is given by (Nguyen and Wu, 2006):

$$u_F(x) = \begin{cases} \dfrac{x-a}{b-a} & , & a \leq x \leq b \\ 1 & , & b \leq x \leq c \\ \dfrac{d-x}{d-c} & , & c \leq x \leq d \\ 0 & , & \text{otherwise} \end{cases}$$

When $b = c$, we say A is triangular data; if $a = b$, $c = d$, we say A is interval-valued data.

If people can express the degree of their feelings by using membership functions, the answer presented will be closer to authentic human thought and thus we obtain the concealed entrance to more data.

Measurement with fuzzy data
A trapezoid fuzzy set can be viewed as a continuous fuzzy set that gives further information about events which can be interpreted from various perspectives. When a sample of trapezoid data is presented, we are interested in scaling its value on the real line. In some practical applications, however, instead of the original class of all linear rescaling, it is reasonable to consider a more general class of non-linear transformations between scales. For example, the energy of an earthquake can be described both in the usual energy units and on the logarithmic (Richter) scale. Similarly, the power of a signal and/or of a sound can be measured in watts as well as a logarithmic scale.

When we consider the reasonable and meaningful conditions for mapping trapezoid data into a real line, we need to identify two conditions: the transformation data should be (1) finite-dimensional, and (2) the dependence on these parameters should be a smooth way (differentiable). In mathematical terms, this means that our transformation group is a Lie Group. Once such a transformation is selected, instead of the original trapezoid data, we have a new value: y = f(x). In the ideal situation, this new quantity (y) is normally distributed. In practice, a normal distribution for y may be a good first approximation. When selecting the transformation, we must take into account that due to the possibility of rescaling, the numerical values of the quantity x are not uniquely determined.

Definition 3.1 Scaling for an interval fuzzy number on R

Let $A = [a, b]$ be a trapezoid fuzzy number on U with its centroid $(cx, cy) = (\dfrac{\int x u_A(x) dx}{\int u_A(x) dx}, \dfrac{\int \frac{1}{2}(u_A(x))^2 dx}{\int u_A(x) dx})$. Then the defuzzification value of $A = [a, b, c, d]$ is defined as

$$RA = cx + \frac{\|A\|}{2\ln(e + \|A\|)};$$

Where $\|A\|$ is the area of the trapezoid.

Note that for convenience we will write $\|A\| = \dfrac{a+b+c+d}{4}$, if A is a trapezoid; $\|A\| = \dfrac{a+b+c}{3}$, if A is a triangle;

$\|A\| = \dfrac{b+c}{2}$, if A is an interval.

Example 3.1 Let $A_1 = [2,2,3,3]$, $A_2 = [1,1,4,4]$, $A_3 = [1,2.5,2.5,4]$, $A_4 = [1,2.5,2.5,8]$, $A_5 = [1,2,3,4]$, $A_6 = [1,2,3,8]$ be the fuzzy data. According to definition 3.1 we illustrate the defuzzification values on the following Table 1.

Table 1: Defuzzification for fuzzy data

Fuzzy data	cx	$\dfrac{\|A\|}{2\ln(e+\|A\|)}$	RA
$A_1 = [2,2,3,3]$	2.5	0.42	2.92
$A_2 = [1,1,4,4]$	2.5	0.89	3.39
$A_3 = [1,2.5,2.5,4]$	2.5	0.55	3.15
$A_4 = [1,2.5,2.5,8]$	3.83	0.99	4.82
$A_5 = [1,2,3,4]$	2.5	0.68	3.18
$A_6 = [1,2,3,8]$	3.79	1.07	4.86

Some studies provided functions in the measurement system. In this section, we will propose a well-defined distance for trapezoid data.

Definition 3.2 Let $A_i = [a_i, b_i]$ is a sequence of interval fuzzy number on U with its centroid

$$(cx, cy) = \left(\frac{\int x u_A(x)dx}{\int u_A(x)dx}, \frac{\int \frac{1}{2}(u_A(x))^2 dx}{\int u_A(x)dx} \right).$$ Then the distance between the trapezoid fuzzy number A_i and A_j is

defined as

$$d(A_i, A_j) = \left| cx_i - cx_j \right| + \left| \frac{\|A_i\|}{2\ln(e+\|A_i\|)} - \frac{\|A_j\|}{2\ln(e+\|A_j\|)} \right|$$

Example3.2 Let the fuzzy data be $A_1 = [2,2,3,3]$, $A_2 = [1,1,4,4]$, $A_3 = [1,2.5,2.5,4]$, $A_4 = [1,2.5,2.5,8]$, $A_5 = [1,2,3,4]$, $A_6 = [1,2,3,8]$. According to definition 3.2, we presented their distances on Table 2

Table 2: Distance for fuzzy data

$d(A_i, A_j)$	$A_1 = [2,2,3,3]$	$A_2 = [1,1,4,4]$	$A_3 = [1,2.5,2.5,4]$	$A_4 = [1,2.5,2.5,8]$	$A_5 = [1,2,3,4]$	$A_6 = [1,2,3,8]$
$A_1 = [2,2,3,3]$	0	0.47	0.13	1.90	0.31	1.68
$A_2 = [1,1,4,4]$		0	0.34	1.43	0.21	1.47
$A_3 = [1,2.5,2.5,4]$			0	1.77	0.13	1.81
$A_4 = [1,2.5,2.5,8]$				0	1.64	0.12
$A_5 = [1,2,3,4]$					0	1.68
$A_6 = [1,2,3,8]$						0

The distance signifies the gap between observed data and expected value; a smaller distance indicates that the observed data is a better fit for the expected values. To obtain a clear picture of the distance between ideal and actual data we need the following definition about efficiency, for which the value will be a standardized constraint on 0 and 1. We use exponential transformation f(x) that transforms the distance of fuzzy data set of possible values of x into (0,1). A natural symmetry requirement explains the selection of exponential function as an appropriate transformation of all-positive quantities.

Empirical study

In this study, we evaluated the relationship between estimated time and actual time on mobile learning by university students. The empirical study was conducted by surveying a sample of freshman students at Yuan Ze University in Taiwan. To determine improvement, the gap between motivation and satisfaction when learning English vocabulary using mobile apps was studied by means of fuzzy statistical analysis.

Figure 1 shows the process of the experimental design used in this paper, which adopted a ten-day experiment with

thirty participants. The data collected included a pre-test given before the experiment and a post-test given after the experiment. When the two tests were compared, it was found that the students had improved. The two surveys given in the study were conducted and analyzed by using fuzzy correlation coefficients.

Figure 1: The procedure followed in this empirical study

Participants

The participant group for this experiment comprised thirty freshman students, majoring in three faculties at Yuan Ze University, Taiwan. There were fifteen female students and fifteen male students. Their English levels ranged between five and eleven out of fifteen, based on the University Entrance Exam. The distribution of their English level, gender and college are shown in Table 3 and Table 4. Twelve of the students had previous experience in learning English with apps, while the remaining eighteen had had no related learning experience.

Table 3: The distribution of the participants' English levels and gender

Level Gender	L5	L6	L7	L8	L9	L10	L11	Total
Male	1	1	1	2	5	3	2	15
Female	2		0	1	2	7	3	15
Total	3	1	1	3	7	10	5	30

(L1 refers to level 1; L2 refers to level 2, etc.)

Table 4: The distribution of college and gender

College Gender	College of Engineering	College of Informatics	College of Humanities and Social Sciences	Total
Male	6	8	1	15
Female	5	3	7	15
Total	11	11	8	30

Pre-test and Post-test

Before and after they were given the game apps for learning purposes, every participant took an online test to evaluate his/her English vocabulary knowledge. The test comprised fifty questions selected randomly from the level 6 vocabulary bank of the Appointed Subject Test offered by Taiwan Test Central (see Figure 2). Level 6 is the equivalent of the GEPT intermediate level or CEFR B1. The correlation coefficient between students' English levels and the results of the pre-test was 0.618, which proved that the test was reliable. In other words, the higher the students' English level, the higher their scores on this test, and vice versa.

Figure 2: Pre-test and post-test

Pre-questionnaires

Straight after taking the pre-test, students were introduced to two app games for learning English, and were required to upload them onto their smart phones. They had to play each game for twenty minutes. For the second step, the students had to estimate how much time they would need to spend playing these two games to learn the English vocabulary during the next ten days. Their predicted estimation was given as a period of time: one to two hours, two to three hours, or four to five hours, for example, rather than asking the students to predict a specific time. The students also gave feedback on reasons why they would like to learn English vocabulary by playing apps games.

Post-questionnaire

In the first part of the post-questionnaire, the participants had to report how much time they had spent playing these two games during the previous ten days. The second part of this survey asked questions about their degree of satisfaction. It consisted of seven items on a five-point Likert scale, where 5 represented "strongly agree" and 1 represented "strongly disagree."

Two applications

There are three components in the model of memory: sensory, working and long-term memory. The ultimate aim of learning is for the material to be stored in long-term memory. When students played the vocabulary games, they received auditory and visual input, thus stimulating the sensory memory. With ongoing repetition, the information would be acquired, rehearsed and saved in their working memory. This process of how our memory works can be applied to the use of the two apps (see Figure 3); connections are formed between the students' first language and English and meaningful learning takes place. The app Hastars (left in Figure 3) requires learners to choose the correct Chinese translation for the English word shown on the screen within five seconds. The game ends if students choose the wrong answers three times. The questions incorrectly answered are repeated from time to time to prevent the students making the same mistake. The second app, Memorizing Vocabulary by Sliding a Finger (right in Figure 3), is also a bilingual vocabulary game. Students can either skip the words if they already know the meanings or review the definitions that are new to them. As there are no time constraints, students can enjoy playing the game as well as enjoy learning until they have completed the mission. The focus group was free to play either of these games since they were very similar.

Figure 3: The design apps of Hastars and Memorizing vocabulary

FINDINGS

Leaning motivation: both male and female students learned for academic purposes

In the pre-questionnaire, we found that sixty-three percent of the participants were willing to learn English using apps for academic purposes and thirty-seven percent for personal reasons. The detailed information is shown in Table 5.

Table 5: The Reasons why the participants use the educational apps

Categories	Reasons for using	
Academic purposes	Vocabulary development	27%
	English Proficiency Test Preparation	26%
Personal reasons	Personal Interest	10%
	Convenience	12%
	Pleasure and Fun	11%
	Self-confidence	9%
	Killing Time	5%

In this survey, the Wilcoxon Signed-Rank Test was used to evaluate differences between male and female students' motivation when using apps for learning (see Table 6). The null hypothesis (H_0) was: female students' motivation=male

students' motivation, whereas the alternative hypothesis was female students' motivation ≠ male students' motivation. The results showed p-value > Z, so we accept the null hypothesis. There was no difference between males and females.

Table 6: Differences between male and female students' motivation

Purposes of using apps	Overall	Female	Male
For academic purposes	0.63	0.61	0.65
Interest and Convenience	0.37	0.39	0.34
Correlation coefficient for academic purposes between female and male students	p-value = 0.703 > $Z_{0.05}$ = 0.305		
Correlation coefficient for interest and convenience between female and male students	p-value = 0.850 > $Z_{0.05}$ = 0.305		

For the post-questionnaire, we evaluated students' satisfaction with their learning experience. The results are shown in Figure 4.

The satisfaction scores were between seventy-six percent and eighty percent, indicating that students were satisfied with their academic leaning as well as the convenience of learning using their smart phones. In terms of learning motivation for personal reasons, the satisfaction score was fifty percent. In summary, most of the students found learning English vocabulary with apps to be a good experience. Other than the academic results, their self-confidence was boosted, and they had fun and found learning to be a pleasurable experience.

Figure 4: Learning satisfaction

Students' outcomes

The students' results after playing the two games for ten days are shown in Figure 5. Most students did better than that of pre-test. Green bars refer to the results of the pre-test while orange bars refer to the results of the post-test.

Figure 5: Compare students' outcomes between pre-test and post test

The differences between the pre-test and post-test results show students' progress in English vocabulary acquisition. The data were computed by using a nonparametric Wilcoxon sign rank test, and the result reveals the post-test was higher than that of the pre-test ($Z = \frac{T-E(T)}{\sigma T}$,   p < .001).

To determine the differences in progress between male and female students (see Table 7), we used the Wilcoxon Rank-Sum Test. The comparison reveals that the p-value > .05. Therefore, we accept H_0. This indicates that there is no significant difference between male and female students' improvement.

H_0: Female students' progress = male students' progress
H_1: Female students' progress ≠ male students' progress

Table 7: Testing students' progress by gender

Type of testing	Values collected from students' progress of English learning														
Gender	F	F	F	F	F	F	F	F	F	F	F	F	F	F	F
Progress	16	16	-4	-20	19	8	-8	16	2	20	4	-8	4	20	6
Signed-Rank	21	21	6.5	1	24	15	2.5	21	9	26.5	11	2.5	11	26.5	13
Gender	M	M	M	M	M	M	M	M	M	M	M	M	M	M	M
Progress	16	4	-4	32	24	10	8	-6	8	20	20	-4	16	12	-4
Signed-Rank	21	11	6.5	30	29	17	15	4	15	26.5	26.5	6.5	21	18	6.5

$$Z = \frac{T - \frac{n(N+1)}{2}}{\sqrt{\frac{mn(N+1)}{12}}} = \frac{212 - \frac{15(30+1)}{2}}{\sqrt{\frac{15 \times 15 \times (30+1)}{12}}} = -0.85, \quad p > .05$$

In this study, the participants were from three faculties: the College of Engineering, the College of Informatics, and the College of Humanities and Social Science. In order to find out whether students from different faculties would show different progress, we used the Kruskal-Wallis test to identify the relationships between these faculties. The results reveal that there is no significant difference in the progress made by students in the three faculties.

Another question to be answered was whether students who spent more time playing the games showed greater improvement in English vocabulary acquisition than those who played less time. According to the Pearson correlation coefficient, the result was 0.393, which means the relationship between the degree of students' improvement and the time spent on the games is positively related. However, the correlation coefficient of 0.393 indicates the strength of the relationship between these two variables is only moderate. This result may confirm that language learning is a long-term process; although students did manage to increase their English vocabulary within a ten-period, it requires further effort to maintain their own learning.

Estimated playing time vs. actual practice
The difference between the students' estimated playing time and actual practice time was tested with the Wilcoxon Sign Rank Test. The test is significant at 0.47 (n=30, p> .05), hence we accept the null hypothesis: the time students estimated they had spent playing these two apps was the same as the actual time. The students were from three faculties: College of Engineering, College of Informatics and College of Humanities and Social Science. Would the students from different faculties differ in the actual time that they spent playing games? For instance, did students from the College of Engineering or Informatics spend more time than the students from Humanities and Social Studies? We used the Kruskal-Wallis Test to determine the relationships between these factors: K= 0.86 > .05; therefore we accepted the null hypothesis: students' registration in a specific faculty did not affect the length of time they spent playing the games (see Table 8).

H_0: The students spent the same time on the games
H_1: The students spent different time on the games

Table 8: The length of time spent on playing the games the by different participants

Faculty	Evaluating by students' time spent on apps using												
Engineering	16	16	16	4	-4	-4	32	-20	24	19	10		
	21	21	21	11	6.5	6.5	30	1	29	24	17	R1=	188
Informatics	8	-6	8	20	20	-4	16	12	8	-8	16		
	15	4	15	26.5	26.5	6.5	21	18	15	2.5	21	R2=	171
Humanities	2	20	4	-8	4	20	-4	6					
	9	26.5	11	2.5	11	26.5	6.5	13				R3=	106

$$K = \frac{12}{N(N+1)} \sum_{i=1}^{k} \frac{R_i^2}{n_1} - 3(N+1) = \frac{12}{30(30+1)}\left[\frac{188^2}{11} + \frac{171^2}{11} + \frac{106^2}{8}\right] - 3(30+1) = 0.86 > .05$$

Moreover, the relationship between students' English levels and their time spent playing these two games was defined by the Spearman correlation coefficient of 0.11, which indicates that the amount of time the students spent on learning English vocabulary had nothing to do with their English levels. These two factors have no direct connection. From this result, we ascertained that despite students' various English levels, they were willing to spend time on educational

games because of the pleasure they derived from the activity and their flow experience.

CONCLUSION AND SUGGESTIONS

The key contributions of this study are: (1) The mobile game-based learning method is workable and acceptable for both female and male students in university level. Students have showed the similar motivation and satisfaction no matter what they were playing the games for academic or personal purposes. When university English instructors design their programs, the mobile game-based learning would be an optimal approach for both male and female students. (2) Participants from these diverse three faculties seemed to accept the concept of game-based learning and enjoyed using their mobile devices for academic purpose. The students in College of Management, College of Electrical and Communication Engineering at Yuan Zu University have demonstrated their attitude to mobile game learning with fuzzy questionnaires. It is expected that if students enjoy learning with apps, other subjects and courses may adopt the idea of mobile game-based learning to enhancing engagement and motivation. (3) This study found that the students' estimation of the time they would spend on playing games correlated closely with the actual time spent playing the games for their English vocabulary development, but the correlation between time spent and improvement was only low to moderate, possibly due to the duration of this project: learning a foreign language takes a long time and the project may have been too short to yield reliable results. The correlation coefficient may have been different had the project lasted longer.

Finally, there are thousands of good apps and new educational apps for language learning are constantly being developed. Language teachers could benefit from collecting some good apps and implementing the technology teaching model into learning activities to boost students' learning motivation and engagement for a meaningful learning environment.

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GALILEO GALILEI'S LOCATION, SHAPE AND SIZE OF DANTE'S INFERNO: AN ARTISTIC AND EDUCATIONAL PROJECT

ABSTRACT

The authors are engaged in interdisciplinary research initiatives of the **FDS** Laboratory (**F**ormation, **D**idactics, **S**cience Communication) of the Mathematics Department of the Politecnico di Milano. Among all the projects we did, the authors present four educational projects, that were carried out with teachers and pupils of secondary schools or University students. Its illustrate the variety of topics proposed, in relation to the skills of students that were addressed.

The first project *Galileo Galilei's Location, Shape and Size of Dante's Inferno: an Artistic and Educational Project* was proposed to a group of students of Graphic Art course in the Accademia di Belle Arti di Brera.

We proposed the second project *The Flying Island of Laputa* to students of a secondary school focusing on Humanities and Foreign Languages to enhance their skills in Physics.

The third project *The Marptolemaic System* was proposed to students of the last year of a secondary school focusing on Science to increase interest in Astronomy.

The last project *Analysis of the Chemists Network in Monza* was proposed to the students of the last year of the secondary school focusing on Science and deals with social application of Mathematics to problems concerning both logistics and city planning.

INTRODUCTION

We believe that Mathematics plays a very important role from a cultural point of view in the modern world and that the students, by means of these projects, could realize that Mathematics is also a powerful tool, rather than being a closed discipline. Mathematical concepts connect new ideas to other ideas learned previously or in other educational experiences, helping to learn concepts used in other disciplines. Therefore, from 2002 the **FDS** Laboratory offers interdisciplinary educational projects to motivated students of the high schools.

In particular, we offered projects to contribute to contamination between scientific thoughts and artistic insights or with social content or dedicated to history of scientific theories.

The students involved in the projects followed some lectures at **FDS** Laboratory, then they worked in their classrooms and then presented their works in national and international competitions.

Here we present four significant projects chosen among that we proposed in recent years. Some of these works were chosen to represent Italy at International Young Scientists' contests.

We proposed the artistic and educational project *Galileo Galilei's Location, Shape and Size of Dante's Inferno: an Artistic and Educational Project* to a group of students of Accademia di Belle Arti di Brera.

In the artistic activities, drawing is the cognitive analysis of the object and of the space that contains it, providing the basis for a lather reworking of poetry with different art tools. We highlighted the double value of artistic creation building a complex path, where the multiple values of the drawing and its expressive results stand out.

It is evident that good drawing is needed to draw good geometrical figures. Exactness of a figure, its shape and size, can be measured using mathematical tools so the mathematical knowledge is applied in drawing and painting, for instance with symmetry, making right ratio and proportion.

Our project *Galileo Galilei's Location, Shape and Size of Dante's Inferno: an Artistic and Educational Project* is seen as an opportunity for scientific and artistic thought to share their points of view, starting from an interesting historical background namely the debates on the structure of Dante's *Inferno* which involved Galileo Galilei.

The work plan was divided in two parts: the mathematical laboratory and the artistic work.

The students followed lessons about the cultural environment and the mathematical aspects of the topic, shown below.

In 1588 in the lectures at the Accademia Fiorentina, Galileo examined the opposed opinions concerning the structure of the *Inferno* proposed by Antonio di Tuccio Manetti and Alessandro Vellutello.

The two arguments are identical as regards the general appearance of the *Inferno*, but are considerably different regarding the shape and the size.

In his lectures Galileo combined a clear exposition of Mathematics with his deep knowledge of Dante's *Commedia* and emphasized that the geometry of Manetti's plan is based on evidence from the poem.

Manetti's *Inferno* is a cone-shaped region in the Earth, with the vertex in the center of the Earth and the base on the surface, centered on Jerusalem. The rotation of the circular sector, which has radius identical to the terrestrial radius, generated the cone. Manetti used the straight lines which we pulled up from the center of the Earth, the one to Jerusalem, the other to the opposite extreme, or, as we might say, to the edge of the mouth of the *Inferno* (when it arrives up to the surface of the Earth). The arc, which is drawn from one to the other, is of 1700

Florentine miles. The reason of this choice is that the distance from Jerusalem to Cuma was believed to be exactly 1700 miles. Therefore, the circular sector has the angle at the vertex of 60°.

The *Inferno* does not occupy the whole spherical sector but only the part of the cone that is, under Jerusalem, at the depth of 1/8 of the terrestrial radius.

The funnel is made of nine circles. The first circle is the widest; progressively, the ninth circle is the smallest. This ninth circle surrounds Lucifer. The various levels of Manetti's Inferno are regularly spaced, in fact the first six levels are equidistant with 1/8 the radius of the Earth between each level and the next.

In order to deduce the widths of the first six levels, Manetti divided the length of the arc on the surface from Cuma to Jerusalem into two parts: 1000 miles + 700 miles. In the first 1000 miles he marked 10 spaces, each one of 100 miles, beginning from the mouth; from these partitions he deduced the widths of the first six levels. The reason of this partition into two parts is that in the Middle Ages geography the distance from Cuma to the island of Crete was considered exactly 1000 miles. When Dante arrived to the sixth level of Hell, he is located exactly below the Mount Ida, where was the statue of *Veglio di Creta* (Grand Old Man) which is the mythical origin of the infernal rivers (*Inferno*, XIV, 103-120).

Galileo did not care about these details, but in the Girolamo Benivieni's book (Benivieni, 1897) we read this explanation about the Dante's path: Dante covers only a tenth of each ring and so completes the circle after ten rings (*Inferno* XIV, 121 – 129). Manetti supposed that this spiral drawing correspond to the Dante's path

We can sketch the Manetti's plan as in the following drawing [Figure 1]

Figure 1: Manetti's plan

The seventh level contains the whole of *Malebolge*, which is depth of the Geryon's ravine, and the eighth and last level embraces the four spheres of ice including Lucifer. The first six distances from one level to the other are equal to one another, but it is not possible for the distances from the seventh and the eighth levels from the

Earth's center to be the same as well, because of some verses of Dante's poem. Indeed Dante says that the ninth *bolgia* turns through 22 miles, and, in consequence, the diameter must be 7 miles.

Manetti thus supposed that the radii of the *bolge* were in aritmetic progression and Galileo concluded that the distance of *Malebolge* from the Earth's center is 81 3/22 miles via Thales similarity theorem and the Geryon's ravine is 730 5/22 depth.

Manetti calculated the size of Lucifer from the verses of the *Divina Commedia*: Dante says that he makes a greater comparison with a Giant than a Giant makes with one arm of Lucifer. If therefore Manetti knew the size of Dante and that of the Giant, he would be able to find the size of Lucifer. One knows that Dante was a man of average stature, which means three *braccia*; then Manetti concluded that Lucifer was 2000 *braccia* height.

After these lessons about the cultural environment and the mathematical aspects of the topic (Angelini, 2014), the students went into the concept of the mathematical perspective and the use of proportion and similarity in order to render mathematically the precise positions of *Inferno*'s rings. They studied the *Inferno*'s architecture, the Manetti's plan and estimated the sizes, the widths, the lengths of the eight levels and finally the height of Lucifer.

Each student created a "technical drawing" that is a scaled drawing of Dante's *Inferno*, based on Galileo's calculations, using different types of paper and free-chosen drawing techniques. The choice of different colouring techniques and papers made possible that every drawing could give emotions strongly different, despite being equal in ratio and proportion. Some students chose to work with warm watercolour tones, giving to the *Inferno* an atmosphere of energy and warmth, other of them chose cold chromatic tones and used pen and ink. Therefore there was the same *Inferno*, in shape and measure, but much different in impressions and feelings.

After, each student drew a "creative artwork" aroused from his artistic vision and inspired to the *Commedia*'s verses, unrestrained by the scientific portrayal. They were free to choose the artistic techniques, supports and dimensions of their works. They realized drawings, paintings, original engravings and various dimensions woodcuts, rich in colour and sign and all tightly related to the author's reflections. In some of their works the original model is still visible but in others is unrecovered. In both cases, all of these artworks tell us a story: the amazing transition from measure to dream.

The students' graphic works were gathered, accompanied by short sentences associated with the selected quotes of *Inferno* and displayed on the exhibition at Politecnico di Milano (May 2012). Furthermore the works were exhibited at the Museo Dantesco of Ravenna (September 2013) and at the Bergamo Science Festival (XI Edition, October 2013).

THE FLYING ISLAND OF LAPUTA

In 1726, Jonathan Swift published *Travels into Several Remote Nations of the World. In Four Parts. By Lemuel Gulliver, First a Surgeon, and then a Captain of Several Ships*, (Swift, 2005) commonly known as *Gulliver's Travels*, a prose satire that became popular and nowadays is a classic of the English literature. Many of the scientific ideas that Swift expounded in this book are ridiculous exaggerations of ideas and experiments that he might have read in the Philosophical Transactions of the Royal Society. The way the flying island moves is largely an adaptation of William Gilbert's theory of magnetism (Gilbert, 1991). The island, with its bottom made of a metal called *adamant*, resembles the *terella* and the giant balanced loadstone, which is in its bowels, is an example of the Gilbert's *dipping needle*. Because certain mineral in the earth magnetically repels the loadstone and the adamantine base of the island, the island of Laputa is able to fly and its movement are controlled by tipping the stone on way or another. In the book, Swift give us accurate data about the Laputa's physical aspect, so we propose to students of a secondary school focusing on Humanities and Foreign Languages to answer the question if Laputa can fly because of the magnetic force between the islands of Laputa and Balnibarbi.

The students read the original book of Jonathan Swift and documents about the scientific and social background in which Swift lived. Then they analyzed the scientific reasons suggested by Swift:
- Both magnetism and gravity can affect objects at a distance. Both get weaker as the objects get farther apart. Newton proved in Principia (1713) that the gravity's force is conforming to the law of the inverse square of the distance, but Newton's approach failed with magnetism. The great minds of the age were unable to solve the problem. This situation continued until the end of the eighteenth century when Coulomb placed magnetism upon a different path that stimulated the development of mathematical models based on the Newtonian theory at the beginning of the nineteenth century.
- Unlike gravity, which occurs between objects, magnetism depends on specific properties of objects. Magnetism can either pull the two objects together or push them apart, depending on which way the magnets point. Most materials feel very little magnetic force; others create forces strong enough to be felt. The adamant is maybe a diamagnetic material, so it is repelled by the applied magnetic field. Diamagnetic materials were first discovered

by Seybold Justinus Brugmans in 1778, but in eighteen century the studies of electrical and magnetic phenomena became a popular craze and the gentlemen crowded the salons where popularizers of the science did experiments for entertain the aristocrats. So Swift might have noticed the diamond's diamagnetic properties. We do not know where the adamant of Swift is but it is possible that he believed in some medieval legends that conferred to the adamant particular magnetic properties.

The students examined the notion about magnetism after Gulliver's travels and in particular:

- Quantitative studies of magnetic phenomena initiated in the eighteenth century by Charles Coulomb, established the inverse square law of force and state that the attractive force between two magnetized objects is directly proportional to the product of their individual fields and inversely proportional to the square of the distance between them.

- Since 1829, scientists have been able to accurately measure the Earth's magnetic field and today the measure of the magnetic field is between 0.3 and 0.6 Gauss (3 x 10^{-5} - 6 x 10^{-5} Tesla).

- A theorem due to Earnshaw proves that it is not possible to achieve static levitation using any combination of fixed magnets and electric charges. Static levitation means stable suspension of an object against gravity. There are, however, a few ways to levitate by getting around the assumptions of the theorem. It is possible to levitate diamagnetic materials that magnetise in the opposite sense to a magnetic field in which they are placed. Diamagnetic materials are commonplace and can also be levitated in a magnetic field if it is strong enough. Water droplets and even frogs have been levitated in this way at a magnetics laboratory in the Netherlands (Physics World, April 1997). Therefore this can only be done using the strongest magnetic fields that technology has produced (Berry, 1997).

The students calculated the weight of the Laputa's island based on the measures of Gulliver and some approximated conditions about the layer of the Earth in which there are "minerals in their usual order". Swift certainly understood the study about the English subsoil by John Stacey, published in Philosophical Transaction in 1719. In addition, they suppose that the Laputa's shape is quite a disk and they obtained [Table 1]

Laputa	Yard	m	m^2	m^3
Diameter	7837	7166		
High	300	274,32		
Area			11250,62	
Volume				3086270

Table 1: Laputa's dimensions

Laputa's high = adamant's base + soil + minerals = (182,88 + 3,66 + 87,78) m
[Table 2]

	volume	specific weight	Kg
adamant	2057513	3550	7304171150
soil	41177,268	1750	72060213
stone	41177,268	1062	43730255
total weight			7419961618

Table 2: Laputa's weight

Then Laputa can levitate if the magnetic field generated by Balnibarbi is able to act against gravity and to suspend Laputa over Balnibarbi for almost 3 meters.

Whether an object will or will not levitate in a magnetic field B is defined by the balance between the magnetic force $F = M \nabla B$ and gravity $mg = \rho V g$ where ρ is the material density, V is the volume and $g = 9.8 m/s^2$.

The magnetic moment is $M = (\chi / \mu_0) V B$ so that $F = (\chi/\mu_0) B V \nabla B = (\chi/2\mu_0) V \nabla B^2$. Therefore, the vertical field gradient ∇B^2 required for levitation has to be larger than $2\mu_0 \rho g / \chi$.

Molecular susceptibilities χ are typically 10^{-5} for diamagnetic materials and, since ρ is 2404 kg/m^3, and $\mu_0 \sim 10^{-6}$, their magnetic levitation requires field gradients ~ 4800 T^2/m.

Taking $l = 3m$ and $\nabla B^2 \sim B^2/l$ as estimate, we find that a field of the order of 120T is needed to cause levitation of Laputa.

It is another open question, namely if it is really possible the way Laputa moves and the way it does not move. Unfortunately the answer is no for both questions (Berry,1997 and Merton,1996).

The students conclude that it impossible that the Swift's island floats in the sky for three good reasons: Laputa is too heavy, Laputa flies too high and Laputians did not have tools to provide that stability conditions of the fly were satisfied.

THE MARPTOLEMAIC SYSTEM

The third project we present is "The Marptolemaic System", that we proposed in 2009.

The General Assembly of the United Nations proclaimed 2009 the International Year of Astronomy (IYA2009) because it was the fourth centenary of the publication of Kepler's first two laws of planetary motion in the *Astronomia Nova* and the first astronomical observations with the telescope by Galileo in Padua.

We proposed this project in collaboration with researchers of the National Institute for Astrophysics (INAF) to a group of students of the last year of the high school.

The purpose was to replicate the Ptolemy's geocentric model, supposing that the astronomer was a scholar of other planet in the solar system. The students chose Mars and called the astronomer Marptolemy. The reasons for interest in Mars are mainly two: the first is that this planet has similar physical characteristics to the Earth and the second is that its orbital eccentricity is 0.0935 so it is greater than that of every other planet except Mercury, and this causes a large difference between the aphelion and perihelion distances.

The eccentricity of the Earth's orbit is currently about 0.0167; the Earth's orbit is nearly circular and for this reason, Ptolemy had no doubt to assign the circular orbit to the Sun.

The students used some freeware software of mathematical calculation and astronomical simulation to obtain astronomical data as if they lived on Mars.

They restricted their study to the Sun and the interior planets: Mercury, Venus and Earth and to the two Martian satellites: Phobos and Deimos. They did observations by means *Celestia*, a freeware software, every ten days starting from 1 January 2009 until 27 December 2010.

The students described the orbits around Mars and orbital velocities of the Sun, Earth, Mercury and Venus. They obtained that the revolution's period of the Sun around Mars was about 1.96 years, while actually the period of revolution of Mars around the Sun is of 1.88 years.

Therefore, they found that the motion of the Sun relative to Mars was not uniform circular motion. They calculated the average angular velocity and found 0.51 degrees / day, while actually is 0.52 degrees / days.

They obtained that the revolution's period of the Earth around Mars was of about 736 days and that the angular velocity decreased sharply up to take on negative values from 17/12/2009 to 03/02/2010. It means that there is a retrograde phenomenon and that the motion is not uniform circular motion around Mars.

The revolution's period of Venus around Mars was between 696 and 706 days. In addition, for Venus we had a retrograde phenomenon and the motion is not uniform circular motion around Mars.

Mercury revolved around Mars in a period between 706 and 716 days and they observed a retrograde phenomenon, so the motion was not uniform circular motion around Mars. The students noted that the retrograde motion regularly repeated every 98 days; and it had a duration of about 20 days. [Figure 2], [Figure 3], [Figure 4], [Figure 5]

Figure 2: Sun's positions

Figure 3: Earth's positions

Figure 4: Venus positions

Figure 5: Mercury's positions

In conclusion, the students could describe the Marptolemaic System by two different ways:
- The first one is a repetition of the Ptolemaic theory, introducing the epicycloids explaining the orbits for any planet
- The second one is the assumption that the orbits of the planets are elliptic or composition of circles and ellipses

In the second case, the orbit of the Sun is an ellipse and one can describe the orbit of other planets assuming that its path revolve on a circumference, which center rotates on the solar elliptical orbit. The students called this curve *epiclyssoid*.
This work achieved the prize for the best astronomy's project in the Italian Selection of Young Scientists International Contest. [Figure 6]

Figure 6: Students' desk in the Contest Hall

ANALYSIS OF THE CHEMIST NETWORK IN MONZA
We presented this project to a group of students of a high school in Monza, a town near Milan.
The aim of this project was to rationalising the location of the chemist in Monza in order to improve the quality of the service and to find the best condition for profit.
In order to develop a model with which to compare the results of the analysis, it was necessary to find three kinds of information: the average age and the distribution of the population, the layout of the city and the list of the public and private chemists.
First, the students collected the maps of the city, the demographic data and fixed the GPS coordinates of each chemist. They decided to find for each point of the city the nearest chemist and then to estimate the basin of attraction of each store based on the parameters they established.
It is a classic problem of minimum path applied to a planar region for which is essential the accurate estimation of the distances.
Initially the students considered the opportunity of using the so-called Manhattan geometry, different from the Euclidean one, because the distance between two points is defined as the sum of the horizontal and vertical shift. This kind of geometry seemed very profitable in taking into account the real length of the streets. Even though

this metric was very useful, they were obliged to discard it because it could not be applied without complicated approximation to a city like Monza, which developed around a circular town centre maintaining an annular structure. Therefore, they decided to use the Euclidean metric, since nearly all roads have a radial pattern from the center: move away in a straight line, roughly outlining the circumferences.

In the simulations, the students used the partition of the plan known as *Voronoi diagram system* in order to divide the city of Monza in regions consisting of all and only the closest points to a given chemist (Aurenhammer, 1991).

Then they evaluated the average number of customers of each service.

The result of the processing with the computer is represented by three maps that show the extension of the basins of attraction of each chemist and the share of the population through color gradient that goes gradually from dark blue to green and finally to bright red.

They considered faults in the network according to two factors: uniformity and tendency to red. The dramatic difference in colour between two contiguous regions means an uneven distribution of the customers and the colour is so much warmer as the chemist is crowded.

The first map is the result obtained by the inclusion in the Voronoi diagram of all thirty-seven pharmacies of the city. We can note that many stores abound in customers: dark blue prevails in the centre, light blue in the suburban areas and green in all the remaining regions. Only the areas in the uptown have been coloured in yellow and orange. [Figure 7]

Figure 7: 37 chemists

The second and thirty map represents the simulations that the students carried out taking into account respectively twenty-nine and then twenty-one chemists as generators points, in order to see in which way would probably change the situation for the chemists, if suddenly some exercises were to shut.

In the second map, we can see that the colours reached a warmer hue and Voronoi regions have further enlarged due to the closure of some chemists and to the increase in the number of customers. [Figure 8]

Figure 8: 29 chemists

In the third map, we can note that the regions reached the uniform colouring, thus the customers' distribution is the most homogeneous and rational. In this simulation only the region in the northeast part of the city is extremely overload, as its intense red shows. [Figure 9]

Figure 9: 21 chemists

First, the students used the Fortune Algorithm for the simulation, then they decided to implement a new programme capable of doing the simulation loading the data from an external file; with this software, they could introduce weighted Voronoi diagrams, take into account the road network and automatically create the colours of the regions with higher precision.

Thanks to its simplicity and extreme versatility, this project can be applied to many different fields in which a rational exploitation of the land and its resources is necessary to grant an ordered and sustainable development to a constantly growing society.

This work achieved the third prize in the European Union Contest for Young Scientists (Lisbon 2010).

CONCLUSIONS

The conventional belief has always been that students interested in scientific thought should develop strong math skills. However, it might actually be the other way around. Teachers think that activities in art or in history of science can help students build math skills and make math learning more fun.

FDS give both projects to enhance the mathematical knowledge and projects to build a solid math foundation. Here we have presented examples of the first type of projects, but anyway the aim of our works is to help students visualize the mathematical abstract concepts and its contributions to the cultural heritage.

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GENERATING ONLINE COURSE IN DISTANCE LEARNING
THE IMPORTANCE OF DESIGN PROCESS

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ABSTRACT

With development of information and communication technologies, the speed of accessing information has been rising. Knowledge acquisition is facilitated by online learning environments. Online learning platforms let individuals to have education without time and space constraints. Via these platforms, individuals become capable to organize information due to their needs. Briefly saying, they can control their way of learning. Hence, knowledge become a concept which is not transferred by instructor to learner but vertically permeates among them. Hence instructors need to be innovative in teaching process. Herein, web based distance education programs become prominent.

With the vast spread of web based learning tools, distance education has been integrated into the schedule of many institutions. On the other hand, this fast growing rate also generates controversy. Scholars claims that online learning platforms are not capable enough to serve the qualification and credibility of face to face education. However there are many studies that shows a well-designed distance education course can promote to a high level of student satisfaction. To minimize any possible problem and to provide the best learning and electronic study environments, a well organized and qualified course opening process is the most important factor.

In this study firstly, the connection with distance education and web technologies are explained. Moreover, the importance of design process of the online content is emphasized. In the light of the literature, online course content generation in distance education will be discussed. Finally an effective design is suggested.

INTRODUCTION

With the rise of internet, the notion of space from the material world is extended to the virtual. Internet reached the power to spread all over the world within 30 years after the invention date 1969(Dijk,1999,p.18). By the time 2001, according to Internet World Stats web page (2016), nearly every other person was able to access. Implicitly, internet is a notion that links people all around the world. It was defined as a metaphor for the social life as fluid (Dijk,1999,pp18-35).Moreover, the fast grow rate of Web 2.0 technologies, Wi-Fi routers and 3G mobile systems let data to be transformed in high speed rates, to be shared interactively. This transformation redefines the way we think, communicate and learn. It also triggers structural changings in learning methods (Bilgiç& Tüzün,2015,p.470).

In today's digital based society, physical time and space constraints lost their significance for communication. By this content, education has become an activity that may emerges beyond time and distance. Technology become a primary focus for the most effective means of conducting an activity. In this vain, online learning is not a new theoretical approach but its application in distance education requires special consideration in order to maximize effectiveness. The challenge both educators and learner is learn how to facilitate new tools. According to Conrad and Donaldson (2011, p. 16) explain this challenge in this way:

"An instructor can clearly detect when students are engaged in an effective classroom activity. Both energy and sound levels are higher and students are reluctant to change to another task. The snergy between collaborative partners is exciting to observe as the discussion grows animated and connections are established. The big question is how do create this exhilarating learning environment when you lack verbal and visual cues."

LITERATURE REVIEW

Van Dijk(1999) in his study entitled by " Network Society" explains the reason why this passing thirty years is called Information Age. The reason is that data was produced much more than it was in five thousand years (Dijk,1999,pp18-23). In the information society, practicing technology tools without time and space limitation offers low cost and student centered education. This opportunity triggers active learning and makes data to reach large masses and be shared. In digital era, enhancing content development tools makes education gradually cheaper and increase learning speed.

Especially in today's information society, individuals who have to follow updated knowledge embrace life-long learning principle. The structure of web based distance education lets modern individuals to take the control over variables like time, space and speed of learning. In addition to this, it creates different opportunities for both audiences and lecturers. West and West (2009) claims that audiences are free to choose the lecturer according to related skills and lecturers are free to reach wider audience. This flexibility and self-selectable features increase web based education areas popularity.

"Learners in the twenty first century have been Web consumers for much of their lives and are now demanding online instruction that supports participation and interaction. They want learning experiences that are social and that will connect them their peers." West &West (2009,p2)

Moreover, Conrad and Donaldson (2011) claims that in today's society, interactivity shapes learning. Online learner must quickly establish comfort with the technology and a higher level of self-direction other than traditional methods. If this comfort level is not reached the learner will walk away from the course in frustration (Conrad and Donaldson, 2011, p. 16).

By taking into consideration population grow rate, without physical conditions constrains, buildings, equipment education become easier. Hence, the importance of e-learning is increasing day by day. Likewise, distance education system are now redefining by digital codes. According to Bilgiç and Tüzün (2105) express that web based distance education embrace collaborative learning process in which the teacher and student are partners in constructing knowledge and answering essential questions. This strategic approach includes setting goal, establishing timelines and creating an assessing authentic products. (Bilgiç& Tüzün,2015,p.471).

 It is true that variety of programs and digital quantity is increasing. On the other hand, there are studies that show distance education do not reach the intended success. To reach a significantly success in distance education, first step to consider is opening process of the related program.

According to Meyer(2002) claims that content design plays a key role in increasing the effectiveness of an online course. It makes online learner motivated and successfully interact. Moreover it an effective design helps individuals to collaborate in an online environment and make them eventually engaged in independent knowledge building. He points out the importance of design as following :

"It is perhaps as clear a term for the interrelationship between technology and instructional design as I have found. In other words, it is not the technology that has an effect, it is the way it is used" (Meyer, 2002, p.6).

Online platforms offer a wealth of opportunities for interaction. Yet many times they are employed in a non-interactive mode that tends to focus on creating an online lecture (Meyer, 2002, pp 4-8). A lecture is mainly responsible for knowledge transmission. If its primary strategy becomes using online environment, the course becomes only a digital correspondence course. It triggers online learner to be isolated and leads a high dropout rate (Meyer, 2002, p.16-45).

To prevent this possible drop-out date and increase interactivity, online distance course content need to be organized. (Kearsley,2000,p.78)emphasized that:

"The most important role of the instructor in online classes is to ensure a high degree of interactivity and participation. This means designing and conducting learning activities that result in engagement with the subject matter and with fellow students. "

Web based distance learning is considered as an alternative way of learning. Newman (2003, pp.20-34)emphasized that there are several factors that need to be considered for a course to be represented in online distance education form. These factors can be listed as

1. Student's attention
2. Substructure of the related course
3. Attention of lecturer
4. Interface design
5. Technical infrastructure
6. Possible costs

In other words, plan and design are two elements to develop program. True decisions in planning and designing progress makes evaluation, distribution and maintaining steps easier to follow.

Moreover, Odacıoğlu (2012) forms a control list that is consisted of six steps in the process of e learning program.

1. Preparation to program design
2. Determination of student's attributes
3. Creation of content
4. Designing the program
5. Developing program
6. Pilot study

Furthermore, Türkoğlu (2002) listed the steps that should be followed in developing web based education program.

1. Determination of aims
2. Research of literature
3. Collaboration of related academics with experts
4. Generating Course Content
5. Generating HTML / Design of Web Page
6. Addition the sources of students
7. Providing related database and software
8. Control of accessing the Web page
9. Collecting Feedback from students
10. Testing
11. Updating the web page continuously (Türkoğlu,2002)

What is more, Pina (2008) points out that most of higher education boards first have difficulties to satisfy the demands of web based program. Due to this reason, they primarily open the course and then start to plan it. This situation is the basic reason which entails failures and inefficacy in e-learning areas. E-learning should be considered as an innovation process and it should be evaluated in organizational structure(Pina,2008, pp.24-35).

In addition to this Bilgiç and Tüzün (2015) listed basic categories that should be considered in opening a distance education program.

1. Institutional Mission and Vision
2. Standarts for Opening the Program
3. Application Process
4. Preparation of Program Opening

Bilgiç and Tüzün (2015) revealed that first criteria of evaluation centers for opening distance education program is construction management. Firstly, it should be analyzed if there is qualified technical substructure. Materials that are needed for web based programs, availability of learning management systems and server structures should be checked(Bilgiç and Tüzün, 2015, p.470-491).

Moreover, it is also important to analyze student potential that shows enough demand for the program. Hence, the volume of the students is important factor in opening a distance education program. (Bilgiç and Tüzün, 2015, p.470-491) As it is known, web based programs need qualified technical support like computers, video conference system, content development. All of these technical issues increase the cost. It is emphasized that, if this analyze is not conducted effectively, institutions may get in financial difficulties(Bilgiç and Tüzün, 2015, p.470-491).

Furthermore, the third criteria is related with skills of lecturers(Bilgiç and Tüzün, 2015, p.470-491).Lecturers may have difficulties to adopt themselves while transferring their educational skills from in-class training to web based platforms. In many studies that are related distance education, it is accepted that characteristics of

lecturers affect the success of e learning. Hence, in the light of the literature it can be said that generating content and its design is one of the most important step in online education.

DISCUSSION

It can clearly be seen that education process should not be started immediately after a distance education program is opened. Institutions should not employ trial and error method during learning process to detect inefficiencies. Web based distance learning is developing as a platform which has different needs than traditional in-class tuition. In this regard, different strategies, different pedagogies, integration of technological developments to education process needs to be performed. In the light of the literature, it can be revealed that content development is one of the most peculiar step to increase effectiveness of online distance education.

In the light of literature, it is revealed that templates need to be constructed with collaboration of related experts. These templates need to include the subtitles of introduction of course, learning outcomes, summary of the courses, multimedia equipments, evaluation questions. These steps may form an ideal generating online course process. To achieve the intended success design and development process are conducted carefully.

Firstly, the important steps for designing of online distance education should be revealed. Interface should be readable. The design should make users to feel comfortable. Related messages should be placed where they can quickly catch the attention. Item direction needs to be easy to follow. To achieve this, interface should separated into particular parts. Table 1 offers a detailed design.

Table 1

1.Table Of Contents	2.Course Guide	3. Progress	4.Discussion	5.Course Book	6.Instructor
Title of the chapter	Current news about the course	General graph that show students perception towards to course.	Find Discussion	Units	Courses
Content of the chapter	Updating Information	The graph that shows the students'progress in content of unit	New Message	Tools	Membership
Related reading material	Introduction of Units	The graph that shows the students'progress in related material	Inbox	Add Material	Statics
Unit evaluation exam	Conditions	The graph that shows the students'progress in evaluation	Outbox	Download	Grading Configuration

Secondly, content development comes after an effective interface design.

- Courses should be prepared as they include one semester period. All topics of the class need to be determined in order to create interactivity between instructor and learner. After that, titles and subtitles should be explained. Finally context matches should be reviwed.
- Courses may include all multimedia items such as pictures, shapes, graphics, tables, sounds, videos, animations, plays and etc. Course book may be in the form of Pdf, ePub and iBook.
- Evaluation questions need to be in various forms. They can be multiple choice, short answer questions, match questions, fill in the blank questions, drag and drop questions or labyrinth question forms.

- Mid-term and final exams should be open 7/24 hours in two weeks. Each students have the right to take the exam only one time. Exam duration should be limited. Exam questions should be mixed and represent each students in different form.
- Grades should be given in two steps in such a way that mid-term evaluation and final evaluation. Mid-term evaluation is consisted of downloading and reading book (10%), watching videos(10%), participating in discussions (10%) and mid-term exam grade (70%). Final evaluation grade is also consisted of downloading and reading the related parts(%10), watching videos (20%) and final grade(70%). Final grade may be formed with 40% of mid-term evaluation and 60% of final evaluation.

CONCLUSION

In today's society, distance learning is defined in terms of digital codes. Technology is now integrated into the equation of distance learning. Hence, new approaches should be developed to understand this new integration. Online courses need to be analyzed in terms of various categories before they are represented in the form distance education. Students' attention, instructors' attention and skills, technical substructure and course structure should be checked before any attempt. Otherwise, intended success can't be attained.

Furthermore, to engage online learner into distance learning process there are two main steps entitled by design and content development. An effective interface design makes the online learner follow easier to related steps. In addition to this, it makes students feel comfortable with technology. A powerful design shapes the process of learning. Particular items become more readable and gives message directly to students. In order to increase interactivity between instructor and students, digital platforms should be utilized effectively.

Likewise, content development is another important category. Courses need to be represented in innovative approaches. Course book may include multimedia items which quickly catches the attention of learners. In addition to this, they may be converted into different forms such as ibook and ePub. Grading may also be conducted in an innovative way. Mid-term and final evaluation may be shaped in the light students process and attention.

Studies about web based distance education claims that it will be the only education system of the world in future. Hence, development process of it deserves a careful consideration. Studies were more conducted to support technological sustainability in distance education. However, there is no study that show empirical results that measure students' gratification about related platforms. This study suggests a design which may increase the interactivity of online platforms and a content development process to engage online learner. Future studies may put it into practice and collect feedback to enhance the process.

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GÖÇLE GELEN ÖĞRENCİLERİN TÜRKÇE DERSİNDE YAŞADIĞI SORUNLARIN DEĞERLENDİRİLMESİ

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ÖZET

Günümüzde bireyler çocuklarına daha iyi bir yaşam ve eğitim sunmak için yaşam ve eğitim kalitesi daha yüksek yerlere göç etmeyi tercih etmektedir.

Ailelerin yaşam kalitelerini artırmak için yapmış oldukları göç çeşitli sorunları da beraberinde getirmektedir. Bu sorunlardan biride göçmen çocukların eğitim-öğretim ortamında yaşadıkları sorunlardır.

Göçmen öğrencilere yönelik yapılan çalışmalar bu öğrencilerin Türkçe dersinde çeşitli sorunlar yaşadığını göstermektedir. Anlama, anlatma ve iletişim kurma becerilerine önem veren Türkçe dersinde yaşanan bu sorunların tespit edilip değerlendirilmesi önem arz etmektedir. Bu sorunların tespitinde öğretmenlerin rolü büyüktür. Bu nedenle bu çalışmada göçmen öğrencilere yönelik, gerek alan gerekse de pedagojik bilgileri nedeniyle, öğretmen görüşlerine başvurulmuştur.

ABSTRACT

Today people prefer to migrate to place whşich is a higher quality of life and education to provide a better life and education for the children.

migration of families to improve their quality of life brings with it various problems. Problems of immigrant children in educational environment is one of these problems.

Studies on migrant students show that they experience various problems in the Turkish course. Identification and evaluation of these problems in the Turkish course that emphasize comprehension, expression and communication skills are of importance, and teachers have a huge role in this respect. For this reason, in this study, views of teachers on migrant students were examined due to both their subject area and pedagogical knowledge.

GİRİŞ

Ekonomik, siyasal ve toplumsal dönüşümün bir yansıması olarak birçok insan, yaşadıkları yerleri kimi zaman gönüllü kimi zaman da zorunlu olarak değiştirmiştir ve halen değiştirmeye devam etmektedir. İnsanlar daha iyi yaşam olanaklarına sahip olmak isteği başta olmak üzere çeşitli nedenlerle göç etmektedir.

İzmir'de göç, 1960'lara kadar çok yavaş seyretmiştir. Göçler başlangıçta İç Anadolu Bölgesinden küçük çapta ticaret yapan Konyalılar, Kalifiye işçilerden Kayserililer; Doğu Anadolu Bölgesinden inşaat işçisi Karslılar; Güneydoğu Anadolu Bölgesinden tarım sektöründe iş bulabilen Mardinlilerle başlamıştır. İzmir'e 1960'tan 1965'e kadar Ege Bölgesinden (Manisa, Aydın, Uşak, Afyon'dan), İç Anadolu'dan Konya ve Doğu Anadolu Bölgesinden Erzurum'dan göç yaşanırken; 1965'ten sonra Doğu ve Güneydoğu Anadolu Bölgesi ile İç Anadolu Bölgesi illeri artış göstermiştir. Karadeniz Bölgesinden göç son derece azdır. Bu bölgeden göçler daha çok İstanbul'a olmaktadır. İzmir kent yerleşim düzeni içinde çeşitli illerden gelenler çeşitli semtlerde yoğunlaşmışlardır.

Ekonomik, sosyal ve siyasal nedenlerle ortaya çıkan göç hareketleri, genel olarak, dış göç ve iç göç şeklinde sınıflandırılır. Dış göç, özellikle, az gelişmiş ülkelerden gelişmiş ülkelere doğru olan bir akıştır. İç göç de, ülke içinde kır-kır, kır –kent, kent-kent ve kent-kır yönünde ortaya çıkar (Çelik,2002, s.275).

Göç olgusu, birey ve toplum hayatında çok önemli bir kırılmaya neden olmaktadır. Bu süreçte birçok şey yeniden düşünülmekte ve yeniden yapılandırılmaktadır. Göçmenlerin eğitim düzeylerinin yükselmesi onların kentsel kurumlarla ilişkisini ve kentsel faaliyetlere katılımını arttırmaktadır. Özellikle Doğu ve Güneydoğudan gelen bu ailelerde konuşulan dil Kürtçe ve Zazacadır. Suriye'den gelen ailelerin konuştuğu diller arasında ise Arapça yer almaktadır. Yapılan görüşmelerde bu ailelerin pek çoğunun ikidilli olduğu görülmektedir.

İngilizce karşılığı ''bilingualism'' olan ikidillilik hem bireysel hem de toplumsal nitelikli bir kavramdır. Bu kavram hakkında çeşitli tanımlamalar yapılmıştır. Vardar (1980, s. 93), ikidilliliği şu şekilde tanımlamaktadır: "Bir bireyin iki dili bilmesi veya bir toplumda iki dil kullanılması durumudur''. Aksan'da (1998, s. 26) Vardar'ın yaptığı tanıma benzer bir açıklama yapmaktadır: "Dilbilimde bireyin çeşitli nedenlerle ve değişik koşullar altında birden fazla dili edinmesi, kullanması ya da ikinci bir dili anadiline yakın bir düzeyde öğrenmesi durumuna ikidillilik adı verilir."

İkidillilik durumu psikolojik, sosyolojik ve eğitsel konularda çeşitli sorunlara neden olmaktadır. Türkiye'de toplumsal ve kurumsallaşmış ikidillilik yoktur. Siyasi sınırlarımız içerisinde başka diller konuşulmaktadır. Ancak, bu diller resmi dil konumunda değildir. Türkçe, halkımızın büyük çoğunluğunun anadilidir (İmer,1990, s. 166). Birçok ülke, tek bir resmi dile sahip olsa bile bu ülkelerde sadece o resmi dilin konuşulduğunu söylemek güçtür. Azınlık dilleri denilen farklı dilleri konuşan kişiler birçok ülkede vardır. Aynı durum Türkiye için de söz konusudur. Resmi dilimiz Türkçe olmasına rağmen; Kürtçe, Lazca, Zazaca, Arapça gibi yerel halkın konuştuğu diller günümüzde en azından aile ortamında konuşulmaktadır. Haskara'nın da belirttiği gibi eğer bireyin anadili resmi dil değilse, evde ve aynı dilsel azınlıkta olan birisiyle konuşurken kişiler, çoğu zaman kendi anadillerini kullanmaktadırlar (1996, s. 23). Bu durum da zaman zaman beraberinde anadili Türkçe olmayan çocukların okullarda Türkçe öğrenimlerinde çeşitli sorunlarla karşılaşmalarına neden olmaktadır.

İleri (2000), ikidilli göçmen çocuklarının dil gelişimleri ile ilgili olarak ikidilliliğin gelişiminde üç aşama olduğunu belirtmektedir. Birinci aşama (alt aşama); çocuk hem anadili hem de ikinci dili tam olarak bilmemektedir. Bu durumda çocuk yarım dillidir. Her iki dildeki yetersizlik, hem düşünme yeteneğini hem de zekâ gelişimini olumsuz olarak etkilemektedir. İkinci aşamada (orta aşama); çocuk her iki dili de iyi bilmektedir. Ancak dillerden birinin anadili gibi iyi bilinmesi çocuğun düşünme yeteneğini ve zekâsının gelişimini olumsuz yönde etkilemektedir. Üçüncü aşamada ise (üst aşama); çocuk her iki dili de anadili gibi çok iyi bilmektedir. Bu durum da çocuğun hem düşünme hem de zekâ yeteneğini arttırmaktadır. Göçmenlerin geldikleri yeni yerleşim yerlerindeki yaşama uyumunda iletişimin temel unsuru olan dil en temel araçtır. O halde bu çocuklara uygun yöntemlerle Türkçe öğretimi yapılarak çocuğun düşünme ve zekâ yeteneğini geliştirici bir program uygulanmalıdır. Bu çocukların eğitim-öğretimin daha sonraki yıllarında, iş yaşamında kullanacakları dilde etkin olmaları gerekir. Türkçe; onlar için yaşam boyu gerekli olacak, iletişim kuracakları dildir.

Dil yapısı, sosyal tabakalarda farklı şekillerde kazanılmaktadır. Özellikle alt sosyal tabakada dil yapısının diğer sosyal tabakalara oranla ayrımlaşmamış olduğu ortaya çıkarılmıştır (Yılmaz,1974, s.38).

Ailedeki katman ayrımı, ailelerin dil kullanımlarına da yansımakta ve bu ailelerde doğup büyüyen çocukları da etkilemektedir. Göçmenlerin eğitim düzeyinin yükselmesine paralel olarak aile ortamında Türkçe konuşma oranında artış görülmektedir. Ancak sabahın erken saatlerinden akşamın geç saatlerine kadar beden gücüyle çalışan bireylerin oluşturduğu bir ailede yetişen çocuklar ailelerinden dilsel açıdan olumsuz yönde etkilenmektedir. Bu yüzden bu çocuklar okul yaşamlarında dil becerileri ile ilgili bir takım sorunlar yaşamaktadır.

Bu araştırmanın amacı; ortaokul 5., 6., 7. ve 8. sınıflarda görev yapan Türkçe öğretmenlerinin görüşlerine göre "Göçle gelen öğrencilerin Türkçe dersinde yaşadığı sorunları" tespit etmektir. Amaca bağlı olarak şu alt problemler oluşturulmuştur:

1. Öğretmen görüşlerine göre "Göçle gelen öğrencilerin öğretmen açıklamalarına ilişkin olarak tepkileri" nasıldır?

1. Öğretmen görüşlerine göre "Göçle gelen öğrencilerin Türkçe öğrenme sürecinde yaşadığı sorunlar" nelerdir?

YÖNTEM

Bu araştırma Türkçe öğretmenlerinin görüşlerini tespit etmeye yönelik olduğundan nitel araştırma yöntemi tercih edilmiştir (Kuş, 2003; Ekiz, 2009; Büyüköztürk ve diğ. 2012; Yıldırım & Şimşek, 2013; Christensen, Johnson ve Turner, 2015). Nitel araştırma yöntemi kapsamında da durum çalışması deseni tercih edilmiştir (Büyüköztürk ve diğ. 2012, s.21).

EVREN ÖRNEKLEM

Araştırma, 2015-2016 eğitim öğretim yılında İzmir'in Buca ilçesindeki ortaokullarda 5. 6. 7. ve 8. sınıflarda görev yapan Türkçe öğretmenleri ile gerçekleştirilmiştir (n=75). Katılmcılardan 46'sı kadın, 29'u ise erkektir. Örneklemin tespitinde kolay ulaşılabilir örnekleme yöntemi tercih edilmiştir (Yıldırım ve Şimşek, 2013). Milli Eğitim Müdürlüğü ile yapılan görüşmelerde İzmir'in Buca ilçesinde göçmen öğrencilerin yoğun olduğu okullar tespit edilmiş. Bu okullardan 20 tanesi tesadüfi bir şekilde seçilmiştir.   Okullar tek tek ziyaret edilerek gönüllü olan öğretmenlerden açık uçlu soru anketinde yer alan soruları yanıtlamaları istenmiştir.

VERİ TOPLAMA ARACI

Çalışma verilerinin elde edilmesinde araştırmacılar tarafından hazırlanmış olan açık uçlu soru anketi kullanılmıştır. Soruların oluşturulması için alan yazın taraması yapılmış ve iki soru hazırlanmıştır. Hazırlanan açık uçlu sorular alanında uzman 3 öğretim üyesi ve 4 Türkçe öğretmeninin görüşüne sunulmuştur. Gelen dönütler doğrultusunda düzeltilen anket 2 açık uçlu soru ve kişisel bilgiler formundan oluşmaktadır.

VERİ ANALİZİ

Açık uçlu soru anketi aracılığı ile öğretmenlerden elde edilen görüşler bilgisayar ortamına aktarılmış ve iki araştırmacı tarafından ayrıntılı bir şekilde okunmuştur. Veriler içerik analizine tabi tutulmuş ve yine her iki araştırmacı tarafından ayrı ayarı kodlar belirlenmiştir. Ortaya çıkan kodlar karşılaştırılmış daha sonra Miles ve

Huberman'ın (1994) güvenirlik formülü kullanılarak "Güvenirlik = Görüş Birliği/ (Görüş Birliği +Görüş Ayrılığı)" görüş birliği yüzdesi hesaplanması yapılmıştır. Hesaplamalar sonucunda soruların tümünün görüş birliği yüzdesinin 88,62'ın üzerinde olduğu tespit edilmiştir. Birbiri ile ilişkili kodlar bir araya getirilmiş ve temalar oluşturulmuştur. Öğretmenlerin kodlara ilişkin görüşleri ve frekansları ortaya koyulurken ortak ifadeler belirlenmiş bunlar tablolar halinde sunulmuştur.

BULGULAR VE YORUM

Araştırmadan elde edilen veriler ışığında "öğrencilerin ilgili olması, istenmeyen davranışlar ve disiplini bozucu davranışlar" kodlarına ulaşılmıştır. Bu kodların bir araya getirilmesiyle "tepkisel çeşitlilik" teması ortaya çıkmıştır. Araştırmanın ikinci alt problemi kapsamında ise "benlik algısı, Türkçenin yapısını çözememe, sosyo-kültürel sorunlar ve öğretmenlerin önerileri" kodları belirlenmiştir. Birbiri ile ilişkili bu kodların bir araya getirilmesiyle "dil öğrenmeye ilişkin yapısal sorunlar" temasına ulaşılmıştır. "Tepkisel Çeşitlilik" ve "Dil Öğrenmeye İlişkin Yapısal Sorunlar" temaları kapsamında yer alan kodlar ve bunlardan alıntılarına ilişkin bilgiler aşığada sunulmaktadır.

Birinci Alt Probleme İlişkin Bulgular ve Yorum

Araştırmanın birinci alt problemine cevap bulmak amacıyla Türkçe öğretmenlerine "Göçle gelen öğrenciler sizin dersle ilgili yaptığınız açıklamalara nasıl tepkiler veriyorlar?" sorusu sorulmuştur. Yapılan içerik analizi sırasında birinci alt problem kapsamında "ilgili olma, istenmeyen davranışlar ve disiplini bozucu davranışlar" kodları belirlenmiştir. Birbiri ile ilişkili bu kodların bir araya getirilmesiyle "tepkisel çeşitlilik" temasına ulaşılmıştır. "İlgili Olma" koduna ilişkin elde edilen alıntılar Tablo 1'de sunulmuş açıklama ve yorumlara yer verilmiştir.

Tablo 1: İlgili Olma Koduna İlişkin Öğretmen Görüşleri

Öğretmen Görüşleri	f	%
Öğrenciler derse yönelik ilgililer.	9	12
Anlamadıkları açıklamaların tekrar edilmesini istemektedirler.	5	6,6
Anladıkları kadarı ile katılım göstermektedirler.	5	6,6
Dersi anlamaya çalışıyorlar.	3	4
Açıklamalara uygun tepkiler gelmektedir.	3	4
Bu öğrenciler diğer öğrencilerden daha ilgililer.	3	4
Sınıf içerisinde çekingen tutum sergilemiyorlar.	2	2,6
İletişim kurmakta zorlandıklarında kendi arkadaşlarından yardım alıyorlar.	2	2,6
Anlamadıklarını beden dili ile anlatıyorlar.	1	1,3
Toplam	**32**	**42,66**

Tablo 1 incelendiğinde araştırmaya katılan 9 öğretmenin (% 12) öğrencilerin Türkçe dersine ilgi gösterdiğini belirttiği görülmektedir. Bu durum göçmen öğrencilerin bir kısmının Türkçe dersine ilgi gösterdiğini ortaya koyabilir. Katılımcılardan 5'i (% 6,6) öğrencilerin anlamadıkları açıklamaları tekrar etmesini istediklerini belirtirken, yine 5 katılımcı (% 6,6) göçmen öğrencilerin Türkçeyi anladıkları ölçüde katılım gösterdiğini ifade etmektedir. Bu açıklamalar göçmen öğrencilerin bazılarının derse katılma çabalarının olduğunu ancak Türkçe anlama ve konuşma sorunu ile beraber sınırlı düzeyde katılabildiklerini göstermektedir. Öğretmenlerden 3'ü (% 4) ise göçmen öğrencilerin dersi anlamaya çalıştıklarını; 3'ü (% 4) kendi açıklamalarına uygun dönütler geldiğini; 3'ü de (%4) göçmen öğrencilerin diğer öğrencilerden daha ilgili olduklarını belirtmektedir. Bu alıntılar göçmen öğrencilerin bir kısmının Türkçe dersini anlamak için oldukça ilgili olduğunu ortaya koymaktadır. Katılımcılardan 2'si (% 2,6) göçmen öğrencilerin iletişim sorunları karşısında kendi arkadaşlarından yardım aldığını; 2'si (% 2,6) iletişim kurmak için beden dilini kullandıklarını belirtmektedir. Göçmen öğrencilerin bir kısmının derste kendini ifade etmek için farklı yollar kullandıkları ve derse katılım konusunda istekli oldukları ifade edilebilir. "İstenmeyen davranışlar" koduna ilişkin olarak tespit edilen öğretmen görüşleri Tablo 2'de verilmiştir.

Tablo 2: İstenmeyen Davranışlar Koduna İlişkin Öğretmen Görüşleri

Öğretmen Görüşleri	f	%
Yapılan açıklamayı anlayamıyorlar.	19	25,3
Sessiz kalmaktadırlar.	10	13,3
Derse yönelik ilgisizler.	5	6,6
Anlamadıklarını belli etmek istememektedirler.	3	4
Dersi anlamadıkları için başarıları düşük.	3	4
Katılım göstermemektedirler.	2	2,6
Türkçe öğrenmeyi gereksiz görmektedirler.	3	4
Basit sorulara yanıt vermeyi tercih etmektedirler.	2	2,6
Anlamadıkları için canları sıkılıyor.	2	2,6

Kendini sözel olarak anlatmada sorun yaşamaktadırlar.	2	2,6
Geç tepki veriyorlar.	1	1,3
Anladıklarını anlatmada sorun yaşamaktadırlar.	1	1,3
Dinlediklerini yazamamaktadırlar.	1	1,3
İfade güçlüğü yaşamaktadırlar.	1	1,3
Anlaşılması güç tepkiler veriyorlar.	1	1,3
Toplam	**56**	**70,6**

   Tablo 2'de katılımcıların görüşleri incelendiğinde 26 öğretmen (% 34,6) göçmen öğrencilerin yapılan açıklamayı anlamadıklarını belirttiği görülmektedir. 10 öğretmen (% 13, 3) ise göçmen öğrencilerin derste sessiz kaldığını ifade etmektedir. Bu iki görüş doğrultusunda göçmen öğrencilerin bir kısmının Türkçe dersini anlamadıkları ve derste sessiz kaldıkları ifade edilebilir. 5 Öğretmen (% 6,6) öğrencilerin ilgisizliğinden yakınmaktadır. 3 öğretmen (% 4) Göçmen öğrencilerin dersi anlamadıklarını gizlemeye çalıştıklarını; 3 öğretmen (% 4) başarılarının düşük olduğunu; 2 öğretmen (% 2,6) bu öğrencilerin katılım göstermediklerini; 1 öğretmen (% 1,3) geç tepki verdiklerini; yine 1 öğretmen de anlaşılması güç tepkiler verdiklerini belirtmektedir. Genel olarak "istenmeyen davranışlar" kodu kapsamında göçmen öğrencilerin derse katılmama konusunda ortaya koyduğu davranışların belirlenmiştir. Göçmen öğrencilerin Türkçe dersinde sergilemiş olduğu bu davranışlar öğretmenler tarafından rahatsız edici bir şekilde karşılanmaktadır.

Tablo 3: Disiplini Bozucu Davranışlar Koduna İlişkin Öğretmen Görüşleri

Öğretmen Görüşleri	**f**	**%**
Devamsızlık yapmaktadırlar.	2	2,6
Anlamadıkları için sınıf düzenini bozmaktadırlar.	1	1,3
Kavga çıkarmaktadırlar.	1	1,3
Ders saatinin fazla olmasından şikâyet etmektedirler.	1	1,3
İletişim kuramadıkları için diğer öğrencileri rahatsız etmektedirler.	1	1,3
Toplam	6	8

Tablo 3'te 2 öğretmenin görüşüne göre göçmen öğrencilerin bir kısmı devamsızlık yapmakta; 1 öğretmenin görüşüne göre Türkçe dersini anlamadıkları (ya da Türkçeyi iyi bilmedikleri) için sınıf düzenini bozucu davranışlar sergilemektedirler. Araştırmaya katılan 1 öğretmen göçmen öğrencilerin kavga çıkardığını; 1 öğretmen de iletişim sorunu yaşadıkları için diğer öğrencileri rahatsız ettiklerini belirtmiştir. "Disiplin bozucu davranışlar" kodu kapsamında göçmen öğrencilerin ders sürecinde ya da arkadaşlarına yönelik olarak rahatsız edici davranışları belirlenmiştir. Bu öğrenciler temelde Türkçeyi iyi bilmediği ve kendini ifade edemediği için saldırgan y ada rahatsız edici tavırlar sergilemektedir.

İkinci Alt Probleme İlişkin Bulgular ve Yorum

Araştırmanın ikinci alt problemine cevap bulmak amacıyla Türkçe öğretmenlerine "Göçmen çocukların Türkçe öğrenme sürecini gözlemlediğinizde dikkatinizi ne gibi sorunlar çekmektedir?" sorusu sorulmuştur. Yapılan içerik analizi sırasında ikinci alt problem kapsamında "benlik algısı, Türkçenin yapısını çözememe, sosyo-kültürel sorunlar" kodları belirlenmiş, birbiri ile ilişkili bu kodların bir araya getirilmesiyle "dil öğrenmeye ilişkin yapısal sorunlar" temasına ulaşılmıştır. "Benlik Algısı" koduna ilişkin olarak elde edilen alıntılar Tablo 4'te sunulmuş, açıklama ve yorumlara yer verilmiştir.

Tablo 4: Benlik Algısı Koduna İlişkin Öğretmen Görüşleri

Öğretmen Görüşleri	**f**	**%**
Derse ilişkin düşük motivasyona sahipler.	2	2,6
Yeterince özgüvene sahip değiller.	2	2,6
Toplam	**4**	**5,3**

Tablo 4 incelendiğinde araştırmayan katılan öğretmenlerden 2'sinin (%2,6) göçmen öğrencilerin Türkçe dersinde motivasyonlarının düşük olduğunu belirttikleri görülmektedir. Diğer taraftan yine 2 öğretmen (2,6) de bu öğrencilerin özgüven sorunu yaşadıklarını ifade etmektedir. Bu ifadeler doğrultusunda göçmen öğrencilerin bir kısmının benlik algılarına yönelik olarak olumsuz duygu ve düşünceler taşıdıkları söylenebilir. "Türkçenin yapısını çözememe" koduna ilişkin olarak tespit edilen öğretmen görüşleri Tablo 5'te sunulmaktadır.

Tablo 5: Türkçenin Yapısını Çözememe Koduna İlişkin Öğretmen Görüşleri

Öğretmen Görüşleri	f	%
Türkçeye özgü yapıları anlama konusunda sorun yaşamaktadırlar.	7	9,3
Türkçenin yapısına özgü anlatımlarda sorun yaşamaktadırlar	7	9,3
Türkçeye temel düzeyde de olsa hâkim değiller.	4	5,3
Kelimelerin anlamını bilmiyorlar.	3	4
Mecaz ve atasözlerindeki anlatımları anlayamamaktadır.	3	4
Türkçe dilinin yapısını çözememektedir.	2	2,6
Türkçeyi kendi dillerine uyarlamaya çalışmaktadırlar.	2	2,6
Kelimeleri doğru yazamamaktadırlar.	1	1,3
Toplam	**29**	**38,6**

Tablo 5'e göre 7 öğretmen göçmen öğrencilerin Türkçeye özgü yapıları anlamakta sorun yaşadıklarını ifade etmektedir. Öğretmenlerden 7'si bu öğrencilerin 'Türkçenin yapısına özgü anlatımları kullanmakta sorun yaşadıklarını; 4'ü Türkçe kullanmaya hâkim olamadıklarını; 3'ü kelimelerin anlamanı bilmediklerini; 3'ü mecaz ve atasözlerini anlayamadıklarını; 2'si Türkçeyi kendi dillerine uyarlamaya çalıştıklarını; 1'i ise kelimeleri doğru yazamadıklarını belirtmektedir. Bu öğrenciler anlatımlarında Türkçe kullanırken çok ciddi sorunlar yaşamaktadırlar. Bu durumun Türkçeyi etkilemesi olasılığı da göz önüne alınması gereken durumlara arasındadır. "Sosyo-kültürel sorunlar" koduna yönelik olarak belirlenmiş olana öğretmen görüşleri Tablo 6'da verilmektedir.

Tablo 6: Sosyo-Kültürel Sorunlar Koduna İlişkin Öğretmen Görüşleri

Öğretmen Görüşleri	f	%
Kimlik/aidiyet sorunu yaşıyorlar.	8	10,6
Ailede kullanılan dil ile çocuğun okulda öğrendiği dil çatışıyor.	6	8
Ülkemize adaptasyon sorunu yaşıyorlar.	2	2,6
Okul ile günlük yaşam arasında ilişki kuramıyorlar.	1	1,3
Toplam	**17**	**22,6**

Tablo 6 incelendiğinde 8 öğretmenin göçmen öğrencilerin kimlik/ait olma sorunu yaşadıklarını ifade ettiği görülmektedir. Araştırma verilerine göre 6 öğretmen ailede kullanılan dil ile okulda öğrenilen dilin çatıştığını; 2 öğretmen bu öğrencilerin Türkiye'ye adapte olamadıklarını ortaya koymuştur. Bu veriler ışığında göçmen öğrencilerin Türkiye'ye adapte olma konusunda önemli sorunlar yaşadıklarını söylemek mümkündür. Göçmen öğrencilerin Türkçeyi öğrenme konusunda öğretmenlerin ortaya koyduğu öneriler "öğretmenlerin önerileri" kodu kapsamında, Tablo 7'de sunulmaktadır.

Tablo 7: Öğretmenlerin Önerileri Koduna İlişkin Görüşleri

Öğretmen Görüşleri	f	%
Türkçe öğretimi için dilimizin en temel kurallarından başlanması gerekir.	5	6,6
Küçük yaşta oldukları için çabuk öğrenmektedirler. Bu nedenle farklı yaş grupları için farklı dil öğretim programları geliştirilmeli.	2	2,6
Sosyal çevrede daha hızlı öğrenebilmektedirler. Dil öğretiminde kendi yaş gruplarından yardım alınmalı	2	2,6
Türkçe öğretimi oyun içinde gerçekleştirilirse daha başarılı sonuçlar elde edilebilir.	2	2,6
Yabancılara Türkçe öğretimi hakkında bir eğitim almadığım için öğrencilere yeterli olduğumu düşünmüyorum. Türkçe öğrenmede derme çatma bir eğitim oluyor. Öğrenci de isteksiz olunca başarıya ulaşılamıyor. Yabancı uyruklu öğrencilere baştan Türkçe öğretilmeli Türkçe biliyorlarmış gibi davranılmamalı.	2	2,6
Okullarda bu öğrencilerin adaptasyon sürecini hızlandıracak çalışmalar arttırılmalı.	1	1,3
Kitaplar zor ve ağır geliyor. Göçmen öğrencilere yönelik Türkçe ders kitapları hazırlanmalı.	1	1,3
Toplam	**15**	**20**

Tablo 7 incelediğinde 5 öğretmenin göçmen öğrencilere Türkçe öğretiminde temel kurallardan başlanması gerektiğini vurguladığı görülmektedir. 2 öğretmen göçmen öğrencilerin yaş sevilerine uygun Türkçe öğretim programlarının geliştirilmesini; 2 öğretmen akran grupları yardımı ile dil eğitimlerinin desteklenmesini; 2 öğretmen dil öğretiminde oyundan yararlanılmasını; 1 öğretmen de okulların adaptasyon konusunda çalışmalar yapmasını önermektedir. Genel olarak öğretmenlerin göçmen öğrencilerin Türkçe öğrenmesini kolaylaştıracak öneriler ortaya koyduğunu söylemek mümkündür.

SONUÇ VE TARTIŞMA

Araştırmanın "ilgili olma" kodundan elde edilen sonuçlara göre 33 öğretmen (% 44) öğrencilerin Türkçe dersine yönelik olarak öğrencilerin ilgili olduklarını belirtmiştir. Bu öğretmenlerin görüşlerine göre öğrenciler derse katılım göstermek için anlamadıkları konuların açıklamalarının tekrar edilmesini istemekte (9 öğretmen-% 12); öğretmenin açıklamalarına uygun tepkiler ortaya koymakta (3 öğretmen-% 4); derse anadili Türkçe olan öğrencilerden daha fazla ilgi göstermekte (3 öğretmen-% 4); iletişim kuramadıklarında ise ya arkadaşlarından yardım almakta (2 öğretmen-% 2,6) ya da beden dilini kullanmaktadır (1 öğretmen-% 1,3). Araştırmaya dâhil öğretmenlerin bir kısmına göre göçmen öğrenciler Türkçe dersine katılmak için hem öğretmeninden yardım almakta hem de kendilerince çabalamaktadırlar.

"İstenmeyen davranışlar" kodu kapsamında 63 öğretmenin (% 84,66) görüşüne göre göçmen öğrenciler derste Türkçeyi öğrenmek için gereken duyarlılığı ve çabayı göstermemektedir. Katılımcılara göre bu öğrenciler derste yapılan açıklamaları anlamamakta (26 öğretmen-%34,6), sessiz kalmakta (10 öğretmen-% 13,3) ve Türkçe öğrenmeyi de gereksiz görmektedir (2 öğretmen-% 2,6). Derse katılım göstermemekte (2 öğretmen-% 2,6) ya da basit sorulara yanıt vermeyi tercih etmektedirler (2 öğretmen-% 2,6). Genel olarak "istenmeyen davranışlar kodu incelendiğinde göçmen öğrencilerin Türkçe dersini öğrenmek için gereken çabayı göstermedikleri söylenebilir. Alan yazınında konuyla ilgili çalışmalar kendi kültüründen farklı bir kültürle karşılaşan bireylerin dil ve eğitim alanında sorunlar yaşadığını ortaya koymaktadır (Badawi, 1993; Söylemez, 1999; Akkaya,2011). Ancak Türkçe dersinin temel beceri alanları olan okuma, yazma, konuşma ve dinlemeyi geliştirmede ne kadar etkili olduğu göz önüne alınırsa üzerinde önemle durulması gereken bir tablo ortaya çıkmaktadır. Türkçe dersinin etkili bir şekilde öğrenilmesi diğer derslerdeki başarı durumunu da aynı ölçüde etkileyecektir. Göçmen öğrenciler bu bilinçten uzak bir şekilde hareket etmekte ve kendini ifade etmekte sorun yaşamaktadırlar. Göçer'inde (2010) ifade ettiği üzere eğitim-öğretim hayatında; öğrencilere eğitim dilini sevdirmek, öğrencilerin temel dil becerileriyle ilgili gelişimlerini sağlamak eğitim-öğretim hayatında önemlidir. Bu şekilde öğrenme ve öğretme ortamı öğrenciler için daha cazip hâle gelmektedir.

"Disiplini bozucu davranışlar" koduna ilişkin olarak elde edilen alıntılar Tablo 3'te sunulmuş açıklama ve yorumlara yer verilmiştir.

"Disiplin bozucu davranışlar" kodu kapsamında 6 öğretmenin (% 8) görüşüne göre göçmen öğrencilerin Türkçe dersinin işlenişini ve arkadaşları ile olan ilişkilerini olumsuz etkileyen bir takım davranışlar sergilemektedir. Bu davranışlar zaman zaman kavga çıkarma boyutuna dahi ulaşabilmektedir. Öğrencilerin bu tip davranışlarının altında yatan nedenin anlaşılma ve kendini anlatmadan yoksunluk durumu olduğu olasılığı göz ardı edilmemelidir. Kendini yeterince ifade edemeyen öğrenci dikkat çekmek için bu tarz davranışlar içine girebileceği gibi okulu tamamen reddetme tavrı da takınabilir. Genellikle bu tarz istenmeyen davranışlar öğrencinin kendini yapılacak bir işi olmadığını düşünmesinden, yaptığı işi ilginç bulmamasından ya da öğrencilerin öğretmenle sağlıklı iletişim kuramamasından kaynaklanmaktadır (Balay ve Sağlam;2008).

"Benlik algısı" kodu kapsamında 4 öğretmen (% 5,3) görüş belirtmiş ve bu öğrencilerin motivasyonlarının ve özgüvenlerinin düşük olduğunu ifade etmiştir. Göçmen öğrencilerin Türkçe öğrenme, Türkçeyi anlama ve kendini Türkçe anlatma konusunda yaşamış olduğu sorunlar onların derse yönelik olarak motivasyonlarını olumsuz yönde etkilerken kendilerine de güven duymamalarına neden olmaktadır. Ergenliğe geçiş ya da ergenlik dönemi içerisinde olan 5, 6, 7 ve 8. sınıf öğrencilerinin özgüven sorunu yaşamları gelecekte yapacakları seçimler üzerinde de sıkıntılar yaratabilir. Benlik algısı yüksek bireylerin iletişim ve sorunlarla baş edebilme becerileri de yüksektir (Razı, Kuzu, Yıldız, Ocakcı ve Arifoğlu; 2009).

"Türkçenin yapısını çözememe" koduna yönelik olarak araştırmaya katılan 29 öğretmen (%38,6) göçmen öğrencilerin Türkçenin yapısına uygun bir şekilde konuşmadıklarını belirtmiştir. Öğrenciler Türkçedeki kalıpları kullanmada (7 öğretmen-9,3); mecaz ve atasözlerini anlamada (3 öğretmen-%4); kelimeleri doğru yazmakta (1 öğretmen-% 1,3) çok ciddi sorunlar yaşamaktadır. Her dil kendi kültürünün ve yaşam biçiminin bir ürünüdür. Farklı bir kültürden gelen göçmen öğrenciler Türkçenin yapısal özelliklerini anlamakta zorlanmaktadır. Diğer taraftan bu öğrencilerin kendi dillerini yazarken farklı bir abece kullandıkları da göz önüne alındığında Türkçenin bu öğrenciler tarafından anlamlandırılması ve yazılması bu öğrenciler için oldukça zor olmaktadır. Küçük yaşta Türkiye'ye göç etmiş olan öğrenciler Türkçeyi ince ayrıntıları ile öğrenme konusunda daha başarılı olabilir ancak yaşları ilerlemiş olan öğrenciler için sınıf düzeyi durumun böyle olduğunu söylemek pek mümkün değildir. Göçmen öğrencilerin Türkçeyi yapısal özelliklerine uygun bir şekilde öğrenmesi dilimizin korunması açısından da önemli bir durum olarak ortaya çıkmaktadır. Göçmen öğrencilerin Türkçe konuşması adına bir takım ödünler verilmesi geri dönülmez sorunları tetikleyebilir.

"Sosyo-kültürel sorunlar" koduna yönelik olarak 17 öğretmen (% 22,6) ortaya koydukları görüşlerle göçmen öğrencilerin Türkiye'ye adapte olmakta zorlandıklarını belirtmiştir. Öğretmenlerden (8 öğretmen-%10,6) bir kısmına göre bu öğrenciler aitlik duygusuna ilişkin önemli sorunlar yaşamaktadır. Ait olma insanın doğası gereği önemli bir duygudur. Kendisine ait olduğunu düşündüğü ya da kendisine aitlik hissi veren şeyler için fedakârlık yapabilir. Aitlik duygusu dil öğrenme ile birlikte çok boyutlu ele alınması gereken bir konudur. Türkiye'nin son

yıllarda çeşitli nedenlerden dolayı karşılaşmış olduğu göçmenlerin ve onların yaşadığı sorunların ülkenin geleceğinin planlanmasında hassasiyetle ele alınması oldukça önemlidir.

"Öğretmenlerin önerileri" koduna yönelik olarak 15 öğretmenin (%20) işlevsel bir şekilde öneriler/öneriler ortaya koyduğu tespit edilmiştir. Öğretmenlere göre göçmen öğrencilere dilin temel kuralları verilmeli (5 öğretmen-% 6, 6); yaş grupları dikkate alınarak programlar oluşturulmalı (2 öğretmen-% 2,6); oyun içerisinde eğitim yapılmalı (2 öğretmen-% 2,6); okullar bu öğrencilerin adaptasyon sürecine daha fazla katkı sağlamalı (2 öğretmen-% 2,6) ve göçmen öğrencilere özel Türkçe ders kitapları geliştirilmelidir (1 öğretmen-% 1,3). Göçmen öğrencilerle birebir görüşme fırsatı bulan ve onların Türkçe öğrenme sorunlarını gözlemleme durumunda olan öğretmenlerin önerilerinin dikkate alınması etkili bir Türkçe öğretimi programının hazırlanmasına ve uygulama sürecinin yaşanmasına katkı sağlayabilir. MEB'in uygulayıcı konumundaki öğretmenlerin görüşlerini özel olarak önemsemesi bu öğrencilerin yaşadığı sorunların en aza indirilmesinde etkili olabilir.

Araştırma sonucunda şu öneriler geliştirilmiştir: Eğitimin her kademesinde göçmen öğrencilere yönelik öğretmen görüşlerine başvurulmalı; öğretmenlerin bu öğrencilerle ilgili yaşadıkları sorunlar öğretmenlerin gözüyle araştırılmalıdır. Göçmen öğrenciler arasında da yapılan benzer çalışmaların sayısı artırılmalı, göçmen öğrencilerin ve göçmen öğrencilere sahip öğretmenlerin eğitim-öğretim ortamında karşılaştıkları sorunlar ortaya konulmalı, sorunlara yönelik çözüm önerileri geliştirmek amacıyla araştırmalar yapılmalıdır. Bu konuda yapılacak araştırmaların farklı yönlerden sayısının arttırılması sorunların farklı bakış açılarıyla ortaya konmasını sağlayacak ve pek çok çözüm önerilerini de beraberinde getirecektir.

Akran grubu, aile, okul ve diğer toplumsal faktörler bireysel özellikleri etkilemektedir. Bu bireysel özelliklerden bir bölümü, yaş, cinsiyet ve ırk/etnik köken gibi değişkenlerdir. Bir bölümü de depresyon, kaygı ve benlik saygısı gibi daha çok psiko-sosyal değişkenlerdir (Kapıcı, 2004) eğitim sisteminde göçmen öğrencilerin bireysel ve psiko-sosyal değişkenleri göz önünde bulundurulmalı, Türkçe dersine başlamadan önce bu değişkenlere bağlı olarak öğrencilerin ülkeye ve eğitim dili olan Türkçeye adaptasyonu hızlandırılmalıdır. Bu şekilde ülkemizde sayısı gittikçe artmakta olan göçmen öğrencilerin adaptasyon süreçlerinin sağlıklı bir şekilde tamamlanması, öğrencilerin birbirlerini daha iyi anlaması, birbirleriyle daha etkili iletişim kurması, birbirleriyle ortak değerler oluşturması sağlanabilir. Öz'ün de (2004) ifade ettiği üzere sağlam benlik saygısına sahip olan birey, yaşamında mutluluğu bulur, yolunda gitmeyen durumların üstesinden gelir ve koşulları değiştirebilir.

Öğrencilerin olumsuz davranışları bireysel olanlar, arkadaşları ile ilgili olanlar ve öğretmenle ilgili olanlardır (Celep, 2002). Göçmen öğrencilerin Türkçe dersinde göstermiş oldukları olumsuz davranışlarının kaynağı tespit edilmeli ve olumsuz davranışları azaltacak çalışmalar yapılmalıdır. Göçmen öğrencilerin sorunlarından biri olan aidiyet duygusunun yetersizliğinden kaynaklı olumsuz davranışları azaltmak üzere öğrencilere sosyal bir çevre, öğrencilerin akranlarıyla kardeşçe iletişim kurabileceği, göçmen öğrencilerin özgüveninin ve iletişim becerilerinin gelişmesine katkı sağlayacağı bir ortam oluşturulmalıdır.

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GUIDED GROUP PROJECT APPROACH FOR AN ENGINEERING TECHNOLOGY COURSE: PERFORMANCE AND LEARNING OUTCOMES

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ABSTRACT

In differentiating the Engineering and Engineering Technology curriculum, emphasis has almost always been placed on the hands-on and practical problem-solving aspect, of which the latter tips the balance on field implementation expertise. It is, however, difficult in the best of times to differentiate the programmes when the technical contents are of the same nature and the resulting syllabus very similar, if not entirely the same! Working within the outcome-based education framework, one could argue that the actual impact and lasting impression of learning take shape and place with the activities incorporated within a course. It follows that two seemingly similar course contents, if delivered and learned in a different approach and manner, would produce very different results or outcomes in the students. Therefore, intuitively, the intended learning outcome, if supported by tailor-made activities, could be realised effectively with relevant and appropriate assessments. This paper describes an endeavour to ensure attainment of a learning outcome in an Engineering Technology course, i.e. Soil Mechanics and Foundations, via guided group project approach. In groups of 4-5, students were to organize comprehensive design and execution procedures for a related technical problem. Choosing only one, the problems given were wide-ranging and current, including landslides, resue of landfills, deep excavations and foundations in problematic soils. Students were entitled to refer to an actual case study to reassess the problem for a new, innovative solution, or to create an assumed case with the incorporated problems to solve. The project was carried out progressively throughout the 14-week semester, with incremental level of learning and understanding according to the course chapters. Regular meetings with the lecturer, interviews with experts and extensive literature review help steer the students towards producing a creative and innovative yet practical, feasible and contemporary solution. Assessment was based on the technical report, oral presentation as well as visual representation of the design, by a group of panelists from various fields of civil and environmental engineering background. Analysis was performed on the assessed components, targeted learning outcome in conjunction with students' perception of the exercise. All in all the exercise demostrated that guided group activity as this can be expedient in attaining the targeted learning outcome, with emphasis on the practical side of trouble-shooting and innovative solutions, simultaneously highlighting and differentiating from those of an engineering course more inclined for a theoretical approach.

INTRODUCTION

Engineering technology education at university level was introduced in the country some half a decade ago, with an apparent divergence from traditional engineering education where emphasis on practice outweighs that of theory. This is not to say that engineering technology students are not taught the regular tenets of engineering sciences, but the engineering theoretical background is overlain with practical and on-site solutions, further interwoven within the programme and syllabus as well as learning and teaching approaches. It would seem that exposure to real-world teamworking scenarios in handling field problems suits the intended learning outcomes of such hands-on emphasis. In other words, students are guided to engage in student-centred, self-directed and collaborative learning for seeking practical solutions to real-world issues and problems (Brundiers & Wiek, 2011). It is important in such endeavours that students actively participate in the learning process to construct their own knowledge from the learning activities (Blumenfeld et al., 1991). In addition, Hmelo-Silver (2004) explained that the basis of problem-based learning is having problems introduced in class as stimulus for learning, and that the approach is characterized by a much self-study type of learning through problem-solving sessions in small group facilitated by a teacher. Merrill (2012) further elaborated that the unique instructional method is most effective in the context of solving real-world problems by engaging the application of existing knowledge and the activation of new knowledge. Marwan (2015) also found students' heightened interest and engagement in the learning process of an English class incorporated with computer technology.

As examined in the sustainability programme for undergraduates, Brown et al. (2010) highlighted that the problems assigned to students rarely come with ready answers or solutions, but are rather complex without simple, straightforward solutions, i.e. termed 'wicked' problems. It requires high level cognition and problem-solving skills, unlike the basic knowledge recall at lower thinking levels (Chung et al., 2009). The students' enquiry and learning process often lead to other related and complicated problems, which challenge them to conduct in-depth investigations of the existing solutions in terms of feasibility compared to their proposed ideas. This absorbing cycle of learning enables students to forge deeper understanding with improved critical judgments of the topic (Thomas, 2009), and is particularly well received among STEM (science, technology, engineering & mathematics) educators too (Drane et al., 2005). Students are duly given the opportunity to delve into the pseudo-professional world by identifying, analyzing and formulating feasible solutions to a given set of problems within a team, hence honing their professional skills at an early stage of their tertiary education (Yasin & Rahman, 2011).

Learning as a group or team was reportedly developed by Dr. Larry Michaelsen over 2 decades ago for the business school (Parmelee et al., 2012). Formation of the teams can be based on a good gender and experience mix (Thomas & Bowen, 2011), though it is not uncommon to carry over the same group membership from previous engagements (Okubo et al., 2012). Whichever approach is adopted, it is important to remind students of the necessity to embrace differences and exercise tolerance when opinions differ in a group, which likens to real-life working environment for engineering technologists especially. Nonetheless this is not denying the fact that the collaborative efficacy is influenced by team relations and leadership (Fu & Pow, 2011), and teacher interventions when needs arise (Kuiper et al., 2009). Small groups are also expedient in bolstering collaborative learning as students tend to feel more secure and comfortable in a familiar setting with less competition (McLean et al., 2006). This amiable and conducive learning environment is known to produce better performance and learning outcomes among students (Saleh et al., 2007).

The present study adopted the peer-led, problem-oriented learning approach in small group formations (Sperry& Tedford, 2008) for the students' project component in a core civil engineering technology course of Soil Mechanics and Foundations. In groups of 5 or 6 for a class of 31 students, the project was conducted over the 14-week semester with mandatory fortnightly brief meetings with the instructor. Details of the course and project are given below.

THE COURSE AND PROJECT

The Soil Mechanics and Foundation course (BNP20903), is a compulsory core course in the civil engineering technology programme offered at the University. With an approximately equal mix of both genders, the 31 students enrolled in the programme were the pioneer batch, with entry qualification of either diploma, matriculation certificate or Malaysian Higher School Certificate (STPM). The course consists of 5 topics, namely (1) site characterization and earthwork operations, (2) soil's response to loading, (3) design considerations of geo-structures, (4) problematic soils: pre-treatment, (5) geo-environmental concerns and technology. Each topic was delivered in 2-3 weeks, with 2 hours of lecture and 3 hours of labwork per week over the 14-week semester. The project was part of the problem-based semester-long tasks assigned to the students per group. It addressed the course learning outcome of having students 'organize comprehensive design and execution procedures for geotechnical as well as geo-environmental solutions with practical considerations'.

The project was assigned at the beginning of the semester, where students were briefed of the requirements and tasks at hand. The project titles were different for each group (determined by drawing lots among the group leaders):

P1   Climate change and landslides: Is there a relationship?
P2   Climate change and flooding: Are they related?
P3   Solving the geotechnical problem of heaving soils.
P4   Mitigating deep excavation risk to a nearby building.
P5   Saving a building from risk of liquefaction.

The project titles were designed to encourage exploration of information beyond the lecture and syllabus, where students were expected to conduct extensive literature search and review, sieve through the information and data gathered, discuss and debate the compiled information to reach an answer or solution agreed by all in the group. The scope of study engage students in active search for the relationship between the course contents and other influencing factors and conditions, such as environmental and construction issues. Each group would conduct

data collection and analysis, prepare a written technical report and a model or visual aid for demonstration of their findings and solutions, with a mini exhibition-style presentation at the end of the semester. Regular meetings with the facilitator (course lecturer in this case) was organized every fortnightly, though students usually had brief 2-3 minutes' discourse or quick question sessions with the instructor during lecture breaks each week. The assessment during the mini exhibition was carried out by 3 panelists from the civil and environmental engineering background, using a pre-determined assessment rubric. The components of assessment include (1) technical content- 55 %: soundness of solution, technological reasoning, creativity and practicality of solution, cost-effectiveness; (2) model / video / visual aids- 30 %: technical contents, creativity or uniqueness, clarity of presentation; (3) presentation- 15 %: coordination and teamwork, delivery and flow, question and answer session.

Analysis and discourse of the groups' performance in the project are presented in the following sections in conjunction with the learning outcomes. The end-of-project survey also provided information on the students' perception of their individual learning curve experience pertaining to the project. In addition, an examination of the soft skills cultivation was conducted based on the survey response. This was an enhanced aspect of the project where students were exposed to skill sets not normally found in conventional lecture sessions, with the hope that the inherent skills among the students could be further developed, and the new skills learned for future advancement.

THE STUDY: RESULTS AND DISCUSSIONS

Project Outputs

The students have shown noteworthy outputs in the Project. Take for example the solution proposed for the landslides triggered by climatic change (P1). The comprehensive technical report showed analysis of the rainfall records for the recent past decades with relation to the landslide occurrence, severity and damages incurred. Once the relationship was established, the technical solution put forward was a combination of the slope stabilization techniques commonly implemented in the country, i.e. slope surface vegetation coupled with sub-ground drainage and internal stability struts (Figure 1a). Justifications for the combination of techniques selected were from the economic sense, feasibility aspect as well as availability of expertise and materials locally. Similarly for P4, the students examined past failures of projects involving deep excavation to identify the triggering factors, looking up literature in textbook, news archives, library repository and technical publications. The general failure mechanism was next investigated and established to determine the key areas to fortify in prevention against such failures of deep excavations. The proposed solution was an ingenious combination of removable wire mesh baskets filled with rocks stacked up against the excavated pit walls, with additional reinforcement of the exposed dug out pit with soil nails (Figure 1b). Interestingly, the techniques incorporated in the solution were commonplace retaining methods for slope facing, where the required materials, technology and installation skills were not lacking. This made economic sense with no need for costly import of external expertise.

(a) Slope stabilisation   **(b) Safety of deep excavation**

Figure 1: Proposed technical solutions by the students.

Such reasoning proved the student' serious engagement of the Project with remarkable prowess pertaining to reviewing of current conditions of the problem at hand and technical resources available, undertaking of an organized teamwork approach to address the given problem, and formulation of an appropriate solution to the problem based on the information obtained from the research conducted. It was a positive indicator of the expediency brought by the group task, not only in in terms of technical knowledge and competencies' acquisition, but also in developing the soft elements often associated with employability skills desirable in graduates.

Assessment

Figure 2 shows the performance distribution of the students in the primary learning domains, i.e. cognitive, psychomotor and affective. The project targeted the second course learning outcome which addressed the psychomotor component. Apparently students demonstrated the best performance in this learning domain, suggesting the learning tendency and preference of technical students in an engineering technology course, with leanings towards hands-on and practical tasks. As the project called for extensive research beyond the course module, students would be pursuing investigations via other sources of information, including the ubiquitous internet, interviews with experts, published works and past records such as newspaper archives.A large portion of their time allocated for the project would also be dedicated to building the model and visual aids, further exerting a demand on their physical constructive ability and skills, substantiated by necessary prior knowledge and knowhow of the subject matter. Nonetheless, the fact that the students fared relatively less well in the cognitive domain assessed through test and examination seemed to be incongruent with their good performance in the project, seeing that the project contents were closely related with the course contents. A plausible explanation is that individual close-book assessment may not necessarily reflect the students' actual and deeper understanding of the topics, where stress and anxiety can lead to subpar performance in the somber air of an examination hall.

The breakdown of the students' achievement in the psychomotor domain is given in Figure 3. Note that the smaller percentage of marks assigned to the labwork, also contributing to the psychomotor learning domain, appeared to be slightly better achieved by the students. Marks for both tasks were combined to constitute the 35 % psychomotor component of learning in this course. Weighed against the 40 % cognitive domain apportioned for the total assessment, the hands-on prioritization in the course is arguably comparable and inter-supportive. Intuitively the performance record supports earlier observation of the students' predisposition towards hands-on exercises not unrelated with the course contents. Considering that the course is part of an engineering technology programme with emphasis on practical skills, the overall psychomotor learning domain performance corroborated with the aims of the programme and course, especially when the course is a core and compulsory technical one.

Figure 2: Performance per learning domain.

Figure 3: Psychomotor domain achievement.

Figure 4: Labwork assessment (as per 100 %).

Figure 5: Trends for formative group tasks (as per 15 % each).

As the Labwork and Assignments were the other tasks completed by the students in the same group formation, but the Assignments were being done in pairs within the same group, a brief account of the performance by the students in these tasks are included to better illustrate the group accomplishment in the course. The average performance for each of the Labwork is shown in Figure 4. The rather disparate marks obtained by the students ranged between approximately 80 to 95 %, with Labwork 3 seemingly the 'killer' task where all groups fared poorly. As all groups scored similarly for the particular task, it is assumed that Labwork 3 which consists of 2 experiments might have been too overwhelming to the students within the time allocated. It is also postulated that coverage of the topic concerned might have been inadequate in the lecture and hence requiring revision. A combination of the performance of the students for Assignments and Labwork, which were both topical and formed part of the formative assessment exercises is shown in Figure 5. Clearly the overall performance for the Labwork was far more uniform than the Assignments, and that there was no apparent correlation between the performance for both group tasks. The rather large variation observed in the marks for the Assignments could be indicative of non-uniform learning pace of members in the same team, not readily noticeable in the group setting for Assignments and Project.

Attainment of Learning Outcomes
While the Programme Educational Objectives (PEOs) are not expected to be attained until 3-5 years upon graduation, they are nonetheless the ultimate outcomes predetermined for an entire academic programme, where the Programme Learning Outcomes (PLOs) are drawn up and the Course Learning Outcomes (CLOs) for each subject in the programme are in turn attuned to. With approximately 40 courses in the complete programme, the CLOs of individual courses would contribute towards the PLOs in a progressive and gradually built-up manner across the duration study. In other words, the learning outcomes are related in an ascending time frame of on study (CLO), on graduation (PLO) and on service (PEO) for every student, spanning the course of the student's study at university right up to several years after joining the work force.

The PEOs for the civil engineering technology programme were as follows:

PEO 1   Practice in the civil engineering technology field with outstanding knowledge and skills.
PEO 2   Involve in activities pertaining to civil engineering technology with demonstration of exceptional technical competencies.
PEO 3   Communicate effectively with all relevant stakeholders.
PEO 4   Adapt to changes and renewals in the civil engineering technology field.

Following is an analysis of the students' response on their projected attainment of the PEOs based on the Project alone. While it is arguably stretching the students' imagination and also the yardstick in making this measurement, the contributing factors of the Project towards these ultimate goals in a cumulative manner, albeit small per se, are undeniable. It is noted from Figure 6 that over half the students considered the education objectives to be significantly developed via the Project, though 40 % were of the opinion for PEO 2, suggesting a budding confidence in their technical competencies. Nevertheless this is not surprising as these students were only in year 2 of their 4-year programme, relatively green still on the holistic view of the body of knowledge and industry as a whole with a yet to be fully formed self-confidence in their professional aptitude. The small number of students citing low attainment of PEO 2 (i.e. 3 %) could be attributed to the same reasoning too. In general majority of the students found the Project to be helpful in grooming them to meet the expectations at work in future, recording self-measurements of mainly moderate to significant levels of attainment.

Figure 6: Programme Educational Objectives (PEOs) attainment perceived by students.

With the Programme Learning Outcomes (PLOs) being expected of the students upon completion of all the courses at the end of their study, it is of interest to identify the students' perception on how the Project could

help them move nearer the ultimate goals. The PLOs for the programme are as listed below:

PLO 1   Use and apply knowledge of science, technology and fundamentals of engineering in the discipline of civil engineering technology (Knowledge).

PLO 2   Demonstrate comprehensive technical expertise in civil engineering technology (Practical Skills).

PLO 3   Communicate effectively both in written and spoken form with engineering technologist, other professionals and community (Communication Skills).

PLO 4   Identify, formulate and provide creative, innovative and effective solution in civil engineering technology problems through the use accurate tools and routine design (Critical Thinking, Problem Solving, Routine Design).

PLO 5   Function individually or in teams effectively and with the adaptability to be a leader or a team player (Teamwork Skills).

PLO 6   To engage in life-long learning and professional development (Lifelong Learning & Professional Development).

PLO 7   Self-motivate, enhance entrepreneurship and managerial skills for career development (Entrepreneurship & Managerial Skills).

PLO 8   Understand and commit professionally, ethically and responsibly, for sustainable development, safety in technology in line with the engineering technologist best practices (Moral, Professional Ethics & Safety).

PLO 9   Mastering and demonstrate effective leadership qualities (Leadership Skills).

Figure 7 summarizes the students' response on how the Project influenced their attainment level of the PLOs. All PLOs recorded ≥50 % perceived significant attainment except for PLO 3, which had a slightly low 33 %, though students who considered moderate attainment level of the learning outcome was a remarkable 67 %. Combined, the perceived PLOs attainment levels were all in all positive and encouraging where the Project was concerned. It shows that the group tasks helped the students to cultivate areas of learning not usually covered in normal lecture sessions or other activities in class. In addition, of all the PLOs, PLO 5 was thought to be the one most supported by the Project. This is evidence of the students' conscious engagement in the semester-long activity, harnessing on the beneficial collaborative learning platform provided by the group task.

It is worth noting that with the rotational team leader role every fortnightly for each group ensured the equal opportunity for all members to helm the ship and steer the team on the right course. The team leader succession exercise also took the group task a notch higher in terms of difficulty especially in terms keeping the group's solidarity and organization in place with every change of leadership. The students were challenged to adapt to organizational changes within their respective groups, while adopting the appropriate attitude and stance to cope with the dynamic working environment both as a leader and a team player. Apparently, the survey results showed positive response among the students, a strong indicator of the students' preparedness to face disruption to their comfort zone as well as the presumed status of the peer learning setting.

Figure 7: Programme Learning Outcomes (PLOs) attainment perceived by students.

This was followed by relatively high perceived attainment of PLOs 7 and 8 which were closely related to PLO6, both recorded 63 % and average of 35 % of significant and moderate attainment levels. This suggests the effectiveness of the Project in relating the group task with real-world problems likely to be encountered by these future graduates as engineering technologists. The students were exposed to a heightened sense of professionalism and social responsibilities in performing their duties, as simulated in the miniature scenario presented in the Project. Besides, the rotational leadership for each group enabled each and every student to gain experience as a team leader, honing the essential skills and finer nuances of dealing with a group of co-workers under his or her supervision. It is indeed heartening to note the students' active engagement in the group task aiding their growth as a technically competent yet humanely sensitive professional in future.

Cultivation of Soft Skills
Apart from the apparent academic-related technical knowledge and competencies, students also had the opportunity to develop their soft skills (SSs) while conducting the Project. The skill set examined were as follows:

SS1   Communication skills [PLO 3]
SS2   Critical thinking and problem-solving skills [PLO 4]
SS3   Teamworking skills [PLO 5]
SS4   Continuous learning and information management skills [PLO 6]
SS5   Entrepreneurship skills [PLO 7]
SS6   Ethics and professionalism [PLO 8]
SS7   Leadership [PLO 9]

The overlap with some of the PLOs was immediately noticeable, as noted in the square brackets at the end of each SS above. It follows that the students' response in the survey would likely show similar pattern of perception in the attainment level of the respective soft skills. For instance, the skill component with the highest significant attainment perception was SS3 (Figure 8), which corresponded with PLO 5, i.e. teamworking adaptability. Interesting though, a small number of students reckoned the Project to be marginally helpful in moulding them into effective team players. This was thought to be caused by isolated cases of interpersonal issues impeding the positive skills cultivation among the students, and this is considered accountable for the 10 % low attainment level recorded for SS 5 too.

From Figure 8, it is also apparent that all soft skill components recorded distinct positive responses, with more than half the class scoring significant attainment level except for SS 5, entrepreneurship skills. Nevertheless the combined significant and moderate attainment levels from the students' perception for SS 5 was a good 90 %, pointing to an optimistic outlook on the skill cultivation via the Project. This attribute was not especially emphasized in the Project, notwithstanding the basic costing and economic advantages each group highlighted in the reports. As the year 2 students were considered novices in technopreneurship mastering, the Project served more as an introductory exercise in the enterprising aspect of technical innovation and not a full-fledge course on entrepreneurial development. The defence put up by students on the economic sense of their proposed solutions during presentation affirmed contribution of the Project to development of the particular soft skill component. As mentioned earlier, discord among group members could have led to the rather negative perception registered from the survey for SS 5. Sound business potential needs to be collectively developed and defended in the presentation with unanimous agreement and support of all team members. Disagreement due to personal issues or team dissonance could result in a resentful team atmosphere damaging to the team's cohesion and solidarity, let alone shared visions of entrepreneurial prospect of the respective Projects.

Figure 8: Soft skills (SSs) cultivation as perceived by students.

CONCLUSIONS

The study gave an interesting overview of the students' performance in a group project and their corresponding attainment of learning outcomes as well as soft skills cultivation. While the students excelled in the project with emphasis on the psychomotor domain learning, their cognitive assessment of test and examination results were far less encouraging, indicative of the misleading measurement of a student's grasp of a subject matter based solely on close-book written assessment. For en engineering technology course with greater emphasis on the practical aspect of the subject matter, the preeminent hands-on leaning of the students is perhaps understandable and expected. The students also demonstrated an acute awareness of the group task as a simulation of the real working environment they would one day graduate into, with a growing awareness of the professionalism and social responsibilities expected of them as engineering technologists. Besides, the students consciously honed their team-working skills, be it as a leader or a team member, learning the different functions and attributes expected of the intertwined roles routinely found in a group work setting. Soft skills development with execution of the Project was generally perceived to be positive by the students, with a good corroboration with the overlapping PLOs. The minority who rated their teamworking and entrepreneurial experiences to be less gratifying were likely motivated by personal unsatisfactory teamworking experience, not unexpected in any group work setup. In a nutshell, the group task of Project was effective for psychomotor domain training of the students, with a comprehensive development of the relevant soft skills too.

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Gustav, web tool for software development time estimation

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ABSTRACT

Nowadays, time plays a very important role in the field of SW development. Estimation of development time is a key element of a software creation process. Our project is focused on improving of these estimations as for the commercial sector as scientific and educational purposes to. The time estimations are processed by analytical programming, differential evolutions and method of Use Case Points.

A new web application was created based on this solution. In this application, the analysis can be performed directly in a web browser and the data can be exported for further processing. Our main objective is to help users to improve their estimations and learn directly from real data.

INTRODUCTION

Field of software development (SD) and software engineering is constantly evolving. This situation is caused by increased requiments from users whose use computers every day for work and for fun. Continuous development of better software is not trivial matter. The most important of SD is selection of the right methodology, tools and procedures. There are a number of these methodologies. These are divided into two groups - traditional and agile ("Manifesto for agile software development," 2001). Traditional methodologies were mostly replaced by agile methodologies (AM). AM provide new procedures in development. For example rapid development methodology brings procedures like prototypes, customer involvement into development, bigger freedom for programmers and also increased efficiency and productivity of development (Martin, 1991).

Crucial aspects of SD are time and quality. Until the development starts the project demands must be correctly estimated. There are various methods of time demands estimation such as identification by using expert estimates, the estimation based on the analogy or estimation by the method of function points. All share a common question, "How long will all this take?". Results of all estimation types are timetable of SD parts. It provides overview of parts. According this the SD should be processed. Time is obviously one of the most important factor of SD which can significantly affect project price and profits of Software Company.

THE STUDY

The basis of the project was an idea to estimate the time required for projects by using Use Case Points method supported by analytical programming**.** The analytical programming method was used to improve the Use Case Points method. The Use Case Points method is fully dependent on the human factor. Project manager determines the weights for individual elements such as: unadjusted Use Case Weight (UUCW), unadjusted Actor Weight (UAW) Technical Complexity Factor (TCF) and Environmental Complexity Factor (ECF). Each project manager makes a slightly different estimate based on his experience. Analytical programming uses artificial intelligence reduces dependence on human factor. The combination of analytical programming and the use case point's method is used to more accurate effort estimation results (Urbanek, Prokopova, Silhavy, & Vesela, 2015).

Applications for the calculation of these estimates were programmed in language Lua. It is open-source software, distributed under a very liberal license (the well-known MIT license). It is a powerful, efficient, lightweight,

embeddable scripting language. It supports procedural programming, object-oriented programming, functional programming, data-driven programming, and data description ("Lua: About," 2011).
The application has been optimized for high speed calculation. When the calculations application development started, the web interface was developing also.

Software development companies must accurately estimate the time required for development. Wrong preparation of development schedule often has considerable financial sanctions. As a part of this project, the method for calculating these estimates using combinations of analytic programming, differential evolution and Use Case Points method, was used. This method reached up to 60% success compared to the classical method of calculation on testing data (Urbanek, Prokopova, Silhavy, & Vesela, 2015). The method of "Use Case Points" (UCP) was created by Gustav Karner in 1993. The concept of UCP is based on the requirements for the system being written using use cases with factoring to account for technical and environmental considerations by different weights according to the complexity (Karner, 1993). Our application was named after the founder of the method UCP, Gustav.

Figure 1 Landing page

Our project is focused for better estimation of developing time for the commercial sector and for scientific purposes too. The main advantage of the project is the possibility that any software company can generate a custom equation of method Use Case Points. All these calculations and equations are displayed in created web application. The main output of the data processing is clear graphical representation. The user can compare his estimates with our calculations there. With this Web application it is possible to analyse these data with in a web browser or you can export this data for further analysis. Our main aim is to help users to control and improve their estimates for more effectivity and quality of their work.

FINDINGS
During the design of web applications different ways (such as PHP, JavaScript,…) of development was considered. ASP.NET MVC was chosen. The ASP.NET MVC Framework is a web application frame work that implements the model-view-controller (MVC) pattern. It is developed by Microsoft Corporation (Microsoft, 2014). It is a popular architectural solution. The next step was this election of appropriate technologies for storing and working with data. Relational database where the data is structured was chosen. MySQL database using SQL is a popular choice of database for use in web applications ("MySQL," 2016). Another technology that we need to use in this project is the Java Script library for rendering data in graphs in a short time. The research in the field of JavaScript data rendering tools helped us to identify the most suitable libraries (Vesela, 2015). D3.js and Charts.js reached the best score in tested parameters. There was a quality difference of libraries documentations. D3.js library at the project was used. This library has full support for all modern browsers and there are extensive documentation and a lot of examples. With this library you can create simple graphs, but also very complex graphs with extensive data (D3.js - Data-Driven Documents [online]). The architecture of the entire solution consists of two servers. At one of the

servers the calculations are running using the algorithm of analytic programming, this conserver issued for the retrieving data from user, data storing and graph plotting.

Result is displayed in the application immediately. The message with link of his data visualization is send to user automatically. This visualization can be plotted on three types of graphs. There the user can see his specified values compared with five best estimate calculations.
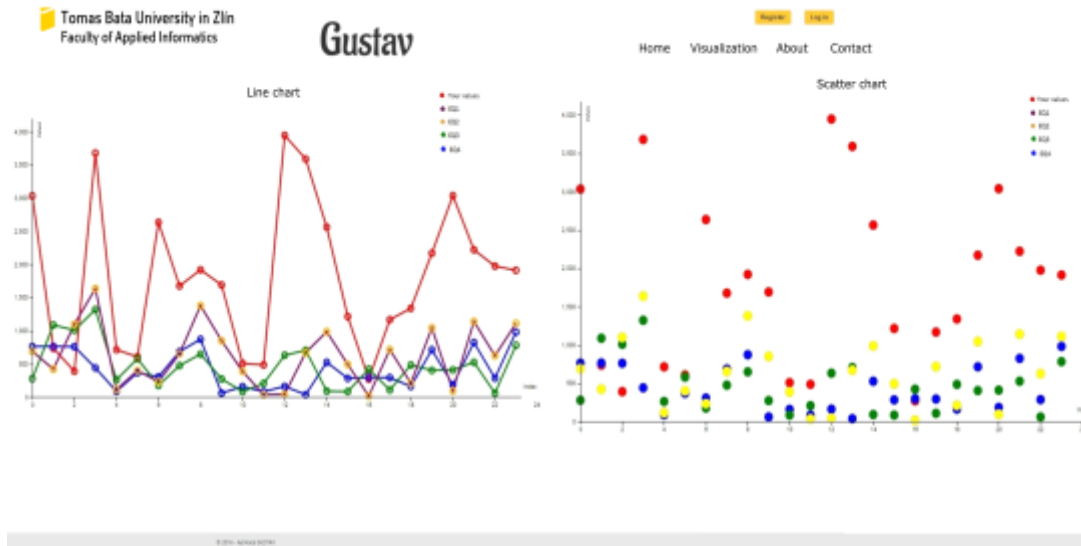

Figure 2 Graphical representation of data in application

Based on these data, the user can check the accuracy of the method used. In the case of large differences user may reconsider changing the valuation of time demands. This can improve economic performance of his company. Application also can be used in teaching of software engineering.

Description of application workflow:

First, the users have to register to application. The registration allows anytime access to previously uploaded data. There are two different methods for data upload. First one is manual filling of form which may take about 15 minutes. Form example is shown in the figure below.

Figure 3 Form example

Second method is uploading of XML file with required data. Users can simplify their work by inserting xml file with already prefilled values and start directly with the calculation and comparison. Example of file format is shown below.

```xml
<?xml version="1.0" encoding="UTF-8" ?>
<root>
   <row>
      <simple_actors>3</simple_actors>
      <average_actors>5</average_actors>
      <complex_actors>4</complex_actors>
   </row>
   <row>
      <simple_use_cases>5</simple_use_cases>
      <average_use_case>2</average_use_cases>
      <complex_use_cases>3</complex_use_cases>
   </row>
…
</root>
```

CONCLUSIONS

Result of this project can be use both in the research and the commercial sector, where may help refine time estimation. The main advantage of the project is the possibility that each software company will be able to generate their own formula with method Use Case Points, which will be optimized for the software company and its area of influence. There is no need to install any special software since it can be used in standard web browser. The project is also imported according to world economy. It is necessary to provide accurate software time estimation. These estimates may help to developers and their customer also. Created web application is used for the efficient collecting, storing, presenting and analysing of obtained data from the software companies. Collecting data are processed by method Use Case Points using artificial intelligence elements. It can also be used for analysing and understanding of the importance of individual parts of software development. These results can then be used for further research and teaching software engineering or similar objects.

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HEINRICH ROMBACH'S STRUCTURAL PEDAGOGY AND HOW TECHNOLOGY CAN HELP TO TRANSFORM THE SCHOOL SYSTEM IN A SCHOOL STRUCTURE

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ABSTRACT

After German philosopher Heinrich Rombach had presented his spanning work "Substanz, System, Struktur" (1965/66, 22010) he subsequently developed his structural pedagogy in which he presented new ways of teaching which complies with the needs of the learner and facilitates genuine and veritable learning. Concerning the crisis in the German school system Rombach's ideas are helpful to find a new approach and might even be a working basis when thinking about a transition from a school system to a school structure. However, his structural pedagogy is quite conceptional and waiting to be applied in a practical context. Modern teaching and learning concepts like *Flipped Classroom* or file sharing like cloud based apps (*Dropbox*, *Evernote* etc.) in a digital classroom are a means of applying the theory of the structural pedagogy in modern educational institutions. Changes like that are very urgently called for to transform institutions for learning environments for human beings with all their diversity, talents and aptitudes who mustn't be pigeon-holed any longer to serve the institution.

Keywords:
Ontology, educational sciences, system, structure, school system, technology, apps, learning, institutional education, Germany, Heinrich Rombach

INTRODUCTION

A lot of discussions and attempts of reforms have been going on in the German school system since the disastrous scores of the first PISA study in 2000. Politicians and parents were shocked and alarmed by the outcome and low ranking of the German schools. Parents are calling for fundamental changes in the landscape of institutional education, politicians are trying to cope with those calls by introducing mini reforms which seem to lead nowhere and politicking, while the educating personnel in the schools are searching for new ways of teaching to handle all the challenges brought into their classroom. But no essential changes are in sight though it is obvious that the school system is dysfunctional both in its conduct and results. More and more private schools are popping up which claim to have better approaches, public schools are chronically underfunded. It is obvious that there has to be an ultimate change in the school system and the question might be why the decision makers adhere to the construct of the system when there is, as German philosopher Heinrich Rombach asserts, a better and working advancement, namely the structure. Out of his work "Substanz, System, Struktur" in which Rombach tells the course of the European intellectual history, he has developed the structural pedagogy which differs from most of today's classroom practices in many ways. The concept of the structure is worthwhile to elaborate on and think through because it might represent the turnaround that the institutional education is looking for. Thinking in structures is a considerable possibility to return to a vibrant learning environment in which the vividness and uniqueness of human beings exploring is allowed. In fact, Rombach has pointed out that thinking in terms of the structure is the only way of comprehending (post-)modern times.

SUBSTANCE, SYSTEM, STRUCTURE

A good example for thinking in categories of *substance* is wheat. The nature, i.e. the substance of the wheat is always there – be it in the ear in the fields, the flour or the bread. The entity of God is substance and present everywhere.

Thinking in *systems* started out in the early days of natural sciences, when people began to explore the world around them without the entity of God as the overall substance. The solar system would be a good example.

A structure is a system with one vital extra factor: movement. In a structure, there is no unchangeable law or a underlying principle like in a system. Neither is there a whole or an entity outside of the structure looking "at" or "down on" it or guiding it. Viewing, observing and beholding a structure means being a part of it. Through movement the function of the single elements in a system becomes obsolete and the structure focusses on relations. The elements in a structure originate only through their relation and thus become moments. A moment can only be described in its relation to the other moments of the structure. There is no difference between the elements, no gap between the part and the whole. A structure means entity, but within the structure there is always change. The structure corrects itself constantly and this goes hand in hand with the concept that the structure is alive. This makes it impossible to view the structure from any other point as in between. There is no above or below, no front or behind. A structure is vivid, alive and quick. The structure always finds a way, it is flexible. In a structure there

are always possibilities because there is constant adjustment. This is why the structure can always change according to its revisions and adjustments from within and it is changing constantly (Rombach, 2010).

THE STRUCTURE IN CONTRAST TO THE SYSTEM

A good example for grasping the difference between the structure and the system is Rombach's contrast between Wallenstein and the emperor Ferdinand II. in Schiller's same-named play.

Emperor Ferdinand II. stands for the system whereas Wallenstein is a personification of the structure. His character resembles possiblity. The emperor's thinking categories are that of a center and a hierarchy. He thinks in terms of idealism and nature of things. His arrays are the law, the war and obedience.

Wallenstein has a totally different approach to leadership. His way of thinking is that of balance, he himself is present within the army he is commanding. His approach is that of realism and the situation motivates his actions. His notions are determined by the categories of success, a balance which can be reached by peace. He does not claim obedience, but focuses on information of his men. (Rombach, 1988, p. 77-80)

STRUCTURAL PEDAGOGY

According to his work on the structure Rombach has come up with the concept of a structural pedagogy. Learning is profoundly human and so the step from developing the concept of structure to applying it to pedagogy and education is a very small one for the philosopher Rombach.

In a structural pedagogy some principles which have been applied for a very long time in institutional education have to be put aside. Rombach claims that first and foremost there mustn't be anything like an aim or *telos* for educational interventions because these aims are fixed from the outside. Education cannot happen for fulfilling a predefined plan, but for the human being. Planning is part of a system. Learning in a structure means that the learner himself defines his aim.

Education in the way Rombach sees it works without "Einwirkung" (impact). Impact is always result-oriented which makes it a category for the system. Without impact there is freedom for self-constitution of the student and acting in relations to and with others. Only thus there is a chance of walking our unique and invariant path of life. There will be special requirements for the teaching individuals, the educators – they have to be able to span and stretch the horizon for learning, showing the way instead of leading, they have to turn away from viewing themselves as a omniscient instance but rather as a counselor, coach and a coequal part of the learning group.

Other categories to let go of are those of grading and the idea of development. Human sciences cannot be countable or measurable (just like squeezing education into a plan). By grading, the students are given the impression that they are not good enough or only good enough if they reach certain marks. The idea of immaturity is always present in the school system and legitimizes the efforts of the institutional education to "develop" the student: Only by fulfilling a certain plan which is given to her from the outside the student can become a "complete" human being (Rombach, 1966).

One central point of how to facilitate learning in a structure is that of the group experience. In a group the peers let the others "be as they are". In the perception of the peers no one is unfinished, immature or deficient. The role of the educator (not teacher) is to span a horizon in front of which the group and the learning experiences can unfold. Institutionalized learning is mostly isolated learning. To make learning in a structure possible, that isolation of the learner needs to be replaced that by learning in groups and social structures, spanning widely across knowledge levels and the age of the children. There has to be movement, outward and within the learner, creating wow effects (Schmaus 2012).

Using the right and already existing technology could make all these requirements for structural learning possible.

TECHNOLOGY AS AN ELEMENT OF A SCHOOL STRUCTURE

Technology can enable differentiation, integration and flexibility because it is very easy to provide the right material to any skill level. Contents can be presented and research can be done with the highest possible flexibility the students learn how to think critically on the fly.

Thinking in a structure in Rombach's sense is always correction and adjustment. With the help of technology, the student has access to information that facilitates change in an instant.

Examples for straightforward use of technology without skyrocketing costs would be the implementation of smartphones and tablets. In the app stores there are numerous apps which enable students to work in groups:

1. Cloud based work spaces like DropBox, Google Drive or OneDrive:
Working in projects and using the cloud is an easy way of making information available for anyone anywhere. There could be something like a „class cloud" which can be accessed by anyone in the class or the work group. Teachers can upload additional information, texts and other media, quizzes for self-evaluation, extra exercises etc. The cloud can be used for projects by different groups which use different folders or areas but also have access to the information stored by other work groups. Google has introduced "Google Classroom", a virtual learning environment. One might say that companies and enterprises have to stay out of the public educational system (or even the private), but companies and enterprises are the institutions who have the money to react quickly to provide the required resources. The administration apparatus is much too slow and does not make enough money available.

2. Evernote
Evernote is an app for personal note taking and note storage, but can also be used in cooperation with a work group. It can easily be used for classroom management issues and making resources available for everyone in a learning process. Because it is cloud based the access for assigned members of work groups is easy and cooperation in learning projects is really simple. Anyone anywhere can store ideas and resources and share them with the members of the group. Evernote is a web-based app which synchs with a smartphone and tablet app as well an installation on a local computer. A learning environment like the *Flipped Classroom* can utilize all the possibilities that Evernote offers:

- setting up different "notebooks" for different topics, subjects, workgroups etc. and enable/disable access for different groups or individuals
- taking and storing personal notes (text, pictures/photos/videos, links etc.) , clipping information from the internet as text, links, screenshots etc. and storing it
- full text search and filter functions
- sharing notes with an assigned work group or the whole class

The *Flipped Classroom* is a method which turns the learning process around. The conventional way is teaching first by giving the information in the classroom and the student has to do exercises at home. "Flipping the classroom" means giving the necessary information at home for the students to work through and then discussing it, elaborating and working on it and doing exercises in the classroom. The information the teacher/moderator gives the workgroup/class can be uploaded to Evernote and shared with the class for easy access at home. Different fields to work on can be assigned to each student individually or for work groups and the assignments can be shared with only the moderator or the whole class. In class, on site so to speak, the work can be presented and elaborated on.

3. Electronic school books
In Germany, the discussion of using e-books or not is mostly limited to books of fiction. School books are not included in this discourse. Besides the advantages of less weight and the huge storage of an e-book reader there are many more features which make an e-book the ideal format for a school book.
Children are carrying their school books on their back from their home to school and back every day. There are heavy books for almost each subject and considering a whole school day a child of 10 years has to carry about five books plus copybooks and work books, other paper, pens etc. to school and back home for the homework. A tablet which stores the schoolbooks would literally take a load off the children.

If children carried their school books on a tablet, they could "come alive" very easily. Implementing multi-media in an e-book is very easy and makes information vivid. Examples for avoiding text heavy books are:
- video,
- audio,
- links to the internet for more information (e.g. for projects or presentations),
- up-to-date and relevant pictures and graphs[1].
- interaction: After each chapter, a short (or longer) quiz is attached for the student to work on, the results can be sent directly to the teacher who can see which students still needs support.

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[1] The video game heroine Lara Croft (Tomb Raider) was very popular in the 1990s, but if you show the character to students now, nobody knows her anymore. But she is still shown in a German text book for ESL as well as a boy group which used to be in the charts by the time the English text book was printed (around 1990). In an atlas used for geography lessons in German schools you can still find the expression *Mulatte* (mulatto), which is discriminating and perjorative.

Last but not least e-books can save a lot of money, space for storage and paper.

4. Gamification
Turning unpleasant tasks and chores into a game or a competition is not a very new idea. On the internet there websites where you can become part of a team who does housework and with each finished chore the teams collect points. Fitness wrist bands or watches transfer data about taken steps or sporting activities to a platform where the user can compete against other users, e.g. who has walked farthest on a weekend or during the week.

Classcraft (http://www.classcraft.com) is a very successful way of bringing the concept of gamification into the classroom. It is an "educational role-playing game" for the classroom with "real risks and rewards". Cooperative learning is encouraged because helping each other with homework leads to rewards and the promotion of the characters and the team.

CONCLUSIONS
Heinrich Rombach's structural pedagogy is very relevant to the current situation of institutional education. From a structural point of view it is possible to re-think education in public (and private) schools and to transform it to meet the needs of a post-modern society. Rombach has pointed out that a structural approach is the only way of thinking and reforming these days. We all have the feeling that "something is wrong". Applying the structure as a framework for renewal – not only in the field of philosophy and education - is a possibility worth considering.

Deriving from this different approach are new ideas and stimuli for applying different ways of learning. By means of today's technology and the access to the internet new horizons are opening up for bringing information, knowledge and learning to students of every age. With very small efforts and very little expenses it is possible to dust off old ways of learning which still date from the era of industrialization. Easy-to-use applications can turn the learning process into a gripping and absorbing experience for every student and thus help to overcome educational injustice. Using technology in the classroom is but only one small component of structural pedagogy.

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HIGH SCHOOL STUDENTS' VIEWS ABOUT PROCESS ORIENTED GUIDED INQUIRY LEARNING (POGIL)

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ABSTRACT

The aim of this study was focused on identifying high school students' views regarding Process Oriented Guided Inquiry Learning (POGIL). In this study, a case study design was employed as the research method and the sample of this study was comprised of 11th-grade students in a chemistry class. The study was conducted during 2014-2015 spring semester. Purposeful sampling was used to identify the students. At the end of the implementation with POGIL, semi-structured interviews were conducted with 7 students to explore their views about POGIL. All of the interviews were audiotape recorded and transcribed. Summarizing content analysis was conducted to analyse the data. The results showed that all students improved positive attitudes towards POGIL. Also, after the data analysis, students' views about POGIL were grouped into four main categories. The categories were as in the following: POGIL and learning process, the views about effects of POGIL, the views about POGIL structure and the negative views about POGIL implementation.

Key words: POGIL, high school students, content analysis, case study.

INTRODUCTION

Process-oriented Guided Inquiry Learning (POGIL) is a student-centred teaching philosophy, and it supports students' active participation in their own learning process. In POGIL, students learn in cooperative learning groups through specially prepared activities which follow the paradigm of learning cycles approach. In this method, where peer learning is at the forefront, students respond cooperatively to questions available in a peer-led guided inquiry learning environment. The questions are organised in a way that enables students to configure the concepts, in a relatively easy way, and in a manner that takes students' prior knowledge (their misconceptions, misunderstandings and lacking mental structures) into consideration. The questions asked later become relatively difficult, and are prepared in a manner that enables students to acquire basic process skills (Moog, Creegan, Hanson, Spencer, & Straumanis, 2006).

Both students' cognitive properties and their process skills affecting the process of learning are extremely important in POGIL. Process skills such as analytical thinking and team work play important roles in learning in POGIL. It is related with process education-which is a philosophy of education focusing on increasing the skills necessary for achievement at school and in life, and focusing on lifelong learning and on its continuation by increasing (Hanson & Wolfskill, 1998; Shatila, 2007). Beside specially prepared activities, group work supporting cooperative learning is also available in POGIL. In addition to learning a topic, students also need to participate actively in basic processes such as working efficiently in groups (Simonson & Shadle, 2013).

POGIL emerged on the basis of the benefits of inquiry and cooperative learning which ensure that students participate in and configure their own learning (Bransford et al., 2000; Farrell, Moog, & Spencer, 1999; Moog, Lewis, & Bunce, 2006, as cited in Simonson & Shadle, 2013). It is pointed out in the literature that teaching in inquiry and cooperative learning strategies contributes more to the development of students' achievement and problem solving skills than traditional teaching does (Cooper, Cox, Nammouz, Case, & Stevens, 2008; Johnson,

Johnson, & Smith, 1998; Lou, Abrami, & Spencer, 2000; Schroeder, Scott, Tolson, Huang, & Lee, 2007). Studies conducted found that the students in experimental groups using POGIL activities were more successful than the ones in control groups. Therefore, POGIL, which offers the advantages of both cooperative learning and inquiry leaning together, is proffered in this study. After POGIL was successfully used in university undergraduate Chemistry courses (Farrell, Moog, & Spencer, 1999), it was used in other undergraduate courses. It was employed for instance in such courses as organic chemistry (Schroeder & Greenbowe, 2008), physical chemistry (Spencer & Moog, 2008), biochemistry (Minderhout & Loertscher, 2007), medical chemistry (S. Brown, 2010), anatomy and physiology (P. Brown 2010). It is also used in secondary education Chemistry course to eliminate misconceptions (Barthlow, 2011; Şen, 2015; Şen, Yılmaz, & Geban, 2015).

This study also uses POGIL to eliminate the misconceptions students have in relation to electrochemistry. While the course was taught through POGIL in the experimental group, it was taught in traditional teaching method in the control group. Determining the views held by students exposed to POGIL learning environments would offer important clues on the use of the method in high schools. In this way, both teachers and educators will benefit from the clues while using the method, and they will be able to create classroom environments accordingly. Setting out from this idea, the study seeks answers to the following question:

1.   How do the students in the experimental group perceive POGIL?

METHOD

This study uses the design of a case study. A case study analyses a setting, a topic and an event in details. It is used so as to describe the details of an event and to evaluate the event (Yin, 2003).

Study Group

According to Merriam (2009), a researcher is aware of the problem in qualitative research, and accordingly chooses a purposeful sample necessary for data collection. Therefore, 7 students (3 girls and 4 boys) were assigned to the experimental group to conduct a semi-structured interview. The students were chosen in the purposeful sampling method. Patton (1987) suggests that purposeful sampling is a method of sampling enabling researchers to analyse and research the situations which are thought to get   more information about (as cited in Yıldırım & Şimşek, 2011). The above mentioned 7 students were determined through intensity sampling– which is one of purposeful sampling methods (Patton, 1990). The views held by other students in the experimental group were obtained through POGIL feedback form.

Data Collection Tools

1. Semi-structured Interviews

Semi-structured interviews aim to exhibit the effects and sides of the application done through POGIL activities which are pleased and displeased by the students in the experimental group. On examining the post-test scores at the end of the application, it was found that there were seven students having relatively plenty, little and mild misconceptions. Each interview lasted for about 10 minutes, and the interviews were recorded by students' consent. Prior to the interviews the students were informed of them and the purpose of the interviews were explained to the students.

2. POGIL Feedback Form

The POGIL feedback form was prepared by the researchers in order to reveal the other experimental group students' thoughts of POGIL at the end of the application. Expert opinion was received for the form prepared, and thus the required arrangements were made on the form.
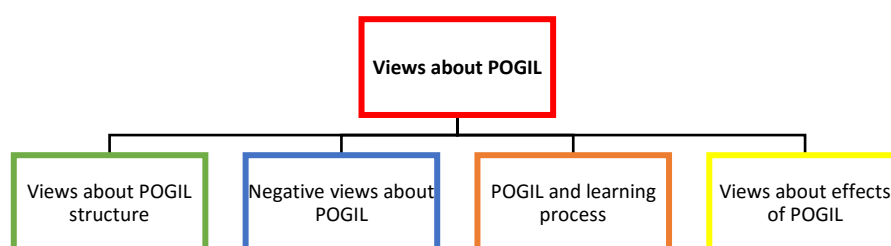
Data Analysis

Summary content analysis, one of the three types of content analysis methods described by Mayring (2002), was used in this study. Summary content analysis is performed by means of abstraction so as to display a comprehensive perspective of the data set. In this way, a general picture of the data set is obtained in consequence of   the analysis. Inductive categories are formed in summary content analysis. The categories are derived from the data set.

Categories were formed in consequence of encoding the data obtained from the feedback form and from the interviews. Assistance was received from an external auditor in encoding the data. The results obtained through exchange of views with the auditor were analysed step by step together. After the individual codings made by the auditor, comparisons were made, and it was found the fit levels were very close. For the different codings made individually, the researchers and the auditor returned to the data, and agreement was reached in terms of encoding by working together, and thus the process of data encoding was completed. Having completed the encoding process, the results concerning the data were shown to the participants, and member checking was obtained for verification.

FINDINGS

On examining the replies students gave to the feedback form and the interviews, 4 categories were divided. The categories were: the views about POGIL structure, the negative views about POGIL implementation, POGIL and learning process, and the views about the effects of POGIL. The categories are shown in Table 1.

Table 1: Students' Views of POGIL

In the category of views about the structure of POGIL, the students said that they covered their as well as friends' deficiencies by working in groups, that learning in groups was more enjoyable, and that they learnt and socialised in consequence of group discussions. Besides, they also stated that the critical thinking questions increased their curiosity and led them to research and inquire instead of being directly offered the information, that their learning became permanent, and that they no longer memorised the redundant information due to the critical thinking questions. They also added that the use of smart boards made classes no longer monotonous and that offering the information through questions instead of directly instructing was more beneficial for them. Some of the students' views in this category are as in the following:

Student:" We have learnt to work in groups, to respect our friends' opinions and to listen to each other."

Student: "Thanks to critical thinking questions, a subject becomes permanent in mind."

Student: "The POGIL activities, we did on smart boards were enjoyable, and the classes were no longer boring or monotonous. In this way, POGIL contributed to our learning."

Another category distinguished in consequence of the analyses was about students' negative views of POGIL. In this category, the students pointed out that they got used to the present system (traditional method), and therefore they could not get used to the new system. They said the they were not accustomed to group work, and that they learnt better by working individually. They also said that they were disturbed because of the noise arising in consequence of discussions while doing group work. The analyses performed indicated that some of the students were anxious about the potential use of POGIL in classes. Some of the views stated in this category are as in the following:

Student: "The method was occasionally effective because group work is not effective for me. I do better when I work individually, on my own."

Student: "..because we have got used to memorising, I do not understand anything in this system."

Student: "POGIL was something we had faced for the first time. For this reason, at the beginning I didn't think I could understand in this system."

Another category distinguished was the category of POGIL and learning process. In this category the students stated that they learnt step by step, they learnt in classes, they exchanged views while doing group work, they worked to give joint answers, and that they had fun while learning. Some of the views stated in this category are as in the following:

> Student: "…with this system, it was assured that individuals earnt by themselves by understanding the rationale instead of using rote learning."

> Student: "The most beautiful side of learning in groups is that everybody states a different opinion. In this way, I am learning the things that I did not see before."

> Student: "Learning through this method is fun and we also explain to each other what we cannot do on our own. Our teacher cane and showed interest to us, one by one."

> Student: "This method both made lessons less boring and assured learning together."

In the category of views about the effects of POGIL, students said that POGIL had effects on effective learning, on learning the different strategies and techniques of learning, on permanence of learning, on increasing the interest in chemistry, on students' active participation in classes, on students' making efforts to learn, and on peer cooperation and inquiry. Some of the views stated in this category are as in the following:

> Student: "We have learnt the subject with our own efforts. We make made inferences from the questions. In this way, we learnt differently from the one in classical system of education."

> Student: "POGIL increased our interest in and attitudes towards Chemistry course."

> Student: "Since classes were not boring, POGIL activities, other activities and the questions increased the permanence of the subjects in mind."

CONCLUSIONS AND DISCUSSION

This study using an experimental design with experimental and control groups in it made an attempt at identifying the experimental group students' views on POGIL. For this purpose, the students were interviewed and they were asked open-ended questions about POGIL learning environments in feedback form. The data obtained were then put to the medium of computers and put to summary content analysis. In consequence, the students' views were grouped into 4 categories. The categories were the views about POGIL structure, the negative views about POGIL implementation, POGIL and learning process, and the views about the effects of POGIL respectively.

Following the analysis of the open-ended questions in the POGIL learning environments feedback form and of the data obtained through semi-structured interviews, it was found that the majority of the students held positive views of the POGIL despite some negative views. A review of the studies available in the literature demonstrates that students hold positive views about POGIL (Conway, 2014; Eberlein et al., 2008; Farrell, Moog, & Spencer, 1999; Hinde & Kovac, 2001; Lewis & Lewis, 2005; P.Brown, 2010; Schroeder & Greenbowe, 2008; Soltis et al., 2015). This current study, on the other hand, divides the views about POGIL into four categories. One of the categories is the category of negative views about POGIL. The category mostly contains students' worries that the method used would not be adequate in preparing for national examinations and their insistence on (or rather demand for) working individually. The other categories distinguished were the views about POGIL structure, POGIL and learning process, and the effects of POGIL. Farrell, Moog and Spencer (1999) found that students had positive attitudes towards POGIL. Accordingly, the students stated that cooperative learning increased their achievement and that POGIL was a better method than traditional method of teaching. They said that it was a useful method for the teaching of chemistry. Eberlein et al (2008) report that both educators and students liked POGIL learning environments more. Schroeder and Greenhowe (2008) point out that POGIL increases students' self-confidence. Students say that they find lessons taught through POGIL easier and that it helps them to have positive attitudes towards the course. Researchers also emphasise that there has been a positive change in students' perception that Organic Chemistry is a difficult course. P. Brown (2010) reports that almost all of the students say that POGIL is an effective and useful method. Conway (2014) points out that students say they have positive attitudes towards Chemistry course, and that they attribute it to POGIL.

RECOMMENDATIONS

The fact that students' worries could not be prevented and that they were not ready for inquiry learning and cooperative learning caused problems in performing this study. POGIL activities should be used beginning with primary schools so as to remove such problems, and should be assured that students are ready for this method. In this way, students will understand better and basic process skills will develop at early ages. With the use of POGIL at the first stages of teaching, POGIL will be used more effectively. With the effective use of POGIL it will be assured that students have fewer misconceptions.

NOTES

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HOW ADULTS HAVE SPATIAL-TEMPORAL FLEXIBILITY EXPERIENCES THROUGH LEARNING TECHNOLOGIES

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ABSTRACT

Spatial and temporal involvement of individual into the process of socialization through the mediation of technology is explored in the framework of e-learning in this study. e-Learning is highlighted by its advantage in terms of spatial and temporal flexibility for accessing and participating learning activities. The problematic of the study, focusing on students as individuals, is to determine the interpretation of "spatial-temporal flexibility", emphasized in social theories that explain social relations and their transformation in the framework of technology with concepts such as interaction, asynchronization, de-massification, convergence, networking etc…

INTRODUCTION

The common characteristic of new forms of socialization, which became increasingly visible both in daily and occupational dimensions of social relations, is their concretization through information and communication technologies. In other words, our spatial and temporal involvement into existing social relations as individuals in both dimensions is ever more meditated by technology (Aggleton & Whitty, 1985, p. 60).

In this study, spatial and temporal involvement of individual into the process of socialization through the mediation of technology is explored in the framework of e-learning. e-Learning is highlighted by its advantage in terms of spatial and temporal flexibility for accessing and participating learning activities. The problematic of the study, focusing on students as individuals, is to determine the interpretation of "spatial-temporal flexibility", emphasized in social theories that explain social relations and their transformation in the framework of technology with concepts such as interaction, asynchronization, de-massification, convergence, networking etc…

In order to demonstrate their spatial-temporal interpretation, information gathered from a sample that consists of two categories of students enrolled in the vocational schools and undergraduate programs of Ankara University will be used. The first group contains those who have chosen e-learning program according to their grades obtained in national qualification exam. The other group comprises student who have chosen regular program but are obliged to get to have some courses via e-learning model (blended learning program).

METHODOLOGY

Online questionnaire was used in this study (www.online-anket.gen.tr). There were two groups of query expressions in the survey and each group had eight query expressions. The first six query expressions were same and those based on the program either e-learning program or blended program and the last two query expressions were different (as differentiated query expressions) for two categories of students. Students with the age of between 18 and 35 were asked to respond using a 5-point Likert scale in all query expressions. Concerning agreement of benefits, '5' on the scale was 'strongly agree' and '1' was 'strongly disagree'.

The survey was administered at the beginning of fall 2014 semester. Based on the sample of the study, 4000 e-learning program students and 1660 blended learning students received information about the study. They also received email with the link of the questionnaire.

The questionnaire was open for three weeks. 109 e-learning program students out of 733 who opened their emails and 123 blended learning program students out of 629 who opened their emails responded the questionnaire.

FINDINGS

Query expression 1: *I do get more detailed answers when I ask a question to the instructor in the forum.*

Figure 1 shows no significant difference between synchronous and asynchronous activity in the blended learning group: [1+2]=% 45; [4+5]=% 39.
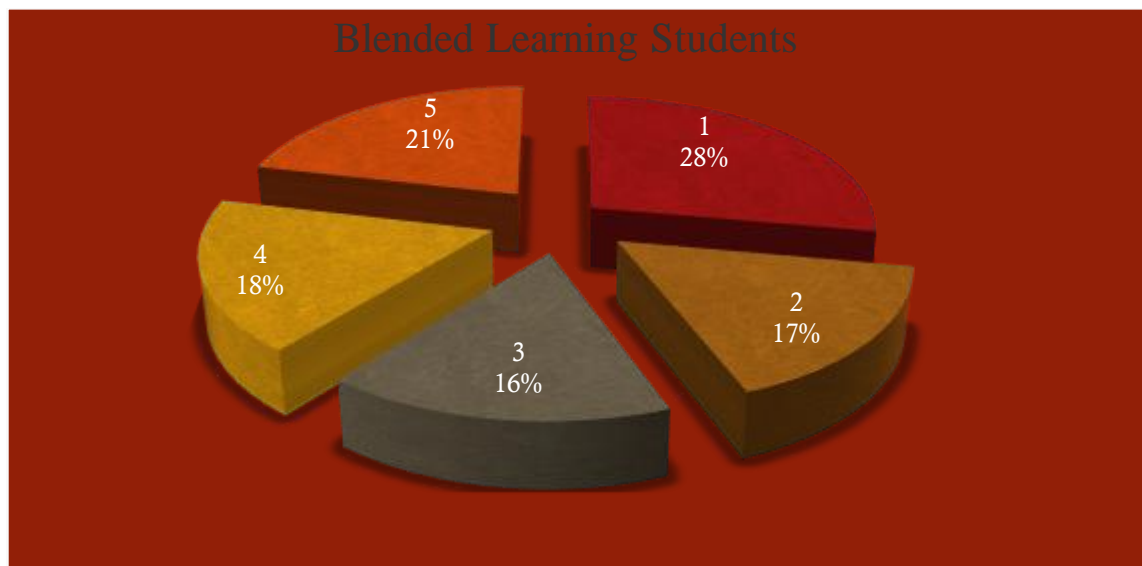

Figure 1

Figure 2 shows positively significant difference between synchronous and asynchronous activity in the e-learning group: [1+2]=% 18; [4+5]=% 56.
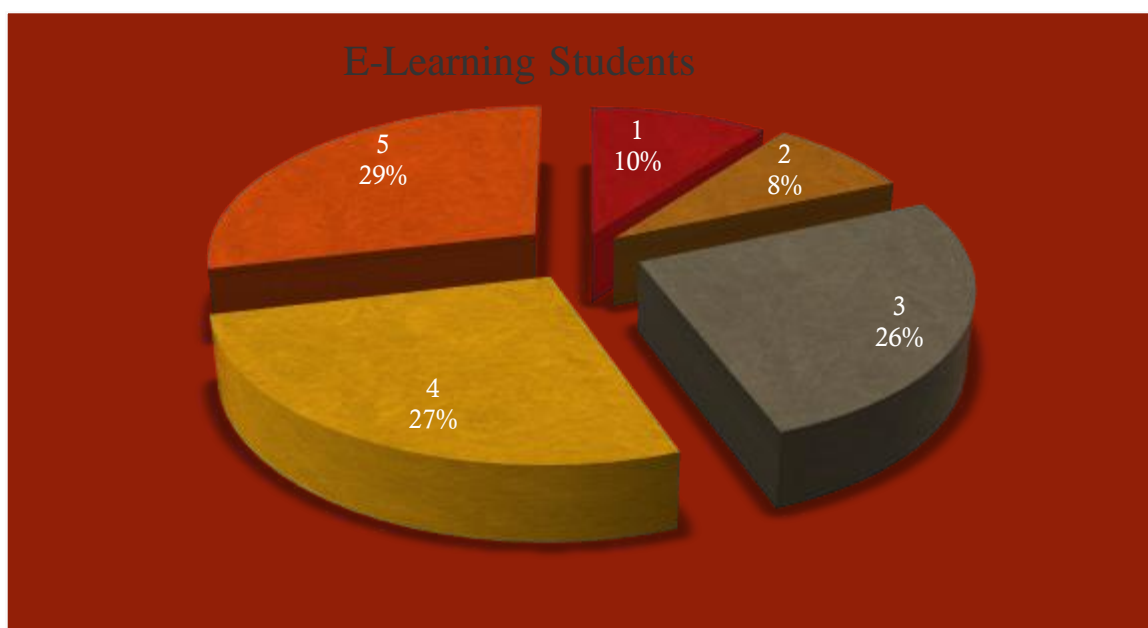

Figure 2

Query expression 2: *When we have a class in the virtual classroom, I feel like I am one-to-one interaction with my instructor.*

Figure 3 shows negatively significant difference in terms of "real" interaction between virtual class and real classroom in the blended learning group: [1+2]=% 58; [4+5]=% 27.

Figure 3

Figure 4 shows positively no significant difference in terms of "real" interaction between virtual class and real classroom in the e-learning group: [1+2]=% 24; [4+5]=% 58.

Figure 4

Query expression 3: *Since I do not choose class time by myself I do not prefer virtual class.*

Figure 5 shows no significant difference on understanding to have or have not time flexibility in the blended learning group: [1+2]=% 41; [4+5]=% 43.

Figure 5

Figure 6 shows no significant difference on understanding to have or have not time flexibility in the e-learning students: [1+2]=% 36; [4+5]=% 37.

Figure 6

In this group, the high score on [3]=%27 shows there is no understanding by students to be able to choose class time by themselves.

Query expression 4: *Virtual classroom application gives me the opportunity to have other activities in the Internet environment at the same time*.

Figure 7 shows no significant polarization on understanding the difference between being virtual/physical and having virtual/physical activities in the same environment for the e-learning students: [1+2]=% 40; [4+5]=% 41.

Figure 7

Figure 8 shows a significant polarization on understanding the difference between being virtual/physical and having virtual/physical activities in the same environment for the e-learning students: [1+2]=% 27; [4+5]=% 49.

Figure 8

Query expression 5: *I had the opportunity to join the learning activities without leaving where I live with the e-learning model.*

Figure 9 shows that there is no significant understanding on the difference between virtual and physical environment in terms of place flexibility for the group of blended learning: [1+2]=% 45; [4+5]=% 44. The fact on understanding is not just the technology itself, it is also to have it or to be able to being accessible to it.

Figure 9

Figure 10 shows that there is significant understanding on the difference between virtual and physical environment in terms of place flexibility for the group of e-learning students: [1+2]=% 12; [4+5]=% 74.

Figure 10

Query expression 6: E-learning module should continue only with forums and electronic materials instead of virtual classroom.

When we look at the **Figure 11**, we do not see the understanding of the close relationship between time-place flexibility and synchronous interaction from the view of blended learning group. [1+2]=% 40; [4+5]=% 41. This group has a high time flexibility. Having a work is not a priority according to the group of blended learning students.

Figure 11

When we look at the **Figure 12**, we see the understanding of the close relationship between time-place flexibility and synchronous interaction from the view of e-learning group. [1+2]=% 61; [4+5]=% 27.
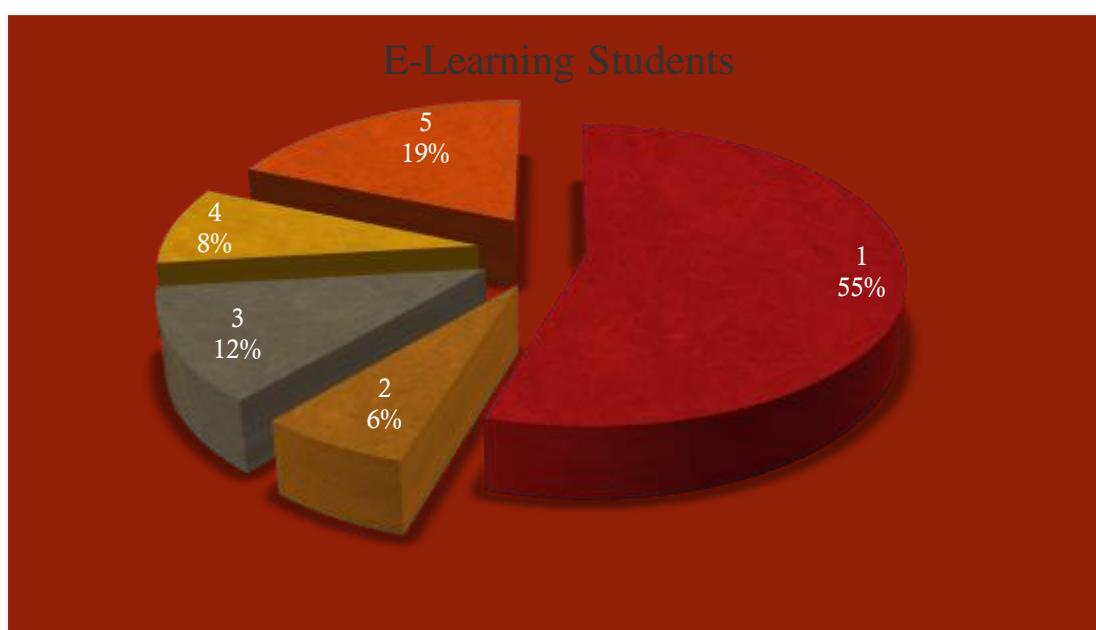

Figure 12

Differentiated query expressions (7 and 8) for two groups:

At this point we have two different questionnaires for these two groups of students. For the group of blended learning students the expression is "*if it were possible I would take all my classes with e-learning model*". For this group, it is obvious that time-place flexibility is not prior (see **Figure 13**): [1+2]=% 74; [4+5]=% 19.
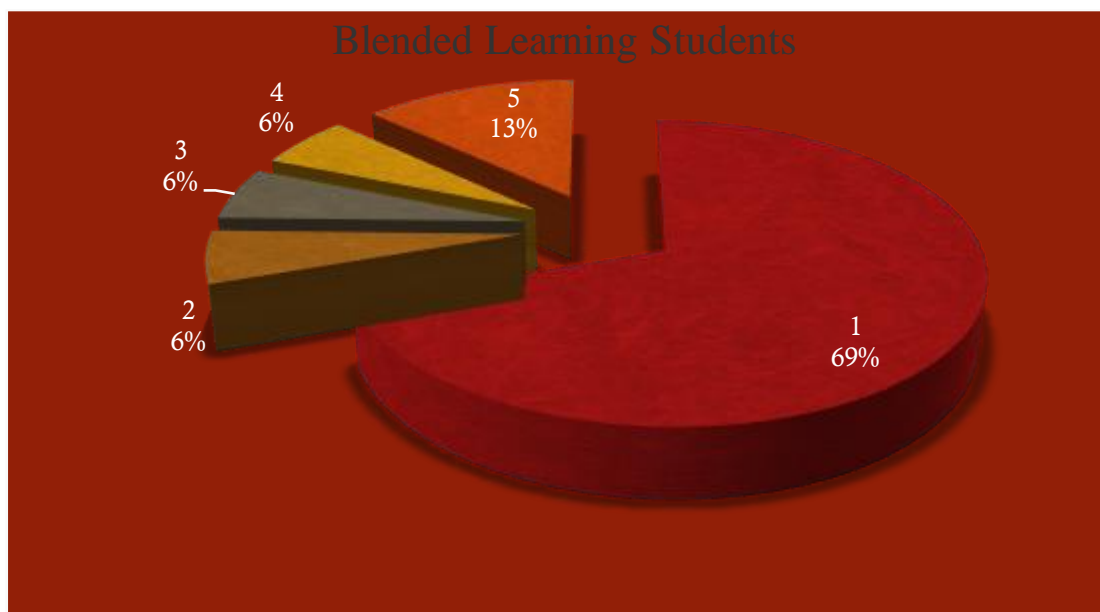
Figure 13: *If it were possible I would take all my classes with e-learning model.*

For the group of e-learning students the expression is "I prefer e-learning model since I had to work". For this group, it is obvious that time-place flexibility is prior (see **Figure 14**): [1+2]=% 68; [4+5]=% 24.
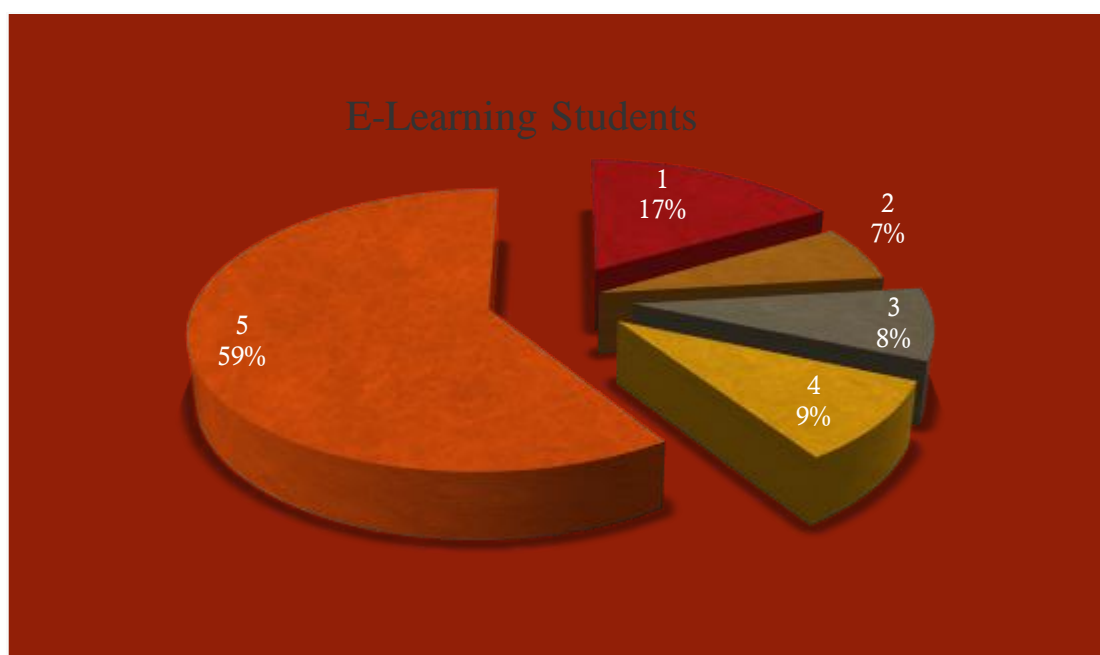

Figure 14: *I prefer e-learning model since I had to work.*

In the last questionnaire, the expression for the group of blended learning students is "when I take common classes with e-learning module I can use my time efficiently". It is seen that there is an understanding the close relationship between time flexibility and controlling the time from the view of blended learning students: (see **Figure 15**): [1+2]=% 75; [4+5]=% 19.

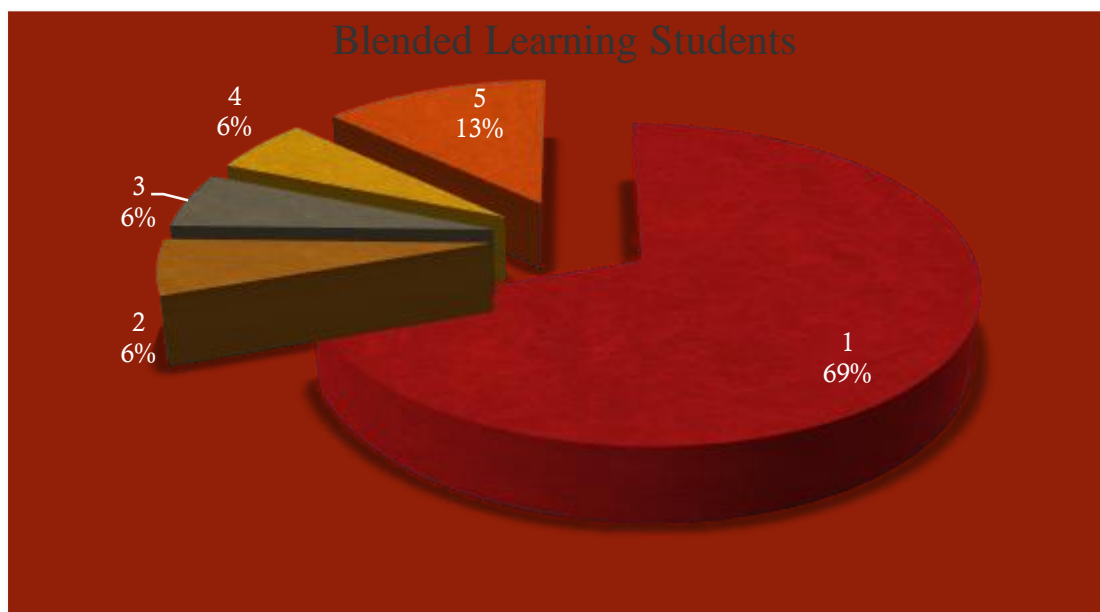Figure 15: *When I take common classes with e-learning module I can use my time efficiently.*

For the group of e-learning students the expression is "I would rather take face-to-face classroom teaching instead of e-learning if my opportunities were able to". For this group, it is seen that the difference between technology opportunity and material opportunity was understood: (see **Figure 16**): [1+2]=% 21; [4+5]=% 72.
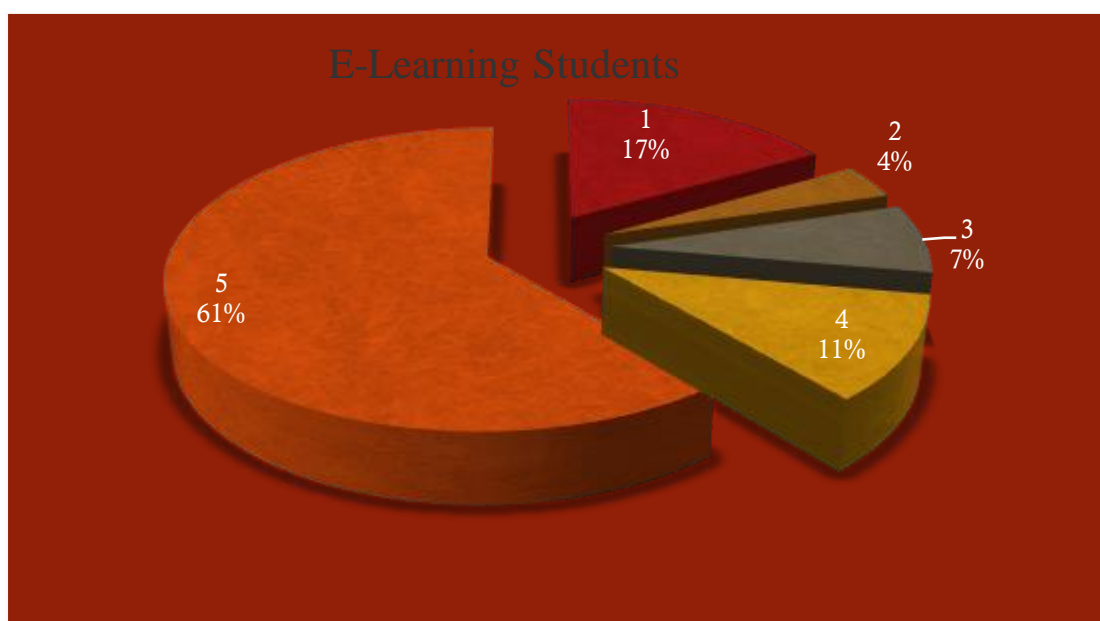

Figure 16: *I would rather take face-to-face classroom teaching instead of e-learning if my opportunities were able to.*

RESULTS

This study shows that students who join any instructional activities use technology in somehow. But the determining factor in here is not student as an individual voluntary behavior[1]. There are other factors involved. For the e-learning students they have working-life priorities; for the regular program students, the priority of the university who organize all these activities (university administration) is decisive.

Based on the understanding the differences between synchronous and asynchronous activities for the group of e-learning and blended learning students, individual's understanding as a students is not only spiritual-discursive

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[1] Erturgut, R. (2008).

level acceptances, it is also a process which is continuous and shaped by overlapping with experiences gained in practice/application these acceptances.

In the whole social relations, education-training relations are also abstract relationships. From abstract to concrete or "authenticity" takes effect when relationship and interactivity can happen in both ways. The difference seen in the context of "authenticity" of interactivity between virtual space and physical space is distinctly negative for the blended learning students who take less amount of their class online and almost imposed this situation to them.

The flexibility of time and space is not through only technology, it is a condition determined by the all individual's social existence conditions. For the e-learning students group, in the context of space flexibility, in terms of meaningful understanding of the basis of the difference between the virtual and physical environment, the physical presence of the conditions that made possible by the existence primarily engaged in the work environment.

In terms of e-learning activities, since the virtual interaction can happen everywhere, every time, the people who organize these activities think that technology make it happen itself, although this study shows that students prefer face-to-face interaction if there are options. Because of this (and also to promoting and supporting the ability to change itself), in the context of e-learning activities, people who organize these activities should give students options to select.

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HOW TO EMBRACE THE NEW CHALLENGES OF EDUCATION?
THE USE OF AN INNOVATIVE METHODOLOGY IN THE TEACHING-LEARNING PROCESS, IN THE IN THE ASSESSMENT AND IN THE RELATION TEACHER-STUDENT VS. STUDENT-TEACHER
BASED ON THE SIMULATOR OF BUSINESS ENVIRONMENT TECHNOLOGY

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ABSTRACT

The existent concern in suppress all the identified gaps in the traditional teaching of Accounting and Administration has led to the creation of a new way to be in Higher Education. This new way to be, denominated by Business Environment resulted in the implementation of two curricular units designated by Project of Business Simulation.

The present article has as purpose study not only the potentialities, but also the constraints of the innovative methodology of the teaching-learning process and the assessment used. We intent, to analyse in what measure the Simulator of the Business Environment beneficiates the school success, in result of an improvement in the teaching-learning process and, consequently, in the development of the students' competences.

The results of the study raised issues related to the teaching-learning methodologies traditionally used and the methodology of the Simulator, as well with the assessment methodology and how it develops in students a different attitude regarding the teaching and learning process. The centrality at the student as the focus of this rating system allows self-regulation of learning through feedback. Individual and group work are presented as key factors in the development of generic skills and behavioral in addition to technical inherent to the profession.

"The act of learning could be reproduced according to four dimensions diversely combined: by an emancipator master or by a heartless master, by a wise master or by an ignorant master" (Rancière, 2005, p.33)

INTRODUCTION

The present work is not finalized, it is a study in course, integrated in a Pos Doctorate Research, so Methodologies, data collections, treatments and solutions are not yet presented here.In the book "The seven knowledge necessary to the education of the future", of Edgar Morin (2002), are highlighted some aspects related to this theme, namely, the question of how education "(…) gives knowledge, provides knowledge, knowing" and the shaping of that knowledge to "a world formed by curricular unit teaching" isolated, this should provide a multidisciplinary character, so that the student has the knowledge as a whole and not only of a part. In the modern society teaching is oriented to students' learning with the purpose of contributing to the society of knowledge and to educate citizens to the job market, taking into account the need for innovation, versatility, adaptation, cooperation and training throughout life.

The main objectives of higher education today should pass by teaching students to think critically and not to memorize small facts; to reflect about the themes and to bring up questions; to develop the capacity of imaginative narrative and the ability to decipher meanings; to form future citizens able to live in an era of growing cosmopolitanism, and, so, to create a "community that knows how ratiocinate together about the problems, debating them in a Socratic manner; not to confuse education with the strict preparation for a profession and with the learning of the wiles of a craft" (Delors, 2001, p. 2).

The approach by competences in school has as main purpose to develop in students the critical reflective thinking, making them able to analyze, decide, plan and communicate their ideas. In this sense, it is fundamental the development of teaching-learning and assessment strategies that promote the achievement of the desired learning results.

Being clearly insufficient to enrich the curricula of the superior courses of Accounting and Administration with the curricular units of Business Simulation, it is imperative the adjustment of the teaching and assessment's strategies in order to ensure the effectiveness of these changes in the formation of the desired competences.

For this desideratum was conceived and already implemented in the curricular units of Project of Business Simulation of the Course of Accounting and Administration at the Superior Institute of Administration and Accounting of Porto, a Model of Simulator of the Business Environment, which intends to be the "terminal environment pivot", which gives the students the application of the knowledge gained separately in other curricular units, in a perspective of a systemic integration and with a critical and reflexive approach.

The present work, besides characterizing this innovator Model of Simulator of Business Environment (SBE) that supports learning, is oriented to the study of the competences that the students of the Superior Course of Accounting and Administration should have arrived at the end of their training process, using an effective process of assessment.

The study of the potential and constraints of the evaluation system (ES) used in these courses, is also a subject of the present article. We intend to, in particular, analyze to what extent this system benefits the academic success of students as a result of an improvement in the learning process and, consequently, in developing the students' skills.

GROUNDS OF THE PROBLEM AND THE CHOSEN THEME

The present study intends to give its contribute to the beginning of a revolution on Education as we know it.
We intend to demonstrate what does not exist in Superior School, namely the increasing lack of teachers with personal experience in business life and the need of aggregating in the teaching "named" Superior, the creativity, the "know how to do well", the risk, the time management, the domain of one or several languages (the internationalization of teaching and the labor market) and to value its clients: the student and the company.

We consider fundamental the change and why not, revolution of the actual programmatic contents and the methodologies of teaching and learning existent which condition the development of a Higher Education able to internationalize, thus dignifying students in their professional performance, both in our country or in the world.

The definition of the Course Curriculum and the technical, didactic and pedagogic quality of the teacher are fundamental aspects to take into account in the structuring of any Course, average or superior, adjusted to the times we live in.

The Superior Schools of the country are still far from a reality that is imposed to them from some time now, the financial crisis and the budget allocation prevails. The gigantic structures created in the last fifteen years were

not thought with the simultaneous need of self-finance. The "managers" of these schools are still in a dormancy that does not allow them to see what the future (already passed) holds them: the sustainability through a creation of new services, of networking between the various schools (of the different areas of knowledge), the sharing with the surrounding community and the constant improvement of the Quality of Teaching.

We think it is time that the mentality changes, in order to implement the core values in lack. Are the values that provide security, reliability, cost and performance and which create strength, integrity, competence and excellence, the behavior patterns, these and others, are the basis for the teaching activity.

THEORETICAL FRAMING

"The narrative of the evolution of the models and functions of the universities, especially in the western world, was globally repetitive in the essential, despite the multiplicity of origins, the external protection by state political institutions or institutional Churches.

These circumstances, too evident in the countries responsible by the long and frustrated process of westernization of the world, as happened with the sovereignties of the Atlantic coast, linked the concept of these centers of knowledge and "the how to do knowledge" to the strategic objectives of the founders, but the task of the pursuit of knowledge and "the how to do knowledge", did not prevent it was implemented, growing and generalizing, the principle of freedom of liberty of observation, of conclusions, and the valorizations, cross-beam of the academic identity, frequently supported in the sacrifice of the authenticity sustained by a long theory of venerated masters" (Adriano Moreira, in foreword, 2012, Santos & Filho, p. 9).

The "great classical thinkers that who have studied the problems of education, said and repeated it: it is up to the teacher to pass to the student what Mankind has already learned about herself and nature, all she has created and invented of essential" (Education – a treasure to discover, 2001, p. 19). According to the same document, "one of the main papers reserved to education consists, first of all, in endowing Humanity of the capacity to dominate her own development. She must, indeed, make each one take his destiny in his hands and contributes to the progress of the society in which he lives in, basing the development in the responsible participation of individuals and communities" (p. 82).
UNESCO – United Nations Educational, Scientific and Cultural Organization, defines the four pillars of Education, has being, the learning to Know; Do; Live in society and, to be.

The acquisition of the fundamental instruments to the understanding so that they can act upon the environment around them and participate in the society activities and cooperate with them, defines the pillars of education.

UNESCO identified what considers being the four pillars of education. Are they: learn to know; learn to do; learn to live together; and learn to be. Depending on the perspective and the ideology of each country, governmental organization (political and economic) and school, each one of these counties will have a certain treatment, being evidenced ones over others. Obviously, on tracing these pillars upon which general education should focus, UNESCO intended to magnify and rekindle the purposes of higher education, pointing out that the paradigm and attitude change in teaching was necessary in face to the economic, social and international changes.

These four pillar of education are:
- "(…) learn to know: acquire the understanding instruments;
- Learn to do: the power to act upon the surrounding environment;
- Learn to live together: to participate and cooperate with other in all human activities;
- and, learn to be (…)".
This is an "(…) essential pathway that integrates the background".

The first pillar above mentioned, refers to learning as a domain of knowledge and not uniquely as an acquisition of a set of knowledge. The need to grow the inner feeling to knowledge through life, is one aspect of great importance to this international organization, once knowledge is not immutable and is not uptight, and, therefore there is a need of a continuous learning. Also defending specialization, it presents the two approaches, by calling particular attention to the fact that there is a need of a multidisciplinary approach of knowledge, which does not exist if two requirements are not fulfilled: the general knowledge and the specific knowledge of the individual. If, on one hand, this possesses only a general knowledge, he has not the necessary specialization to the development of his profession; if, on the other hand, he does not possess a specific knowledge, he cannot perceive what is done in the other areas of knowledge/knowledge that may help him in the construction of knowledge.

The "learn to learn" is defined as the necessary attention to aspects related to the development of memory, attention and reasoning, being the deductive and inductive methods indicated as possibilities of "tools" in the classroom, in order to maximize the perfectioning of learning of the student.
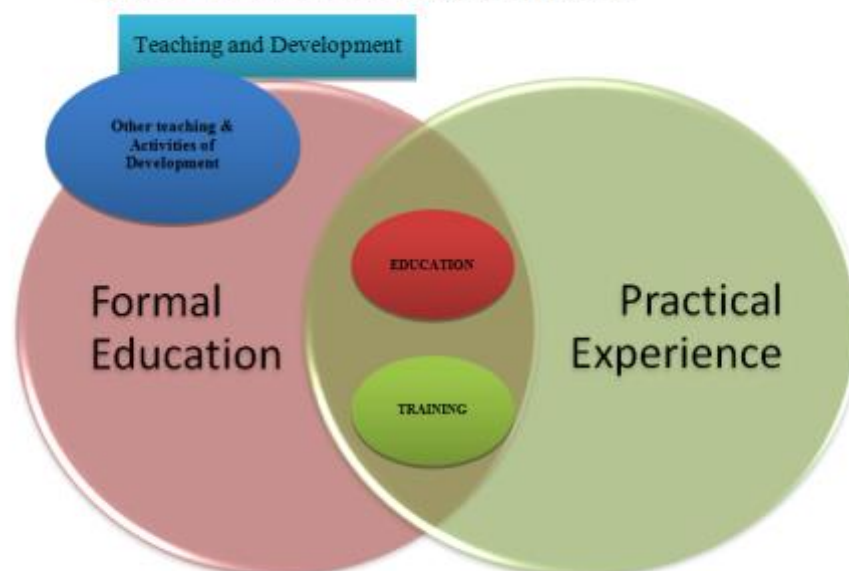
With the "learn by doing", there has been a major concern in education; However, the way to articulate the school with practice is not easy and is often ambiguous. "Learning to do" cannot continue to have the meaning simple to prepare someone for a task well, material or to do participate in the manufacture of something "(p. 93). Learning methodologies should not remain solely as a vehicle for transmitting a set of skills that allow the student to perform a limited range of tasks, and the difference between qualification and competence. If the school's purpose is to provide the student's qualifications enough learning a set of tasks. If, however, is its purpose to provide the student with skills to play in the future his profession independently, so we define competencies as: "qualities like the ability to communicate, work with others, to manage and solve conflicts, that become each time more important." (p. 94).

These four pillars are to be considered as an essential base of higher education, allowing the cohesion between theoretical knowledge and practice, and giving education a higher fullness to the "realization of the person who, in its entirety, learns to be" (p. 90). As referred to the authors of the study, "the confrontation through dialogue and the exchange of arguments is one of the instruments necessary for the education of the 21st century" (p. 98).

The International Accounting Education Standards Board (IAESB) divided in phases the process of Accounting Education, starting with the IPD - Initial Professional Development, followed by the CPD - Continuing Professional Development and evaluation. This organism identifies the aspects to contemplate in the education programs in Accounting, with obedience to a structure based on skills:

A – General education: comprehensive education that is able to fit the need of the accountant professional;
B – Education in accounting: in schools with a program certified by IFAC (International Federation of Accountants);
C – Practical experience: professional experience relevant to the profession of the accountant;
D – Evaluation: formative and summative tests in order to assess the skills and capacities developed and acquired throughout the formative process.

Figure 1 – Components of teaching and development

Source: IAESB – Exposure Draft Proposed Framework for International Education Standards for Professional Accountants, 2009.

The development of information technologies and the increasing generalization of the internet put new bets for the development of the professions, and to the profession of the accountant, administrator and Manager. The technologies caused extraordinary changes in the world since they allow access to information and knowledge,

in time, that even 15 years ago found themselves in the possession of a limited number of entities. The concepts of time and space changed radically, being global is a reality without any alternative.

The discussion around the use of technologies in teaching and learning has not been peaceful, particularly in the construction and/or reconstruction of the relationships School-Students-Teachers-surrounding Community. The teacher is now a mediator of information and a supporter of the process of knowledge. The correct use of technologies in teaching and learning is critical to the development of the country, global country, and the country in the world.

According to Lapointe (1990), "the technology of education will, therefore, be considered an approach that consists of applying scientific knowledge and rational data, processed by the left hemisphere, and intuitive data, processed by the right, with the goal of developing systems (methods, techniques and machines) susceptible to solve learning practices, teaching and training (...). The technology is a tool of rational intervention that guides the intuition of the technologist in the research, as well as the development and application of satisfactory solutions, realistic, desirable and achievable, for the practical problems encountered in the actual universe ", cited by Soares (2011).

According to this author, we believe that the technological approach in education should be based on the technology and should not allow her to take precedence over education. This means that the use of technology in education should give special emphasis to the methodologies in implementation in the classroom and facilitate the learning process. In higher education of accounting and management is also essential that students acquire skills in terms of handling technologies and its development, namely of the integrated systems of information and decision support. The role of accounting has evolved and changed as a result of the evolution of technology and of his intervention in the business world. Hence it is important that students seize the necessary concepts and feel capable of handling the various tools on the market, in addition to having the predisposition to acquire skills in terms of its design, operation and control (Soares, 2011).

Educational technology is characterized by "a systematic way of designing, executing and evaluating the total process of learning and teaching in terms of specific objectives, based on research on learning and human communication, employing a combination of human and non-human resources to produce a more effective instruction" (McMurrin and Snelbecker, 1999, cited by Soares (2011).

The use of computers in education arose in the United States of America, in the 1960s, to assist the various teaching activities. With the spread of computers in the 1980s, the schools began to use the tools to support the calculation and writing. It was also inserted the teaching of spreadsheets, word processors and programming in the syllabus of the computing course units. The teaching of information technology, however, kept separate from the teaching of other educational aspects (Valiant, 1991 in Joly, 2002). The position of technologies in education has been changing gradually and, currently, they support the teaching through games, simulations and educational software (Soares, 2011).

Education (cognitive development) and training (performance in a specific competence) are distinct; however, there are convergent points, as the reach of the goals: teaching, learning. Informatics can (and should) support both whenever possible, providing greater efficiency and performance of a larger number of activities.

The use of technology in the superior courses of accounting and management has undergone significant changes. About ten years ago, computers were present in these courses through the own course units, therefore, the teaching related to technologies was not extended to other professional areas in study.

The computerization of small and medium enterprises, which employ a large proportion of these students, was featuring the need of having in education the access to the appropriate tools.

The increasing interaction between accountants, organizations and the supervisory state authorities facilitated the introduction of professional programs in education.

In Portugal, have emerged curricular units of Simulation that integrate the use of professional programs in the teaching of accounting and management. However, it turns out that the technology is in most cases to be used merely as a vehicle for the preparation of exercises. It has been a mere passage of the resolution of exercises on paper for their resolution with the support of professional programs unbundled. Students are asked to perform the exercises by recurrence to the computer software, by the accounting record and the printing of the accounting and tax parts. The teacher guides the students through the process, worrying about the explanation of the procedure.

The technology, in our opinion, must be used, such as should be in practical life. Hence our proposal contemplates that students, when they are faced with the tasks/simulated situations, are obliged to execute them, with the support of technology and teachers. The technology appears in this process to support the student. It is essential that its role is seized in the right place and not in the replacement of teaching methodologies. The technology must be in a common place to the one of the teacher, in the curricular units eminently practical and real tools should be applied and not manipulated or created solely for teaching. Students must be able to conceive, understand, operate and even change when faced with these, both in teaching and in professional life.

And we understood that the role of the school, in addition to teaching, is to provide a leverage effect of society through the quality of its students, so this should think what the true role that technology has in the fulfillment of this goal.

In the Project of Modernization of Higher Education in Accounting and Management (PECRESC) designed by Oliveira (2003), which was at the origin of the curricular units of Business Simulation Project (initially created under the name of Business Simulation, changed in 2007, when the restructuring of the course according to Bologna), it should be noted that students must be conducted through the reflection and work, to adopt certain attitudes towards their own learning process, must realize that they are the actors of that process themselves. Students should be given training which equips them to develop independently, whereas school only prepares them for life, through a previously defined set of objectives to be achieved by providing them training in the skills required for the performance of the professional activity of Accountant and Manager/Administrator.

In higher education of professionals in the field of accounting and business management, the typology of teaching-learning is still far from what we thought was the ideal education, given that there are still problems inherent in the traditional system of higher education, continuing the knowledge to be segmented by theoretical course units (in which the designated practice course units do not pass from the resolution of theoretical exercises using the technologies) with tight nature not enabling the student enough for his immediate inclusion in the professional environment as Accountant/Manager/Administrator, with full capacity to assume the responsibilities that are required in the real world.

From this fact, gave resulted implications that have reflected in a pragmatic inadequacy of the students - a notorious gap between what we teach to the student and what is required and continues to be required to the professional. It must be adopted different (why not revolutionary) strategies in teaching-learning and educational and didactic, namely the introduction of a systematic and growing multidisciplinary, the use of professional techniques, the reinforcement of knowledge for the complexity and variety of information to support the management by creating in students new skills so far forgotten by teachers, particularly the skills that they will be requested within the labor market (teamwork, communication, among others) and ensure the integral formation of the student (in all its human potential) at the level of the degree.

COMPETENCES - CONCEPTUALIZATION

At this point we will examine relevant aspects of learning, skills development and assessment, related to the process of teaching and learning.

The concept of competence, advocated by some authors (Le Boterf, 1997; Perrenoud, 1999; Rey, 2002), refers to the capacity to mobilize several cognitive resources to cope with various situations.

P. Perrenoud, one of the authors that mobilized the idea of competence as an overhaul of education in terms of their improvement, defines competence as a 'knowledge in use' (Perrenoud, 2000). This notion is very close to the center of another author in this field, on professional skills, Le Boterf (1994). These authors refer to various cognitive capacities to mobilize resources to meet different situations. Skills are not themselves knowledge, attitudes, but mobilize, integrate and orchestrate such resources.

This "knowledge in use" can be assumed to be the opposite of "inert knowledge", i.e., speaking of competence refers to the knowledge that translates into effective usability and handling (intellectual, verbal or practical) and not cumulative with which content is not known to act in the present, nor solve any situation or think about it. Indeed, and as related Costa Martins and Candeias (2010) "Development of skills involves access to knowledge in its various dimensions and, subsequently, the progressive, integrated and dynamic mobilization of this knowledge, a perspective of continuous reconstruction" (p. 24). Despite discussions and lack of consensus in the literature around the concept of competence, in this study we consider the concepts of skills, abilities, knowledge, attitudes, traits and motives within the context of delivery of individual, very close to the triad designated KSA: knowledge, skills and attitudes.

The current curriculum changes in higher education lead us to a reflection on how to conduct a curricular approach by competences, thus reinforcing the need for an effective performance by the student in the act of learning, becoming himself the constructor of his own learning process, critically and creatively.

The definition of what should be the Accountant/Manager and of what he must know in order to perform, adequately enough, his profession as soon as his journey on higher education ends, is very ambiguous. Hence arises an added difficulty in defining and identifying the competences and, consequently, the methodologies of teaching and assessing, which must support the mobilization of those competences being acquired by the students.

According the authors Tavares and Alarcão (2005) it is of great importance to define, in the first instance, the set of competences that the student should acquire along his training process and, in the second instance, the reorganization and the use of methodologies of teaching/learning that facilitate those competences acquisition.

Isabel Alarcão (2004) summarizes that "(…) the professional competence implies knowledge of the situation in an action, holistic, creative, personal, constructed, a knowledge that depends, among other things, of the capacity of the professional to appreciate the value of his decisions and the consequences resulting therefrom".

COMPETENCES VERSUS. PEDAGOGIC PRACTICES

In order to be developed pedagogy for competences, it is necessary to modify the pedagogic practices, with tasks that challenge and motivate the students to mobilize the knowledge they already have, in the search for new knowledge.

Burnier (2001) lists some basic principles of the pedagogy for competences, as the fact that education provides a more comprehensive and solid human training, of changing the concept of learning, of establishing mechanisms to identify previously which knowledge should the students acquire in order to be able to engage in the labour market and the one of developing technical and vocational competences in the students.

Another important factor to focus is that pedagogy for competences applied to higher education, states that the individual inserted into a profession needs to adapt to the new trends in the world of work where he will intervene and act.

THE ASSESSMENT IN THE TEACHING ORIENTED TO THE FORMATION OF COMPETENCES

The competency approach in school aims to develop in students the critical reflective thinking, making them to know how to analyze, decide, plan and communicate their ideas. In this sense, it is essential the development of learning strategies and, in particular, of evaluation to promote the achievement of the desired learning outcomes.

Assess skills at school is to mark a rupture with the assessment practices that favored the acquisition of the disciplinary knowledge, emerging in this logic, the defense of a formative evaluation (Alves e Machado, 2002) putting at the Centre of their concerns a student who, through his pursuit of learning, becomes the protagonist of his own learning.

However, we must bear in mind that the evaluation procedures to be used must be well outlined in pedagogical practices. And the ones that best identifies with skills assessment, are the ones that lie within a formative and forming logic, inasmuch as they are oriented towards a self-regulator assessment or self-evaluative of the individual processes of learning, i.e. each individual learner gradually builds his/her itinerary based on the various benchmarks of the educational process. Therefore, the assessment in a curriculum oriented towards skills training is not organized in function of thematic sequences, but according to the manifestation of the desired competence (Roldão, 2003).

According to Luckesi (2003), when the teacher actually assesses the results obtained, he is able to accommodate the student, to confront him with his learning process, to help him if necessary, a relationship of complicity, in which when the student fails to learn, the problem involves not only him but him and the teacher, providing an educational action of pairs rather than opponents, since the evaluation will only be efficient and effective, according to Sant'Anna (1995) when it occurs in an interactive way between teacher and student.

According to Cardinet (1993), the evaluation serves as a guide to action. The evaluation exercises a regulatory function of learning and before that, as pointed Perrenoud (1999), regulates the work, activities, relations of authority and cooperation among students.

If the act of evaluating assumption is to help the students to learn, the idea of formative assessment becomes quite simple. According to Perrenoud (1993), "the individual will learn better if his environment is able to give answers and regulations in various forms: identification of error , suggestions and counter- suggestions, additional explanations, revision of basic notions, work on the sense of the task." (p. 49).

According to Figueiredo et al. (2010), the assessment should be active, participatory, shared and continuous. New forms of assessment that promote interaction are required (among students, between students and teachers, always based on the retroactivity), and placing the student and his learning experience in the center of the process, cited by Azevedo (2012).

In practice, according to Barbier (1995), "any assessment situation implies the existence of roles and representations: what is at stake is not so much produce , but produce , it's not so much to assert, but make yourself worth, the best device that best enables the exposed assesses their skills, their know-how, and their knowledge" (pp. 19-21).

In this context, ongoing evaluation not only eliminates this situation representation, as it tends to "increase its influence on the development of his own formation" (Barbier, 1995, pp. 19-21). The basic idea of this assessment approach is that the fundamental concern of a teacher should be to help students' progress (Azevedo, 2012).

Met several authors strong point of convergence, in that everyone thinks that evaluates to take decisions. And according to Costa, Martins and Candeias (2010) "decisions by the review aim to understand the processes in order to introduce in them changes, which, even if timely, will be likely to bring about significant improvements" (p. 16).

Identifying the value of formative assessment within a competency evaluation, we can agree with Cardinet (1993), when he considers that formative assessment is intended to allow the awareness on the student of what distinguishes his act from the others and of all the logic that is behind his behavior. It is, thus, the student, who seeks self-regulation, legitimating in advance his assessment.

It is essential to address the self-evaluation in the context of skills, since, if the mobilization of the various knowledge occurs individually and in adverse situations, it is then to learners to manage their ways to make and develop their abilities through their daily practices, insofar as the integration of self-evaluation in school evaluation process, gives the student a different status, giving him a certain autonomy in learning and making him responsible for the condition of his path, with the help of the teacher, transforming the student in the main actor of learning (Pacheco, 1994, cited by Azevedo, 2012).

Formative assessment accompanies the whole process of learning, allowing teachers to tailor tasks to each specific situation, which implies, as stated Abrecht (1994) that it should not be seen as a method, but rather as an attitude. This author believes, for example, that this type of assessment is educational because it is itself a learning activity, it is dynamic, it allows feedback, is transparent, because the students understand what is asked of them and know what it is expected from them.

Formative assessment as a regulatory tool and guidance on decisions that allows adjustment of aid from the continued evaluation of student performances is a core activity of teaching and learning (Allal, 1986).

The formative assessment promotes the gradual assumption by the students of a bigger control and responsibility for their own learning process (Azevedo, 2012).

STRATEGIES OF TEACHING-LEARNING AS A MEAN TO FACILITATE THE PROCESS OF FORMATION OF COMPETENCES
Several authors, numerous articles and case studies of international scope, deal with the various strategies that can be used as a way to facilitate the process of training competences, namely the enterprise games and/or the simulators, the business simulations and the professional internships.

THE COMPANY GAMES
The company games are simulations which aim to reproduce the process of corporate decision, an instrument of research, teaching and learning in management. Although there are many concepts (according Kirby, 1995), they

have common characteristics: there is a goal to achieve; the behaviors that are part of the game are clearly defined; it is introduced the competition; there is a high degree of interaction; and, in most situations, there is a defined result.

A common attribute to games, is that they always involve a simulation process with defined roles and decisions taken in certain contexts.

THE BUSINESS SIMULATIONS

Chen (1990) found more than thirty different definitions of the term "Simulation". For its breadth and diversity there is still no unanimous and precise definition. According to Hönerloch (1997) simulating administrative processes may be characterized by the development of models, by experimentation through these models to identify inter-relations, and to evaluate and quantify the simulation results. Simulations can be used in several areas and circumstances, with emphasis on market research, economic feasibility studies, and still on teaching.

Models are constructed out of real systems, which allows to obtain a drawing as close as possible to reality. The models also allow us to represent situations that have not yet been observed (Bossel, 1992).

The simulations allow a simplification of the reality for study purposes or to assess the various hypotheses and variables, aiming to develop solutions for specific problems or situations.

THE PROFESSIONAL INTERNSHIP

The professional internship appears normally integrated in the curriculum of the Superior Courses of Accounting and Administration, with the purpose to facilitate to students the access to organizations, so that they can apply the competences they've acquired throughout the course, in the actual/real practice of business.

The professional internship is centered in the application of the competences learned, by students, along their higher level training process.

One of the problems placed is related to the type of organization that welcomes the student, depending on its activity and organization to provide him, effectively, or not, the access to various functional areas, in order that he can experience the inherent practical competences acquired. Another problem occurs with the inadequacy of organizations/companies to the pursued aims, which does not allow students to learn in quality environments, providing them, generally, only the execution of routine tasks.

The process of assessment of this form of learning is normally incipient, not allowing gauging its results for the development of the students' competences.

Typically, this evaluation is the result of a probation report that, in the end, is evaluated by the School, in an isolated form.

It's our conviction that professional internships must be used as a strategic training of observation and critical reflection, when combined and in complement to the training based in the simulation of the Business Environment available along the entire course.

THE MODEL OF SIMULATOR OF BUSINESS ENVIRONMENT - THE REVOLUTION IN THE WAY OF BEING IN THE CLASSROOM

Although we accept that in certain curricular units it may be useful the resource to the strategy of games/simulation of companies, we defend, notwithstanding, that the complete training of competences in the Superior Course of Accounting and Administration requires an availability of a Simulator of the Business Environment that assures to the student a multifaceted participation, as an intervener agent in the process of conception, development and maintenance of the business reality.

This Model of Simulator of technological basis must propitiate a space of learning, based on the simulation of the organizational environment typical of an entity provided with an advanced management profile which involves the student in the application of the knowledge that throughout the course is emerging in a multi and inter-disciplinary form.

The particularity of the skills training process so that the courses Project Business Simulation I and II are oriented, shapes teaching methodology and evaluation system itself, which is built on a dynamic basis primarily interested in the progressive effects of the expected change students, the learning of complex behaviors, but also concerned with the verification of skills acquired with a view to their final academic certification. Since this is a practice of education and training, whose fundamental purpose is to link theory to practice, turning the experience of training in professional experience, in which the passive role and receiver gives the student time to the active part of it, evaluation is interpreted as a process of systematic collection of information to measure the

progress of students (for these and the teachers in the two dimensions of self and hetero) and the decision of the adjustments resulting training deemed necessary.

The teachers themselves, responsible for monitoring the curricular units, do so, on a different approach, dealing directly with the real tools of the new technologies available in the field of communication and information, being their function of guidance permanently ensured.

In each of the distinct and gradual steps the training path, demarcated management, import verify and qualify the degree of progression in the trajectory of accumulation of powers, giving the student the possibility to judge on its own evolution, in terms of training, attentive the mandatory rating for administrative purposes, it cannot fail to make a judgment for assessing the satisfaction level of skills acquired by each student. In summary, the assessment of the degree of competences acquired over the frequency of courses Project Business Simulation I and II, follows an evaluation system by the feedback permanently given to the student by the teacher and by the obligation of execution, by the student, of the planned tasks in person and accompanied by the teacher, in all the working sessions.

In modelling this learning is considered essential:
- the integration of TIC (technologies of information and communication) in its dual roller of mentor and facilitator,
- the priority to dematerialization and interaction(of the students) networked in the global market, with a strong reaction dynamics,
- the presential execution, subject to a real calendar, with the possibility of local and remote exploitation (via Internet),
- the use of the electronic portfolio in the construction of the student's curriculum,
- the learning supported by an organizational environment of high systemic complexity, based on a global network by processes,
- the availability of professional tools and the forms commonly used in the reality of the business world,
- the subjects as a comprehensive system,
- the multidimensional treatment of the information oriented to the support of decision making, to the resolution and answer of the "contents/themes/problems/…" placed to the student.

Note that, on this Model, the major pedagogical change of the teaching of Accounting lies in creating the same pivot environment, available along all course, personalized for each student, supported on real technological tools and in the coordinated implementation of all the theoretical knowledge acquired progressively, in order to form comprehensive professional competences.

In summary, this Model to be adopted, not only in the curricular units at the end of the course, particularly those of Business Simulation, but essentially in all the others that, framed in business sciences, need a pivot environment that ensures the extent of knowing to the action in a common context, duly completed and evaluated.

NEW PEDAGOGICAL APPROACHES TO BE USED IN THE DEVELOPMENT OF TECHNICAL AND VOCATIONAL SKILLS OF STUDENTS IN THE TEACHING OF ACCOUNTING AND MANAGEMENT/ADMINISTRATION

Soares (2011), presents the problems in pedagogy in higher education of accounting and administration, identifying a set of "pedagogies" already used by teachers in the classroom but, alerting to the fact that students forget too easily what they memorize, which leads that the acquired knowledge becomes easily outdated, and often inadequate to the problems they are confronted in the professional life. Criticizes the fact that the teaching of accounting "(...) has expended more time to the transmission of content than that which is dedicated to support students in developing skills that will enrich their lives and make them successful professionals.

The pedagogies, or tools, or different forms of work, how we want to call them, are already used in many classrooms but not in a systematic manner and are often used in the wrong way, what creates in the student discomfort and mistrust in his learning process.

We've identified a set of tools to be used defining the circumstances of its use and its purpose, and how each one is already used, since 2003, at ISCAP, in the curricular units of Business Simulation Project I and II, through the teaching-learning methodologies underlying the Business Environment Simulator, presented in the table below.

Table 1 – Pedagogy – Objective – Use vs. The Simulator of Business Environment

Pedagogies	Objectives	Circumstances of use	Business Environment Simulator
Works in real companies	Facilitate to the student the real work environment.	Professional internship along and at the end of the formative process.	Real Companies Simulated.
Analysis of cases	Stimulate in the student the reflexive and critical thinking and the resolution of problems.	During classes, to be held in group, preferably, and presentially.	Always and by processes. Critical reflection at the beginning of all sessions.
Exercises with feedback	Provide the student the resolution of the exercises /problems placed to them and motivate to find new solutions.	During the classes, to be held individually, and outside the classroom, always with feedback.	Ongoing assessment with feedback (from session to session).
Theory	Provide students with the required contents for the development of pre-defined competences.	Before "put" the student challenges to apply this knowledge received in practice.	Explanation of the theory underlying the tasks to be performed by students.
Oral presentations (different languages)	Support the student in the systematization of information for oral presentation and development of communicating competences.	During the classes, after the analysis of a case by a particular group, for instance, and its presentation to colleagues; execution request of certain exercises / works, individually, based on the acquired knowledge for subsequent oral presentation.	Four (4) oral presentations in the two (2) semesters.
Book reading/Support Manuals	Motivate the student to the reading, facilitating like this the acquisition of new information and the taste for reading will allow him to develop communicative competences (oral and written).	During the classes and outside the classroom, always framed in the themes to be developed at the moment.	Supporting documentation to sessions; A's; PRO's[1]; Manuals; Slides; in all sessions.
Role Playing	Develop in students the ability to communicate, to bond with others, leadership and conflict resolution.	During the classes, always mediated by the teacher, and framed on the themes to be developed at the moment.	In the oral presentation "of the company" of a Theme in response to the questions raised by the colleagues (role playing: defend his perspective) and in the final defense FR: one in each semester.
Work group	Develop in the student relational, ethical and behavioral competences.	During the classes, whenever possible.	Since the first session/class and outsider the classroom (reports, work)
Works with technology support	Use correctly the information and communication technologies and instil in students the information search to support the development / resolution of works / problems.	During the classes, whenever possible.	All sessions / classes.
Films/videos/ music	Motivate students by using various tools for oral and written communication.	During the classes, whenever possible and outside the classroom (in the elaboration of work and problem solving / placed situations).	Whenever necessary.
Written works (different languages)	Mobilize students to the necessity of using the English language /Spanish/.... in the various disciplinary fields.	In foreign language classes. And wherever possible in the remaining areas (search for information, etc.)	News in English and written opinion in English about the same; and in the last FR in the second semester the "*firm in brief*" (that they may present orally)

The authors Albrecht and Sack (2000, p. 54) question "Why is it, if we believe that there is still too much theory, we continue to support us in it?"

Students forget easily what they memorize, and the acquired knowledge becomes outdated, and often not adaptable to different types of jobs. The solution lies in the balanced combination, and why not perfect, between the theory and the above mentioned pedagogies (or other) once the critical competences rarely become obsolete and are usually transferable throughout the career of the students.

In the studies consulted on the subject under consideration and with regard to training based on skills, we've verified that, either the School or the professionals, take the same position with regard to developing core competencies in students, being this range of competencies the same as other International Associations, such as the AIPCA, the UNESCO, the IMA, the AECC the European Union, the World Bank, recognize as fundamental and mandatory (Soares, 2011). Thus, it is urgent to find solutions whose primary objective is to integrate these skills in the curriculum of the courses of the various areas of knowledge.

In our area of knowledge, accounting and management or administration, students must, at the end of the training process at the level of the 1st cycle, have the following competencies:

Table 2 – Competences to develop in the students

COMPETENCES	
VOCATIONAL	**TECHNIQUES**
Analytical / critical thinking	Use of the Information and Communication Technologies dexterously
Written communication	Business decision moulding
Oral communication	Risk analysis
Decision taking	Budgeting
Interpersonal competences	Project management
Continuous learning	Accounting
Group work	Negotiation
Professional behaviour - ethics and attitudes	Resource management
Leadership	Sales
Entrepreneurship	Creating a Business Plan
Foreign language	Economic and financial analysis

Source: Adapted from Soares, 2011.

Soares (2011) argues that, on one hand, students have to understand how the technology makes the information less expensive and accessible, and, on the other hand, they must know what this "cheaper" information means and for what purpose it is taught. It is necessary to make students see that technology facilitates business, including communication, decision-making and the importance of strategic partnerships.

The technology changed the world of business, making transactions more complex, shortening the life cycle of products and facilitating the permanent change in business. The students have to use effective and efficiently technology, and learn to remove from it the information to support decision. As already mentioned, the role of accounting has been changing, assuming today, as a management tool, so the accountant must also have competences at the level of the constructions of information systems for decision support. To this end, shall be transmitted knowledge to students to provide them the skills necessary for the handling of this technology.

The school and the professionals will have to position themselves favorably in relation to this aspect, whereas the main technological competences should stabilize at the level of the use of spreadsheets; the word processor; the Windows, the Internet, presentations software and technological terminologies, Database software; planning information systems (for decision support) and e-commerce, among others (Albrecht and Sack, 2000, p. 57, cited by Soares, 2011).

Adds this author that in addition to the previously identified ICT is essential for students in School, taught how to work with Enterprise Resource Planning (ERP) or integrated management systems, capable of introducing the inputs relating to the business and removes the outputs required for obtaining the information to be processed by these to support the management and decision-making.

"Our criticism about accounting education has been harsh. Maybe. But then, before, cries of impending danger have been widely ignored. We lost too much time to rest on our traditions and always look to the past, when we should have been teaching for the future. With the right direction and with dedication and work, accounting education has a bright future. And that future depends on the actions we take now. " (Albrecht and Sack, 2000, p. 58; cited by Soares, 2011).

The changes have been insufficient (Albrecht and Sack, 2000, p. 45), and "all cases studied have focused only on the change of one or other name of one or another discipline" (Albrecht and Sack, 2000, p. 48), cited by Soares, 2011.

In short, the main problems raised at the level of content and the curriculum of accounting courses reside in the fact that introducing the accounting and management/administration as a curricular unit where the debits and credits are the essentials and financial preparation is emphasized; where the management is seen solely as an accumulation of costs and preparation of budgets; where students are prepared for the achievement of financial reports that obey to strict criteria; and where the tax rules and audit standards are transmitted in theory.

Despite these contents form accountants for the labor market, the business world needs qualified professionals for the management with accounting knowledge and what has been taught in accounting in recent years, is not what it currently is done in the real world of business. That is why there is an urgent need to make changes in the contents and in the curricula of these courses to train professionals in management.

Table 3 – Competences mentioned in several international studies

Competences	Teaching-learning Methodologies
Communicational (oral and written)	Discussion of concepts in conjugation with the actual traditional teaching methods. Active role of the student in the classroom through the use of study cases, as for instance, research projects, written reports and oral presentations.
Problem Resolution	Reading method combined with the resolution problems method. Resolution problems method thought alternative solutions, as written reports.
Decision Ability	Resolution problems method with alternative solutions. Remove emphasis to the unique preparation for the professional exam. Combine the use of supporting texts and theoretical exercises with other techniques that motivate the student to be in the classroom. Simulation of cases; Group work; Research projects.
Information System	Conception and implementation of the Information Systems and the use of software in practical classes.
Ethics in the profession and with others	Group work and discussions among groups.
Interpersonal	Group work; research projects; discussions among groups.
Techniques	Professional experience as programmatic requirement; multidisciplinary curriculum; Professional internships and observation throughout the course; technical teaching over content; visits to industries; self-assessment.

Source: Soares, 2011.

The above competences identified by Soares (2011) resulted from an investigation of a PhD based on the several studies analyzed of the international organizations with vocation for these themes and the data obtained from students who attended the curricular units under review in the school years from 2008 to 2010.

Then we present a synthesis of the information collected with the above mentioned organizations, which defined the goals of the teaching of accounting and management; the content that these courses should contemplate for

the goals presented are met; the structure of the course; the methods and pedagogies to adopt; the evaluation to use; what is expected of teachers and, yet, where the school must act in order to implement the changes required by today's world.

Table 4 – Vision of AECC and the BC

Accounting Education Change Commission (AECC) e Bedford Committee (BC)	
Objectives	Accountancy data: multidimensional and systemic.
Contents	Development of information systems for decision support; Comprehensive and multidisciplinary education; Education of Arts and Science; Existence of interdisciplinary, Curricula adjusted to reality; Flexibility (rapid adjustment to the changes that society demands).
Structure	More comprehensive structure; Conceptual knowledge; Technical specialized knowledge; Course structure of at least five years; Joint work of practice and school.
Methods and Pedagogies	New methods in order to facilitate learning; Active learning methods (development of self-study); Theory and Demonstration; analysis of cases and its discussion; simulation of the decision-making process; assessment based on written and oral reports; relevant supporting texts for learning; discussion of ethical cases with professionals in the field; computer aided teaching; Use of advanced technological tools to generate and develop economic information.
Assessment	Assessment of communicating and problem-solving (quantitative and qualitative) competences.
Teachers	Individual support to students.
School	School-business relationship; Concern about the competition.

Source: Soares, 2011.

Table 5 – Vision of the AICPA, the IMA and the AAA

American Institute of Certified Public Accountants (AICPA), o Institute of Management Accountants (IMA) and the American Accounting Association (AMA)	
Objectives	Transversal.
Contents	Imprecise, out-dated or irrelevant; Preparation at the level of concepts such as globalization, technology and ethics; Lack of preparation of students to the real world of business; Teaching with Information Systems technologies for decision-making;
Structure	Insufficient class time to enable the student with the tools necessary to the business world;
Methods and Pedagogies	Memorizing tests are not sufficient; Preparation towards a final certification is not sufficient; Shortcomings in relation to creativity, involves reading and dependence on supporting texts; Does not develop the ability to learn the technique; Focus on technical competences.
Assessment	Nothing mentioned.
Teachers	Posture change in the classroom, more support and not merely a knowledge transmitter.
School	Isolated from the real world; Distance between the labour market and the School; It is still remaining to change the management strategies so that the School increases the quality of the service provided;

	Lack of leadership in School.

Source: Soares, 2011.

Table 6 – Vision of the AECC

Accounting Education Change Commission (AECC)	
Objectives	Accounting education as a mean of information and development of the communication function to the support on the process of decision making; Development of critical thinking; The student should be able to learn for himself; The student must be an active participant in his learning process; Develop ethical attitudes in students.
Contents	Emphasis on teaching by procedures.
Structure	Nothing mentioned.
Methods and Pedagogies	Emphasis on learning by doing and by group work.
Assessment	Nothing mentioned.
Teachers	Reward the most effective teachers.
School	Reward courses and their development.

Source: Soares, 2011.

Table 7 – Vision of CNUCED, of ISAR and of IAESB

Conferência das Nações Unidas para a Cooperação e para o Desenvolvimento e o International Accounting and Reporting Standards	
Objectives	Development of imagination, creativity, re-appreciation of the oral culture and the student experience, "complete development of the person" (p. 99 and 100). "(…) Combining a general culture, sufficiently broad, with the possibility to work in depth a small number of knowledge's."
Contents	"At school art and poetry should occupy a more important place than the one it is granted to them, in many countries, by a teaching that became more utilitarian than cultural" (p. 100). "Conceive education as a whole" (p. 102). "Experience has in fact demonstrated that the most advanced technology is of no use to the educational environment and teaching is not adapted to its use. It is therefore necessary to draft program contents that make these technologies become true teaching tools, which supposes, on the part of teachers, willingness to question their teaching practices" (p. 192).
Structure	Multidisciplinarity.
Methods and Pedagogies	Teamwork, work in various social and professional experiences, alternation between school and work, development of joint projects to enable the development of competences in conflict resolution, greater autonomy, communication, reasoning, (…). Use of new information technologies, interactive and multimedia equipment, of electronic simulators and virtual reality systems to three dimensions (p. 191).
Assessment	Nothing mentioned.
Teachers	Agents of change "must arouse curiosity, develop autonomy, stimulate intellectual rigor and create the necessary conditions for successful formal education and lifelong learning" (p. 152). "The job of the teacher is not simply to transmit information or knowledge, but present them in the form of problems to solve, standing in a context and placing them in

	perspective so that the student can make the connection between its solution and other broader questions" (p. 157).
School	"Universities must give the example by innovating, through methods that allow reaching new groups of students, recognizing the competences and knowledge acquired outside the formal systems and giving particular attention, thanks to teachers' training and teacher trainers, the new perspectives in learning" (p. 123).

Source: Soares, 2011.

Table 8 – Vision of the European Union

European Union	
Objectives	Creation of a European Area of Higher Education; Training throughout the life enhanced by the University; Student-centered learning; Quality education; Transparency; Mobility; International recognition of the courses.
Contents	In the scope of the new methodologies centered on the student there is the indication that it is fundamental to rethink the contents and restructure them in the indicated periods and with the adequacy to the labor market.
Structure	Courses of 3 or 4 years + master (2 years) + doctorate (3).
Methods and Pedagogies	Methodologies centred in the student; Define what students know (or have to know) and what they can do after their training process – competences and capacities.
Assessment	At the level of the University as a whole.
Teachers	Change inherent to changes in teaching methods and methodologies, that can no longer be focused on the teacher, as this is not the only holder of knowledge.
School	Transparency, recognition of qualifications to the international labour market level.

Source: Soares, 2011.

In short, we note that the international organizations with regard to competences to be acquired, the methods and pedagogies and methodologies of assessment that contribute to its achievement, namely the EFCC, the BC, the AICPA, IMA, the AAA, UNCTAD, the ISAD, IAESB and the EU, agree:

- the goals to be achieved;
- the accounting information must be "multidimensional, systemic and transversal";
- develop in students the thinking, the critical thinking and the active participation;
- put the "centrality in the student".

The teacher has a role of permanent support to the student, as it is a "relationship of peers", and must, through the use of new pedagogies and information and communication technologies suitable to the program content, instill in the student job autonomy and decision making, among other aspects. As a result, the curricular structure, should be reconsidered and must rely on the basic formation of competences, and must "conceive education as a whole," always adopting interdisciplinary and multidisciplinary and a systemic basis.

As methods and pedagogies pointed so that change happens, emphasize active learning methods; the group work; the "learn by doing"; and the motivation of the student by placing him in the center of this whole process. Thus, the assessment should be formative and not merely forming, having the need to assess the School and the teachers, "rewarding the most efficient".

The school has to change its posture and increase the level of relationship with the surrounding community, has to adapt to the real world and open the "windows" to the labor market for, this way, be transparent, achieving a level of quality education, with national and international recognition.

This year is marked by the European Union as the "European year of development: our world; our dignity; our future", and is a set of projects and initiatives in "networking" between the European Union and European universities.

The General-Direction of the International Cooperation and development of the European Commission (DG DEVCO), "aims to support teachers of information to future policymakers (young people from 15 to 24 years) about the results achieved by the European Union (. ..) and for a better understanding of global challenges with which they will have to confront "(teacher's Manual on International Development Aid, 2015, p. 3).

The DG DEVCO created the Manual and the "Toolbox" to support teachers in this mission, and this "Toolbox" subdivided into: teacher's Manual; Teachers modules; VIP brochure; and the Thematic Tests.
And is available on the website of the EYD2015 (European year for the development of 2015).

With the launch of the European year for development, the European Union makes clear its commitment to Education as a vehicle for sustainable development (long-term). Its position is further enhanced by the creation of projects and for the support granted to European Educators through tools and techniques mentioned in this study, pedagogies and the urgent need to put into practice in classrooms of Europe, for the creation of a European area of cohesive and mixed Education for young people between 15 and 24 years.

The Schools cannot pass up this essential support and should reflect critically about him. Reflect, discuss and put into practice the solutions, methods and pedagogies made by Europe. "The European higher education area represents an unmissable opportunity to take a significant step towards the design of European convergence." (Sebastian Feio de Andrade, Professor, National Delegate to the BFUG. Bologna Follow-up Group).

The Higher School has to "take as a point of departure and of arrival a new dimension of competitiveness in the country (...) you have to assume Portugal as a global actor, capable of carrying our social dynamic and unstoppable array of knowledge and to turn into an active inductor tradable in wealth creation (...) has to take its fullness and relevance of a consolidated bet in the three T's that configure their strategic distinction: technology, talent and tolerance (...) " Francisco Jaime Quesado, specialized in strategy, innovation and Competitiveness.

REFLECTIONS
The Superior School should be able to modify the programmatic contents of the various areas of knowledge, using interdisciplinary for that investigation has a prominent place and multidisciplinary so that the investigation is extended in its reality and for that "previous" knowledge is reworked and improved. (Saints; Son, 2005).

The Model of Higher Education was asphyxiated by the global economic and financial crisis by the descending in the scientific breakthrough which puts into question its sustainability. The growing uncertainty led that Superior Schools had languished themselves in the decision of who is responsible and those that will survive will be those that have the courage to turn to the market and "talk" in customers and focus on political and financial independence (total).

"The fourth dimension of the University - after investigating, teaching, and manage knowledge and know-how, is rebuilding the new world, because the Black Swan of the turn of the Millennium anarchized the old and requires the identification, safeguarding, strengthening, and innovative strategy of the institutions that keep the word power, that we will do survive to organize the chaos. Are these institutions in the first place ideas of work or business that connect generations by tradition and cement the future for research, knowledge, knowledge-making, and by wisdom, that is, the restructuring of a range of values, which assume the fourth dimension "(Saints; Son, 2005, citing Adauto Novaes, 2007, pp. 12-13, and others).

"However,"(...) not only outdated knowledge as unleashed unforeseen radical and demolishing changes on the know-how and science building before valued, causing disruptions in the planning, not just scientific, also social, political, and ethical, that seriously affect the very foundations of the university building"(Adriano Moreira, in preface, 2005, in Santos & Filho, p. 10).

The restructuring of a range of values was not inserted into the concept of the information society and of the knowledge to be built, to Delors. The European network of higher education has broadened and harmonized with the signature and commitment of the countries of the European Union with the Treaty, Model or Bologna Declaration. However, this European network was not made "at the measure" of the of the contracting countries, and, these blind rushed to put into practice the predicted/planned in Bologna without looking to the surrounding reality and present that European Schools persist. The Superior Portuguese School has to support her own revenues and be a merchant of her art: the teaching and not be solely at the mercy of the tuition fees of her supposed "customers" and the budget's appropriations. The articulate is completely subverted. There is no

quality teaching without autonomy of Knowledge of the political power and/or institutional and there is Teaching without incomes.

We must make Superior School sustainable in its funding but cannot under any circumstances be renegade its role of research, teaching, knowledge, know-how with ethical integrity.

What is needed is to born "wisdom" in the consciousness of those who rule higher education so that they understand that this European network present different shades and unfilled and forgotten spaces and that the European/global network do not hurt the uniqueness of each school.

As Cristovam Buarque refers (2012) "(...), the answers and questions, which must be made at this moment, when the University coexists with a revolution as deep as the Gutenberg and Humboldt together:

How to look from above, without losing contact with the base;
How to be global without losing the overall feeling;
How to define quality in a rapidly changing world; so in reality, as in knowledge;
How to use the methods of mass education and distance learning, without losing the immense power of the teacher/student relation, master/disciple;
How to be of all without ceasing to identify and respect those with more talent, more persistency, more vocation;
How to structure oneself multidisciplinary without losing disciplinary efficiency;
How to follow Morin, without forgetting Humboldt;
How to think by the poor mass, being daughter of the wealthy elite;
How to act, without ceasing to reflect;
How to be both ethical and technical and artist;
How to be contemporary with the future without forgetting the past;
How to be scientific without leaving the Humanities aside;
How to be integrated without losing the richness of diversity;
How to be one and to be many;
How to be more participating in the required revolutions; in basic education;
How to be elitist or democratic".

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HUMOR IS SERIOUS BUSINESS

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More than 100 million tests are administered each year in U.S. schools. Examination scores are used to make major decisions about students' lives. Whether students remain in school, begin their careers, or enter graduate schools, decisions are based on test statistics.

Psychologists Milton and Edguly (1976), after investigating the testing and grading of students and the need for educational change, reported that the trend is toward increased test-taking competition that is now so intensely violent and combative that guilt, anxiety, humiliation and profound internal conflict are aroused in today's students.

Personality theorists have considered anxiety an important factor in producing discrepancies between the potential and actual performance of human beings. Townsend and Mahoney's (1981) research on the effects of humor and anxiety on the class examination performance of college students revealed that participants with low anxiety levels and high examination scores took a humorous examination. Students who took a non-humorous examination showed a high level of anxiety.

Additionally, Deffenbacher (1981) studied the effects of humor and test anxiety on exam performance, worry, and emotionality; the differential effects that worry and emotionality have on test performance; and the possible meditational routes by which humor may lower test anxiety and improve performance. Students identified as high - anxiety or low-anxiety subjects completed a regular exam and a humorous exam . Analysis of the data indicated that high-anxiety subjects reported greater worry than emotionality and that worry was a critical factor in accounting for test performance (Deffenbacher, 1981).

REDUCING PRE-EXAMINATION ANXIETY

Dr. Sharon Yoder investigated the use of selected humorous and non-humorous videos as a means of reducing pre-examination anxiety in Mathematics I for day students at Delaware Technical and Community College. The purpose was to discover how to achieve more accurate test results among mathematics students.

One hundred and forty-five students enrolled in Mathematics I at Delaware Technical and Community College were tested in this study to identify the relationship between humor and anxiety reduction.

Two video tapes were selected. Permission to use these tapes was granted.

Dr.Yoder chose the State-Trait Anxiety Inventory (STAI: Spielberger, 1983) for the study because Buros (1978) reported that this instrument, during the last decade, was used more often in the research of anxiety than any other measure.

The STAI has been widely used in cross-cultural research and has been translated (or adapted) into 37 languages or dialects. Extensive research with the STAI and major revisions of the inventory have been made sine 1979. To date, over 2,000 archival publications in which the STAI was used to measure anxiety are listed in the State-Trait Anxiety Inventory Bibliography. It appears to be one of the most highly tested and evaluated instruments of this type available. (Spielbereger, 1983). Because anxiety was the trait being measured, it seemed appropriate that students who were to be tested in mathematics classes would be ideal subjects for the study. The classes were limited to samples of classes that met on the same day at 10 a.m. though out the college's four campuses.

Humorous and non-humorous videos were selected based on television audience research done by the Nielson Media Research Company. Their ratings techniques are based on sampling laws used by the television industry that reflect

the taste of 80 million homes in the nation. A humorous video, *The Anniversary Celebration for Parents,* was used based on the recommendations reported by the National Nielson Ratings. This particular video was rated, because of its humor, as one of the top ten videos in the 1985-1986 season. A non-humorous video, *Delaware Tech, Your Future for Tomorrow,* prepared by Delaware Technical Community College was used. This video explained the history and the purpose of the college in a serious and to-the-point fashion.

At the beginning of the class sessions, all participating students were given a pretest (STAI) to measure their immediate levels of anxiety and to verify the pre-experimental condition. Experimental group I viewed the 20-minutes humorous video. Experimental group II viewed the 20-minute non-humorous video. Group III viewed no video; but, were instructed to spend 20 minutes quietly at their seats.

At the end of the 20 minutes of the video viewing and quiet time, all participants received a posttest (STAI) to re-measure their levels of anxiety. The classroom mathematics teachers were used to facilitate this experiment. This was done to avoid the additional variable of a new person giving instructions to the class.

EXPERIMENT RESULTS

The students who viewed the humorous video prior to the expected mathematics examination, posttest anxiety levels were significantly lower than pretest anxiety levels.

Posttest anxiety levels for the students who viewed the non-humorous video were slightly reduced; but, higher than students who viewed the humorous video. Group III students who saw no video had the highest posttest anxiety levels of all student levels.

DISCUSSION

Continued investigation and experimentation is highly recommended in using humor in the classroom to lower anxiety levels to produce higher performance. Numerous recent studies using humor in classrooms is indicating that when fun and humor are used in the teaching process the retention levels of the material taught is increasing 50% and the retention time is being doubled.

The practical significance of this study suggests that continued examination of the use of humor at all other grade levels may demonstrate that learning can be3 more effective for students at all educational levels.

RECOMMENDATIONS

It is recommended that the use of fun and humor in teaching course, work could aid the

students in viewing the subject material as fun and non-anxiety producing and could possibly raise test scores because of greater student relaxation and confidence. Getting the students

personally involved in humor by assigning them the task of putting on a humorous skit or writing

a humorous story7 related to the course content is another way to use humor to lower anxiety levels and increase the opportunity for students to participate creatively in more effective

learning techniques.

IDENTIFICATION OF THE CRITICAL FACTORS OF THE PROCESS OF INNOVATION TRANSFER AT UNIVERSITIES IN THE CZECH REPUBLIC

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ABSTRACT

The area of cooperation of universities with commercial or non-commercial entities has currently been a much-discussed problem at the level of the Czech governmental institutions. The efforts are to promote such cooperation eg. in the form of innovation transfer grants. Currently, the only issue is not only to bring innovative solutions but to achieve their specific realization, ie. the particular transfer. The aim of the study is to identify the main problem of innovation transfer processes at regional universities.

To identify the innovation transfer process critical points, a qualitative research method was used, carried out as individual interviews with leaders of innovation transfer teams. The interview questions are: Must a successful transfer cooperate with businesses? Which innovations become more successful, those emerging within a cooperation with an enterprise, or those designed at a university and for which an enterprise is sought for such a cooperation? What are the key issues of cooperation and transfer? (etc.). The interview content is thematically analyzed and is consequently graphically processed into a mind map. The problem areas are identified in the sectoral analysis outcomes conclusion; their elimination is suggested. Despite each process is individual in its content, the results of the study may contribute to efficient solutions for innovation transfers at universities.

INTRODUCTION

Why did we choose such a topic?

The author of a very interesting book says (Chál', Košturiak) that the contemporary situation in various areas is, being affected by the development of technologies, rather complex for competitiveness, especially for the development of technologies leads the areas to overlap and thus numerous factors impacting almost all fields and areas enter the competition. It took be said that *"The fast, flexible and innovative will survive." The competitive lead of a company or enterprise is directly affected by self-improvement, creating and sharing of knowledge as well as experience. Creativity, persistence, joy of one`s work, and enthusiasm for changes, all these are aspects depending on people, trust, and cooperation among them."* (Soukalová, 2016). These statements propose that the competition processes and innovation transfer are closely interconnected, and the practice proves that a successful competition becomes usually the bearer of innovative solutions in the area of products, technologies, as well as design solutions.

For the above reasons, the area of cooperation of universities with commercial as well as non-commercial organizations becomes a highly up-to-date issue in today`s situation of the Czech higher education. An equally important reason is the effort to involve universities as well as commercial organizations into the process of innovation and thus establish a model for a co-financing innovation process. Such collaborative solutions may bring not only a financial effect to universities, it will also provide students, participants of the innovation process, with valuable experience with real projects implemented in practice. Such cooperation also leads to the formation of favorable conditions for graduates and their involvement into practice. Numerous experience from implementation of innovation processes shows that the issue of innovation process should be viewed in two aspects. The first one is related to exploration of new ideas, designs or various innovative solutions, and the other on focuses on the process of implementation of such ideas itself, as well as on its transfer.

The importance of these activities is confirmed also in the fact that the issue of cooperation with the private sector has become a component of the National Research, Development and Innovation Policy of the Czech Republic 2016 - 2020. Based on the comments of the document, a system of collaboration is established which is aimed at the support of applied research for the needs of perspective areas leading the Czech economy forward, among which we also find cultural and creative industries (National Research, Development and Innovation Policy 2016). Key sectors were identified as being biotechnology and nanotechnology, digital economy, automotive and aviation industries and rail transportation, as well as traditional sectors such as machinery, electronics, steel, casting, and energy. Attention will newly be focused on cultural and creative industries. The National Policy further identifies five areas in which the Czech science stays behind, and for these areas, individual solutions are proposed.

Amongst other, it is an area of **the collaboration of the private and public sectors.** For the sake of the support of both the sectors, evaluation and funding of research will be modified in order to encourage researchers and enterprises to

collaborate. Some of the existing centers should be transformed into centers of applied research and at the same time a database of the instrumentation that research organizations possess, and which could also be used for corporate research, will be created.

Innovation in enterprises represents another discussed area.

Particularly large multinational enterprises have been investing into research and development. New services and financial instruments (eg. the National Innovation Fund) should assist small and medium-sized enterprises to get involved in research.

The cultural and creative industries also belong to the areas supported by the National Research Policy, and these are closely related to innovation and to increasing the competitiveness of Czech enterprises.

Given the fact that the subject is a regional university, and especially its art-oriented faculty, the main attention of the study is paid to the transfer of design innovations.

Transfer of innovations is a process of implementation of new solutions (technologies, products) into practice, ie. into production. Transfer of design innovations is often a part of the development of new products and it often includes the change in the design of the product, which is regarded a significant innovation.

The successful transfer of innovation is completed by selling production and subsequent sale licenses or the rights of an entity (enterprise). At present, the regional university sold 16 licenses, of which 7 on design solutions and only 2 licenses are used in practice (www.utb.cz). For other licenses, work on completing proposals continues. These data indicate that the transfer process is a very complicated and long process and that it is necessary to identify critical points, which complicate the process, or make it impossible, and to eliminate their effect.

The main element of the innovation process and its subsequent transfer is searching for new ideas and solutions. How can new ideas be developed within the university environment? In principle, we encounter three ways to develop new ideas.

Whereas, each of these methods brings advantages and disadvantages:

a) the first option for new ideas stems from the very initiative of a student who brings new solutions directly in the context of a school assignment management. The great advantage lies in the flexibility of individual work, enthusiasm, and creativity. The disadvantage, on the other hand, is that the assignment is not clearly defined, the idea does not come from the need of an enterprise or the market, and thus the conditions for a real implementation are not clear; see the example of the ArtBook Zlín.

b) The second option stems from the collaboration of an enterprise with a specific faculty department, in our case it is the studio. In this case, an enterprise addresses the studio with a particular assignment. The great advantage of this situation is that there is a clearly-stated assignment, flexibility, and creativity in proposal processing. The assignment is usually handled in more students` proposals while consulting a cooperative enterprise. The enterprise selects the most suitable solution based on their needs. The disadvantage would be a complicated contractual process and financing matters.

c) The third on is an initiative of a student themselves. They contact an enterprise for their collaboration and the both parties work on a new or innovative solution together. The undoubted benefit lies in a student`s personal interest, they like the process of working on the project, they actively communicate with the assigning enterprise, the task has a defined assignment based on the real needs of the enterprise or market. The fact that authorship and intellectual property rights may pose a minor disadvantage.

We encounter all these models in the process of developing new ideas and innovations. We cannot clearly state which one is the best and most effective for each of them has the ambition to become unique, and many of them may become successful, however, not implemented.

1.   OBJECTIVE AND RESEARCH QUESTIONS

The objective of the study

is to identify the essential issues of the process of design innovation transfer within the regional university, and to propose a solution for how to eliminate theses problems and issues or at least how to minimize them.

The subject of the study

is the design innovation transfer because the subject faculty is oriented at industrial design, glass design, shoe design, graphic design, and 3D design. These specializations are often a base for collaboration coming from enterprises (for instance, a proposal for a design solution, etc.).

The main premise of the research

comes from the experience proving that innovative ideas frequently proposed by students become successful at international competitions but their transfer into practice is a complicated process and is usually unsuccessful.

Research questions
For these reasons, questions form the content of the interview:
Is collaboration with an enterprise necessary for the transfer to become successful?
What innovations are more successful, those being formed from the beginning in collaboration with an enterprise, or those whose primary idea was invented at a university, and for which the collaboration is sought afterward?
What are the main issues for collaboration and transfer? (first, second, etc.)
What are the motives for arising of such issues?
How could the problem be solved, what ways do you suggest for eliminating the root of the problem?
Besides what was said, what surprised you most about the project? Your positive as well as negative impressions.

2. METHODS AND METHODOLOGY

As revealed by the statistics, the innovation transfer process is complicated and lengthy. To be able to identify the problems of the design innovation transfer process, we need to analyze individual cases which either successful or unsuccessful.
Given that in these cases quantitative methods are not sufficient, it was determined that the most appropriate method for the survey would be qualitative research in the form of individual interviews with people who often lead teams working on innovations and their transfer, or with students/authors of their own original ideas.

Research subject
There are numerous cases of design innovation solutions at individual studios, therefore, for the purposes of the research, three specific student projects were selected that were very successful in national and international competitions, and three studios that deal with design suggestions, the industrial design studio, the 3D design studio, and the glass design studio. In view of the fact that the research is carried out in the form of qualitative research for each subject, and is rather extensive, only two cases were analyzed for the purposes of this study (the other will be the subject of further studies and a subsequent comparison of results). The first case study is the individual student project called ArtBook Zlín; the second one is the analysis of the situation in the area of collaboration between the practice and design innovation transfer at the glass studio of the relevant department.

Thematic analysis of individual interviews
The interview questions are prepared in advance so that the interviewer receives an opportunity to employ their own initiative. The interview is a semi-structured interview with narrative features: the interviewer adapts to the type of projects and to the knowledge of an interviewed individual. Such an interview gives the interviewer space to employ their own initiative and to deeply survey areas that arise only during questioning. The interview has to be recorded upon the consent of the interviewed person. After the record has been made, the interview gets transcribed word by word for the purposes of a thematic analysis. The written record has the form of a transcript, the correctness of which is confirmed by an independent person who compares the record with its transcription.
Each interview starts with clarifying the objective of the survey and a brief focus of the research.
The participant is then asked to describe the course, implementation of the project, for example, see the following.
"Please, describe your experience with the project/collaboration with the enterprise in practice? Who was the initiator of the idea for the project/collaboration with the enterprise in practice. Describe the evolution of the project/collaboration and the objective of the project/collaboration. What caused you troubles in the project/collaboration with the enterprise in practice. From today`s perspective, is there anything you would like to change or influence on the course of the project/collaboration with the enterprise in practice."
Thus formulated questions are typical for the start of interviewing as this is how a narrative approach is achieved (the participant talks and the interviewer listens).
Unlike structured and semi-structured interviews (question - reply), where the interviewer holds the key impact on the topics of the interview; the main task of the interviewer in the narrative approach is to be a good "listener" and the interviewed is a mere "narrator" (Hollway, Jefferson, 2000, s. 31). Hollway and Jefferson (2000) mention that narration is a natural way of how an individual organizes their own experience, what topics they assign the greatest importance, what topic they set aside, how they evaluate the course of events in time and by significance. The objective is to acquire as much authentic material as possible, which we expect the narrator structured according to their own experience. The phase of narration is followed by the following questions complementing the questions that have not been answered; see the research questions (Braun & Clarke, 2006).

Research procedure
- a) realization and thematic analysis of an individual interview with the author of an innovative solution for ArtBook Zlín
- b) realization and thematic analysis of an individual interview with the person in charge of the design studio
- c) comparison and evaluation of the critical points in the area of collaboration with the practice and design innovation transfer.

3. EVALUATION

Student project of ArtBook Zlín
A considerable amount of student ideas become very successful at international competitions, unfortunately, the innovation process is often interrupted after having been awarded. Such proposals are difficult to commercialize in practice especially for the fact that they are not proposed upon a specific assignment coming from a particular enterprise.

ArtBook Zlín is a student project - author book called ArtBook Zlín. It is an example of a unique idea of a graduate of the FMC TBU faculty. The book came to existence as a part of a master`s thesis whose objective was to present the history of the town of Zlín, particularly the period of Tomáš Baťa, in an appealing way. What is interesting about the book are pop-up elements. Pop-up elements are 3D models of the 11 objects typical for Baťa`s Zlín, see http://pavelcoufalik.cz/

The book received the Czech National Award for Student Design in 2013, and the manually manufactured original of the book had been installed in the permanent exhibition at the National Museum in Prague. The book was also exhibited in New York, in Germany, etc. After the successes at home as well as abroad, TBU indicated an immense interest to produce and publish the book and it aspires to obtain funding for the production of its prototype and subsequent publishing of the book. As the prototype production for commercial production has not been realized yet, nor has the subsequent publishing, an individual interview was carried out with the author with the aim to identify critical points of the implementation, ie. the production of the prototype and publishing the book.

The results of the interview with the author of ArtBook Zlín (The interview took place and was recorded on 10. 8. 2016)
The topics the author mentioned during the questioning.
The author himself is the initiator of the idea, which is a significant aspect for the author. He had come up with the topics himself and he creatively developed them on his own without any other party`s intervention. The author appreciates this particular aspect of the project most and he would not change this fact.
The author has already manufactured 5 models of ArtBook Zlin which, however, in terms of graphics and construction cannot be machine-produced (3D pop-up elements are too complicated for machine production). The unique books were manufactured for the purposes of placing the book at domestic as well as international competitions and exhibitions. It is currently necessary for the author to simplify the book in terms of its construction and to work out the system of folding the 3D elements and the technology of production for the entire book so that it could enter the production.
Another task is to seek for an appropriate producer of the prototype (based on searches, references, and demand by domestic and foreign producers). As well as to allocate the necessary financial means for the production of the prototype, presumably in the form of grant applications, together with the development of the production technology and choice of producer.
Summary of the answers to the defined research questions
In this particular case, the student considers the key factor his flexibility of the creative process. He also finds it very crucial that no company has come up with a similar assignment. It is a challenge for him as he enjoys exploring new topics. He is willing to enter into collaboration with an enterprise only in the process of the prototype production.
Problem areas
Three fundamental problem areas arose during the interview relating to the prototype realization and publishing the author book.
The first problem area concerns the **construction of 3D elements.** For the purposes of the production of a larger number of copies, when we do not assume a mere manual manufacturing, it is necessary to adjust/simplify the 3D elements for machine production. The second problem is related to **the selection of the appropriate manufacturer of**

the prototype who should (in compliance with the applicable regulations of the university) be selected in a tender process. Regarding the fact that we can presume foreign manufacturers will also be invited, the process will be rather intricate and lengthy. **Allocation of financial means** will be the third problem area. Within the first phase of development and production, financing will be secured probably in the form of grants. The second phase - publishing of a certain edition size, funding will be secured in the form of donations from enterprises in the Zlín Region.

The cause for these problem areas arises already at the moment of the strive for publishing and realizing a unique book, which is something the author had not thought of when writing his master`s thesis.

In the overall, we could say that for the design innovation transfer the ideological creative process, prototype development phase, and the final phase, ie. implementing the project into practice, become equally important.

The results of the interview with the studio supervisor (the interview was taken on 3rd August 2016,   was recorded and transcribed)

Topics covered by the author during the interview.

The studio supports any student activity collaborating with the practice. The collaboration runs in several ways:

a) large enterprises have a system developed for acquiring new ideas, often in the form of inviting student projects into student competitions. In these cases, we speak about the collaboration of an enterprise as a contractor authority and students become participants of a competition. This type of collaboration may be positively evaluated in relation with the prestige for the student as well as the department. The student obtains valuable experience and references. A large number of our students receive prestigious, international awards in these competitions. Such a collaboration has no impact on the design innovation transfer of the studio into practice. There are no funding issues for the prototype manufacturing, the enterprise as a competition promoter is in charge of all this.

b) The most common form of collaboration is collaboration on request of an enterprise in the role of a contracting authority for a design proposal. Students propose design solutions through student projects and are discussed with the enterprise. Selected solutions are proposed for production of the prototype. Communication with contracting enterprises is based especially on personal relationships and direct communication. With the prototype production, the first and a probably most crucial problem arises in the first phase - the financial aspect. Questions on who will finance the prototype production. Will it be the contracting authority or the department from which the student comes and where the proposal was crafted? Nowadays, the studio most frequently answers one-off assignments, which are paid after the task has been completed. Enterprises mostly fear to realize such activities through selling licenses, which is a process by means of which the university could efficiently transfer innovations. In all probability, they want to avoid the complexity of administrative transactions involved (from the side of the university) and potential authorial or copyright unclarities.

c) In some cases, students themselves seek for an enterprise who would be interested in their innovative proposals, and the enterprise collaborates with the students on the proposal as well as manufacturing of their prototype. Such solutions cannot become subjects of the transfer of the university, as the authorship remains on the part of students as well as the collaborating enterprise.

Summary of the answers to the defined research questions

The studio needs collaboration with enterprises from the world of practice, and it demonstrates its efforts to extend such activities; nevertheless, not at the expense of creative activities of its students. Students` creative potential must thus be supported and students led to being able to collaborate on specific assignments, and to exercise their own creative skills in particular solutions. Innovations, being designed since the beginning in collaboration with an enterprise, hold unequivocally driving ambitions.

The above-described interview topics showed what the following fundamental areas relating to the design innovation transfer are.

Problem areas and their causes

Financing of the production of the prototype is normally addressed after the selection of the proposed solution. This is not dealt with at the outset because it is not even clear whether the company picks any of the suggested draft designs.

Communication with the client (enterprise) becomes problematic in the case of impersonal electronic communication. On the other hand, communication is smooth in the case of a personal contact and communication.

Transfer through licensing is very problematic, especially for design innovations. For the outsourcer it is easier and more inexpensive to assign a task to students, then select a satisfactory solution, and refund the order with a single payment. As a separate activity to further address the funding of the prototype production.

CONCLUSION

Summary of the results of partial interviews show the basic common problem areas in the design innovation transfer. The main problems are associated with the production and financing respective prototype design innovations. Problems with design solutions arise in the case of realization of student innovations themselves, see the case of ArtBook Zlín (without the participation of any specific enterprise). When assigned a task by a company, the problem is solved directly with the contracting authorities and does not create any major obstacle in the development of the prototype. The common problem of both monitored situations is the question of how to secure finance for the production of the prototype (Šviráková, 2013). This should be addressed directly when the collaboration is initiated, but very often it is not clear whether any proposal for the prototype manufacturing will be selected. At the same time, addressing industrial property protection and licensing, especially by companies, become problematic issues. Enterprises currently do not want to enter any industrial legal relations with universities in the field of design innovations that more and more become subject to new development trends and undergo frequent modifications. Thus there is no point in a long-term protection of these innovations, eg. by means of industrial design, etc.

The identified problem areas should be addressed preventively by establishing sub-project intents for collaboration. These would contain individual phases of specific projects together with possible modifications.

The study analyzes two cases of the issue of design innovation transfer at a regional faculty of arts. To generalize the results, another two student projects and two design innovations studio workplaces operated by the department will be analyzed in the form of individual interviews. The conclusions will be compared and summarized into applicable recommendations.

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IDENTIFYING OF APPROPRIATE TOPICS IN MEDIA COVERAGE FOR ENHANCING EARTHQUAKE SURVIVAL SKILLS OF UNDERGRADUATE STUDENTS

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ABSTRACT

The purpose of this study was to developed appropriate topics in media coverage for enhancing earthquake survival skills of undergraduate students. The study was conducted by using qualitative research by developed online questionnaire in order to received gap of knowledge of their survival skills of 122 students from 7 universities in Thailand. The results revealed that only 11.5% of the sampling group faced earthquake situation. Among this, 38.8 % of students can handle in case earthquake happened immediately. Even 99.2% of students understand that they should avoid using elevators during earthquake but for other preparation skills were still misunderstand. Therefore, the other appropriate topics and detail such as information about taking care of pets and to keep staying in the second floor instead of run to the 1ˢᵗ floor must be projected in various kind of media coverage.

INTRODUCTION

Hazard is a dangerous event that may cause loss of life, injury or other health impacts, as well as damage and loss to property, infrastructure, livelihoods and services, social and economic disruption and, or environmental damage .The classification schemes for natural hazards vary across different research institutions and governments, but these can be divided into: geological or geophysical (e.g. earthquakes volcanic activity and tsunamis and related landslides, mudslides etc.), hydrometeorlogical (e.g. floods, tropical cyclones, storms, landslides triggered by rainfall etc.), and biological (e.g. outbreaks of epidemic diseases, plant or animal contagion, insect or other animal plagues and infestations) (UNISDR, 2009 cited in Prevention Web, 2015). More people in all parts of the world are exposed to floods, drought, earthquakes and cyclones. In the decade of 2002-2011, 4,130 disasters were recorded worldwide. Whether a natural event turns into a disaster depends on the strength of the hazard as well as on the vulnerability of the people. Vulnerability develops through high susceptibility, a lack of coping capacities and a lack of adaptive capacities (Mucke, 2012).

Thailand is less vulnerable to natural hazards than many countries in the Asia-Pacific region. In 2004, the Indian Ocean earthquake off the Java coast in Indonesia generated a tsunami which impacted six of Thailand's Andaman coastal provinces in the south. The country experienced severe flooding in 2011 due to the monsoon season with rainfall over 140 percent of its normal levels. Floodwater inundated parts of the capital city of Bangkok, 65 of Thailand's 77 provinces were declared flood disaster zones (Center for Excellence in Disaster Management & Humanitarian Assistance, 2015). Disaster statistics in Thailand also presented in Table 1.

Disaster risk is not only associated with the occurrence of intense physical phenomenon but also with the vulnerability conditions that favor or facilitate disaster when such phenomenon occur. Vulnerability is intimately related to social processes in disaster prone areas and is usually related to the fragility, susceptibility or lack of resilience of the population when faced with different hazards (IADB, 2011). The INFORM model adopts the three aspects of vulnerability reflected in the UNISDR definition. The aspects of physical exposure and physical vulnerability are integrated in the hazard & exposure dimension, the aspect of fragility of the socio-economic system becomes INFORM's vulnerability dimension while lack of resilience to cope and recover is treated under the lack of coping capacity dimension. Thailand and other countries in SEA were in the high risk index level (Figure. 1)

Table 1: Statistical Disaster Information for Thailand from 2006 to 2015

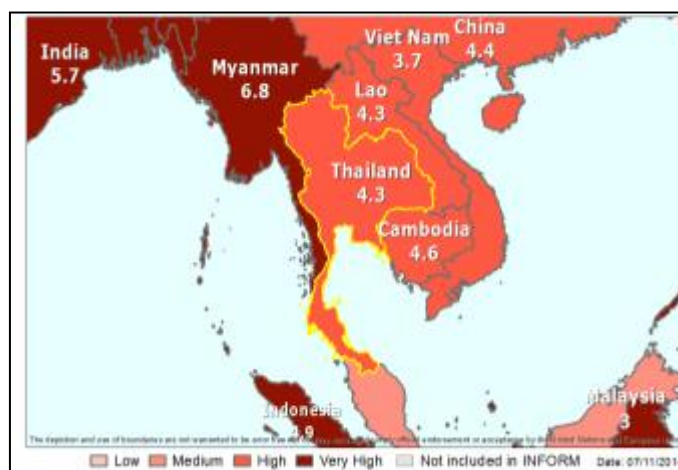| Disaster type	Occurrence (time)	Deaths (person)
Drought	4	-
Earthquake	2	2
Epidemic	2	29
Extreme temperature	1	63
Flood	20	1,616
Strom	3	18
Total	32	1,740

Source: EM-DAT (2015)

Figure 1. Inform 2015 Risk Index
Source: INFORM (2015)

Disaster risk reduction requires local level action. Most disasters are small-scale and local. To be relevant and effective national policies, such as educational curriculum on disaster risk reduction, need to be adapted to local contexts (UNISDR, 2014). From cultivation theory has been explain how mass media, especially television, can influence people's perceptions of reality (Gerbner et al., 1994 cited in Cheng et al., 2016).). As well as from social cognitive theory (Shrum, 2002) explains that a person's background, perceived environment, and behavior are interrelated. Social media can challenge the role and function of traditional mass media (Olorunnisdola & martin, 2013). Terms of news consumption, the internet has become a form of competitive displacement to mass media (Ha and Fang, 2012). There're also more relevant studies stated that while information is presented by mass media in a one-way communication in which audiences are passive receivers, social media is an interactive platform that requires users to take initiative to obtain and generate information. So, both mass and social media has different effect on people's perceptions of reality (Napoli, 2015). As individuals from their perceptions of the environment though media information, their behavioural intentions will also be altered through the cognitive process. Many people become both more willing to help others and to make disaster preparations for the future (Cheng et al., 2016).

Public education and awareness activities are ongoing side by side with the development of emergency plans, evacuation routes, and safe areas. Awareness materials are also being designed, such as tsunami evacuation maps and guidelines for action after a warning is given. Further activities are being undertaken to ensure that the Provin- cial Governors and the local administration organizations can play the roles expected of them once a warning reaches them from the national level. (Fakhruddin, S.H.M. & Chivakidakarn, Y., 2014)

In addition, experiences of disaster affected some people's behaviours such as their energy conservation, mobility intentions and purchase behaviours (Naoi et al, 2014 cited in Cheng et al., 2016). Therefore, this study was focused on appropriate topics in media coverage for enhancing earthquake survival skills of undergraduate students in Thailand

THE STUDY
In this study, qualitative research was implemented by online questionnaire in Google form (Fig.2) in order to evaluate online for 122 undergraduate students in 7 universities in Thailand. Evaluation period was covering October 2015. The content of evaluation were composed of general information and investigate appropriate media coverage for disaster preparedness as well as fundamental understanding of earthquake survival skills of undergraduate students.

Figure 2. Online Questionnaire for evaluation in Google Form

FINDINGS
Based on questionnaire, the results can identify into 2 parts which are appropriate media coverage for disaster preparedness and fundamental understanding of earthquake survival skills of undergraduate students.

Appropriate media coverage for disaster preparedness
General information of sampling group and appropriate media coverage for disaster preparedness were identified in Table 2 – 4.

Table 2: General information of sampling

No.	Category	Percentage
1.	Gender	
	Male	32.8
	Female	67.2
2.	Year	
	1	10.7
	2	38.5
	3	18.0
	4	28.7
	Others	4.1
3.	Earthquake experiences	
	Yes	11.5
	No	88.5
4.	Handle earthquake situation	
	Can control the situation	38.8
	Unsure how to do when earthquake	25.9
	Can help others	15.5
	Anxiety	10.3

Table 3: Frequency of received disaster educational media by different types of media

Ranking	Received disaster educational media	Always	Often	Sometimes	Rarely	Less
3	Website	25.4	31.1	27.0	9.8	6.6
2	Facebook	42.6	29.5	18.0	5.7	4.1
	Twitter	9.8	16.4	27.9	22.1	23.8
	Line	10.7	18.0	33.6	17.2	20.5
1	Television	66.4	17.2	13.9	2.5	0
4	Magazine/ Newspaper	23.8	39.3	24.6	9.0	3.2
	Infographics	7.4	2.3	31.1	20.5	18.0
	E-book	3.3	13.1	31.1	23.8	28.7
	YouTube	20.5	27	32.8	11.5	8.2
5	Classroom	23.0	37.7	23.8	11.5	4.1
	Radio	9.8	26.2	38.5	15.6	9.8
	Book	14.8	32	32	15.6	5.7

Table 4: Appropriate media coverage for disaster preparedness

Ranking	Received disaster educational media	Always	Often	Sometimes	Rarely	Less
3	Website	25.4	31.1	27.0	9.8	6.6
2	Facebook	42.6	29.5	18.0	5.7	4.1
	Twitter	9.8	16.4	27.9	22.1	23.8
	Line	10.7	18.0	33.6	17.2	20.5
1	Television	66.4	17.2	13.9	2.5	0
4	Magazine/ Newspaper	23.8	39.3	24.6	9.0	3.2
	Infographics	7.4	2.3	31.1	20.5	18.0
	E-book	3.3	13.1	31.1	23.8	28.7
	YouTube	20.5	27	32.8	11.5	8.2
5	Classroom	23.0	37.7	23.8	11.5	4.1
	Radio	9.8	26.2	38.5	15.6	9.8
	Book	14.8	32	32	15.6	5.7

The results revealed that Majority of sampling group were female (67.2%) and only 11.5% of the sampling group faced earthquake situation. Among this, 38.8 % readiness to handle in case earthquake happened immediately. Fortunately, 80.2% of students received news and information of earthquake survival skills. Different kinds of media coverage perception were also assessed. Students received information of disaster in the highest level from television (66.4%) follow by Facebook (42.6%), website (25.4%), magazine (23.8%), classroom (23.0%) and YouTube (20.5%), respectively. The highest level of appropriate media coverage for sharing news and knowledge of disaster preparedness are television (74.6%), Facebook (59.8%), classroom (59.8%), magazine (51.6%),YouTube (49.2%), and website (45.1%).

Fundamental understanding of earthquake survival skills of undergraduate students
    Fundamental understanding of "Disaster Knowledge: How to prepare when earthquake" or earthquake survival skills of undergraduate students also identified in table 5.

Table 5: Fundamental understanding of earthquake survival skills of undergraduate students

No.	Topics	Correct Answer (%)
1	If you live in a building, should stay under table/ at the corner	93.4
2	Should stay near door, balcony and window	71.3
3	Should find a way out of the building as soon as the earthquake struck	74.6
4	Should avoid stay under electricity post or under the tree	94.3
5	Do not use candles or fire dduring an earthquake	79.5
6	If you are located at the beach should stay near coastal areas	77.9
7	If you're in the car should go under a bridge or express way.	89.3
8	Do not carry pets during an earthquake	65.6
9	Do not use elevator	99.2
10	If you live in the second floor, should not run down to the first floor.	59.8
	Average	80.49
	Min	59.8
	Max	99.2

The most understandable knowledge of earthquake that students can answer the correct answer was do not use elevator which are 99.2% follow by they should stay under table or at the corner when live in the building during earthquake. However most of them still lack of information about taking care of pets and to keep staying in the second floor instead of run to the 1st floor. Besides, proper topics which were suitable to enhancing knowledge of survival skills were identified in Figure 3.

Figure 3. Appropriate topics for develop media coverage

CONCLUSIONS

The majority of the students know very well about how to survive under earthquake situation even few of them had experiences related with earthquake. Televisions are the most effective media to enhance knowledge and awareness of disaster preparedness follow by Facebook and classroom activities.

According to the basic knowledge of earthquake survival skills, students know very well that they should not use elevator which are 99.2% follow by they should stay under table or at the corner when live in the building during earthquake. However, most of them still lack of information about taking care of pets and to keep staying in the second floor instead of running to the 1st floor.

Last but not least, digital media such as E-book and infographics should be produced and combined with TV, website, especially social network in order to raise awareness of natural disaster preparedness for future generation.

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IDENTITY STYLES AND INTERNET-RELATED ADDICTIVE BEHAVIORS IN ADOLESCENTS

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ABSTRACT
Even though the modern online technologies has positively impacted life areas in terms of social interaction, entertainment, cognitive skill development, etc., as largely demonstrated by several studies, the excessive use of these technologies may be particularly problematic to adolescents. Consequently, the interest of researchers has focused on those individual and/or social factors which could foster internet-related addictive behaviours. The current study aimed at analyzing how and to what extent identity formation could be a protective or a risk factor. A sample of 254 adolescents (M = 135, F= 119; Mage = 18.22, SD = 1.06) were recruited from Italian high schools. They were asked to fill out a questionnaire composed by: the socio-anagraphic section, the Revised Identity Styles Inventory (ISI-5), the Bergen Social Media Addiction Scale (BSMAS), and the Internet Addiction Test (IAT). Descriptive and causal analyses were applied to the data. Results showed high positive correlations between the diffuse-avoidant style and internet and social media addiction and between internet addiction and social media addiction. As the diffuse-avoidant style resulted as a risk factor in the development of maladaptive behaviours, educational contexts should deserve more attention on adolescents' identity formation to prevent or at least reduce the abuse of online activities.

INTRODUCTION

In the last decades the Internet has emerged as an essential medium thanks to its ability to connect people around the world and to provide unlimited sources of information, communication, and entertainment (Turkle, 1995). While these benefits are unquestionable, its excessive use may cause the detriment of work, study, and social life. This is why the Internet has become potentially addictive and, thus, an interesting topic for psychological researchers who have attempted to explore its characteristics and symptoms, to conceptualize its antecedents and consequences, and to develop corresponding measurement tools (Byun et al., 2009).

Preceded by the notions of computer addiction (Shotton, 1991) and technological addictions (Griffiths, 1996), the different internet-related activities were classified in 1998 by Young who developed an eight-item scale, the Internet Addiction Diagnostic Questionnaire (IADQ), borrowing the criteria for pathological gambling (Young, 1998) from the DSM-4. In spite of this, the different terms currently in use, such as cyberspace addiction, online addiction, Net addiction, Internet addicted disorder, pathological Internet use, high Internet dependency, etc., make evident the inconsistent definition of Internet Addiction (Byun et al., 2009), even though the relative symptoms have been identified. They often include increased investment of resources on online activities, unpleasant feelings (e.g. anxiety, depression, emptiness) when offline, an increasing tolerance to the effects of being online, and the denial of the problematic behaviors (Kandell, 1998). The following three symptoms were

added by Griffiths: salience, i.e., when Internet becomes the most important thing in the individual's life, mood modification, i.e., the usage of the Internet to change mood states, and relapse, i.e., when the individual returns to the addictive behavior, even after a period of abstinence (Griffiths, 1998). These symptoms have been often linked to underlying psychological issues, such as low interpersonal skills, high levels of intelligence, degree of self-control, psychological distress, abnormal behaviour, etc. (Hur, 2006; Ko, Yen, & Chen, 2006). Further associations were found between problematic Internet use and depression, self-esteem, loneliness, shyness (Caplan, 2002, 2003), sensation seeking (Armstrong, Phillips, & Saling 2000), locus of control, and online experience (Chak & Leung, 2004).

In the field of personality factors, research has generally showed inconsistent results: both introversion and extroversion have been found to predict Internet addiction (Huang, Zhang, Li, Wang, Zhang, & Tao, 2010; van der Aa, Overbeek, Engels, Scholte, Meerkerk, & Van den Eijnden, 2009; Yan, Li, & Sui, 2014; Zamani, Abedini, & Kheradmand, 2011). According to Wang, Ho, Chan, and Tse (2015), this controversy may be attributed to the differences in participants and in online activities, including social networking. In this context, in reviewing the psychological literature on online social networking and addiction Kuss and Griffiths (2011) have noted that certain personality traits, such as extroversion and introversion, have been often associated with higher usage frequency of Social Networking Sites (SNSs) with different motivations: extroverts use SNSs for social enhancement, whereas introverts for social compensation. Negative correlates of excessive use of SNSs include a decrease of the participation in real life social community and of the academic achievement, as well as relationship problems.

On the contrary, studies on the relationship between identity styles and addictive behaviors are limited (Arabzadeh, Bayanati, Nikdel, Nadery, & Naimi, 2012; Morsünbül, 2014; Tabaraei, Nikoogoftar, & Minoosepehr, 2014). Individual identity has been found to be an important protective factor against health-risk outcomes, such as delinquency or addictive behaviours (Côté & Levine, 2002). Berzonsky's social cognitive perspective of identity (Berzonsky, 1988, 1990, 2011 for a review), generally linked to substance addictions, could provide a good framework of exploring addictive behaviors. The relationship between identity styles and recovery from substance abuse has been explored by White, Montgomery, Wampler, and Fischer (2003), who have highlighted that individuals with a diffuse-avoidant style have shorter lengths of continuous abstinence, fewer recovery-oriented behaviors, lower quality of recovery, and less recovery progress than individuals with an informational style. Recently, the scores obtained on diffuse/avoidant identity style by the drug user group have resulted significantly higher than those of the non-user group (Hojjat, Golmakani, Bayazi, Mortazavi, Khalili, & Akaberi, 2015).

Given the above mentioned lack of research on the relationship between identity styles and internet addictive behaviors, the aim of the current study was to explore the effects of identity styles on internet and social networking addiction. In particular, informational and normative styles were hypothesized to be protective factors, whereas diffuse-avoidant style was hypothesized to be a risk factor.

METHOD

Participants
The sample was composed of 254 adolescents (M = 135, F = 119; M_{age} = 18.22, SD = 1.06). Participants were recruited form Italian high schools in the period January - March 2016.

Ethics approval for the study was obtained from the Institution. Permission was required from heads and deans to conduct the research study at the school. Written informed consent was obtained from students over 18 years of age; parents or legal guardians provided written consent for students under 18 years of age to participate. Respondents were asked to complete an anonymous questionnaire during an ordinary 60-min classroom lesson.

Measures
The Italian version of the *Revised Identity Style Inventory* (ISI-5; Berzonsky et al., 2013; Monacis, de Palo, Sinatra, & Berzonsky, 2016) was used to assess three identity styles, i.e., Informational style, Normative style, and Diffuse-avoidant style. The scale comprises 36 items rated on a 5-point Likert scale (from 1 = *Not at all like me* to 5 = *Very much like me*). The Inventory also includes a nine items identity commitment scale. Total score of each scale is computed by summing responses to the items. The internal consistency of the Informational and Diffuse-avoidant scales were good (Cronbach's alpha = .80 and .81, respectively), whereas the reliability of the Normative scale was acceptable (Cronbach's alpha = .62). These values were comparable with previous studies (Monacis, de Palo, Sinatra, & Berzonsky, 2016; Monacis, de Palo, Di Nuovo, & Sinatra, 2016).

The Italian version of the *Internet Addiction Test* (IAT; Fioravanti & Casale, 2015; Young, 1998) measures the

severity of self-reported compulsive use of the Internet for adults and adolescents. The scale is composed of 20 items rated on a 5-point Likert scale (from 1 = *Never* to 5 = *Always*). The total score is computed by averaging the scores obtained in each item. The internal reliability of the scale was excellent (Cronbach's α = .94).

The *Bergen Social Media Addiction Scale* (BSMAS; Andreassen et al., 2016) assesses the experiences in the use of social media over the past year. It contains six items answered on a 5-point Likert scale (from 1 = *Very rarely* to 5 = *Very often*) reflecting core addiction elements (Griffiths, 2005). The internal consistency of the scale was very good (Cronbach's α = .81).

FINDINGS

Descriptive statistics (minimum, maximum, mean and standard deviation) of each considered variable for the total sample and males and females groups are reported in Table 1.

Table 1: Descriptive statistics of the variables of interest.

	Total sample (N = 254)		Males (N = 135)		Females (N = 119)	
	Min-Max	Mean (SD)	Min-Max	Mean (SD)	Min-Max	Mean (SD)
BSMAS	6 – 26	12.30 (4.61)	6 - 25	12.11 (4.94)	6 - 26	12.51 (4.20)
IAT	6 – 26	12.31 (4.59)	6 - 26	13.06 (5.17)	6 - 24	11.45(3.65)
Informational style	13 - 44	33.10 (5.71)	13 - 44	32.44 (6.18)	20 - 43	33.84 (5.06)
Normative style	12 – 39	26.15 (4.52)	12 - 39	26.22 (4.69)	16 - 39	26.07 (4.34)
Diffuse-avoidant style	9 – 40	22.54 (6.82)	10 - 40	23.62 (6.93)	9 - 38	21.30 (6.49)

Gender effects were examined using t-test for independent samples. Significant differences emerged only in the IAT score between males and females, $t_{(252)} = 2.84$, $p < .01$. Males obtained higher scores.

Bivariate correlation analyses were performed to analyze the pattern of association between the variables of interest (Table 2).

Table 2: Bivariate correlations between the variables of interest.

	BSMAS	**IAT**
IAT	,719**	-
Informational style	,033	-,079
Normative style	,014	-,043
Diffuse-avoidant style	,527**	,578**

** $p < 0.01$

Findings showed that only the diffuse avoidant style was positively associated to both internet and social networking addictions and that both addictive behaviors were positively correlated. Two separate linear regressions with backward method were performed to examine the influence of each identity style on addictive behaviors. Findings showed that internet addiction was positively predicted by diffuse avoidant style (β = .59) and negatively by normative styles (β = -.11), whereas social networking addiction was positively predicted by diffuse avoidant style (β = .53).

CONCLUSIONS

The current study aimed at analyzing the extent to which identity styles, as defined by Berzonsky (1988, 1990), could predict internet and social networking addiction. More specifically, it was expected that informational and normative styles acted as protective factors and diffuse-avoidant style as a risk factor. The hypotheses were partially confirmed: among the identity styles, only diffuse-avoidant was positively associated with both internet and social media addiction. Regression analyses provided a more detailed and interesting information about the causal relationship between the variables: diffuse-avoidant style was a positive predictor of both social media and internet addiction, whereas normative style resulted a negative predictor of internet addiction after removing informational style. These findings partially corroborated previous studies according to which there is a relationship between technology addictions, in terms of internet and social networking, and identity styles (Arabzadeh, Bayanati, Nikdel, Nadery, & Naimi, 2012; Morsünbül, 2014; Tabaraei, Nikoogoftar, & Minoosepehr, 2014). Individuals with diffuse-avoidant style tend to avoid or procrastinate identity problems they have to face probably preferring social networking sites to develop social interactions, which could lead to an excessive use of internet. Conversely, normative-oriented individuals, in internalizing significant others'

expectations and values, tend to protect and conserve their own identity structure. In this case, the virtual environment could represent an uncertain space characterized by a variety of identities and values (Tabaraei, Nikoogoftar, & Minoosepehr, 2014). This is why this kind of identity style negatively predicts internet and social media addiction.

Thus, Internet and social network sites seem to provide a virtual environment where adolescents could face their identity conflicts and issues, especially when they look for independence and separation from parents and need to establish exciting and satisfying relationships with companions and groups on the Internet. On top of that, they can reveal only a part of their identity or construct imaginary identities and names (Arabzadeh et al., 2012) using them for specific goals. These disordered identities, therefore the risk to become addicted to technology, are favoured by inappropriate expectations, dissatisfaction with parents, school, and social relationships.

In general, the findings of this research may be useful both in prevention and intervention programs: parents, teachers, educators, counselors, etc., have to support particularly diffuse-avoidant adolescents who could make an excessive use of internet and social networking sites. It should be worthwhile to promote social skills in order to avoid/reduce the risk of negative outcomes (Caplan, 2005).

Since the hypotheses of the current study were partially confirmed, further studies are needed: (1) to better analyze the nature of the relationship between identity styles and technological addictions, above all as for the informational style which has been found elsewhere (Arabzadeh, Bayanati, Nikdel, Nadery, & Naimi, 2012; Morsünbül, 2014; Tabaraei, Nikoogoftar, & Minoosepehr, 2014) to be a negative predictor; (2) to test a causal model in which further antecedents and consequences of internet/social media addictions can be clearly integrated.

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İLETİŞİM FAKÜLTELERİNDE KÜLTÜR VE SANAT GAZETECİLİĞİ EĞİTİMİNİN ÖNEMİ

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ÖZET
Günümüz toplum yapısında sanatın her dalı kitle iletişim araçları ile bireye ve topluma sunulmaktadır. Medya bu alanda uzmanlaşmış gazeteciler ile birer takipçi haline gelmektedirler. Bu bağlamda kültür ve sanatın medyadaki temsil eksikliğinin giderilmesi, daha sık ve nitelikli bir biçimde ele alınmasını özendirmek için kültür sanat gazeteciliği alanında uzmanlaşmanın sağlanması ve yaygınlaştırılması önem taşımaktadır.
Çalışmamızın amacı kültürel ve sanatsal çalışmaların toplumsal gelişmedeki önemini vurgulayarak İletişim Fakülteleri'nde bu alanda verilecek eğitimin önemini aktarmaktır.

THE IMPORTANCE OF CULTURE AND ART JOURNALISM IN COMMUNICATION FACULTIES

ABSTRACT
In today's modern societies, each branch of art is presented to individuals and societies through the mass media. In the same way, the media has already been a follower by means of specialized journalists in this field. Thus, for the purpose of compensating the representation deficiency of culture and art in the media as well as encouraging their coverage in the media in a more qualified way, it is very important to ensure and extend specialization in culture and art journalism.
The purpose of our study is to emphasize the significance of education that will be provided in communication faculties by highlighting the importance of sensitivity to art and culture in social development.

Keywords: culture, art, education

GİRİŞ

Kitle iletişim araçlarının insanları bilgilendirmenin yanı sıra insanları eğlendirme, boş zamanlarını değerlendirme gibi temel işlevleri vardır. Örneğin tiyatro, sinema, dans, müzik, spor gibi eğlence niteliği ağır etkinliklerle bireyi rahatlatma işlevi görür.

Kitle iletişim araçları çağdaş yaşam deneyimlerinin ufkunu daraltmamakta, aksine genişletmekte, çağdaş insanın kendini ifade etme olanaklarını arttırmaktadır. (Oskay, 1993:15)
Kitle iletişim araçları sayesinde uluslararası işbirliği ve kültür alışverişi gerçekleşmektedir. Toplumlar arasında kültür ve sanat alanlarındaki karşılıklı etkileşim bu sayede daha çok artmaktadır. Kültürel sürekliliği sağlayan bu araçlar toplumu değişikliğe hazırlayabilme yetisine sahiptir. Aynı zamanda kitle iletişim araçları ait oldukları toplumun kültürel mirasının korunmasında ve gelecek nesillere aktarılmasında da önemli bir yere sahiptir.

Toplumda kültürel ve sanatsal değerlerin korunmasında ve geliştirilmesinde kitle iletişim araçlarının etkileri yadsınamaz. Kitle iletişim araçları sayesinde kültür ve sanat alanındaki ulusal ya da uluslararası etkinlikler hakkında topluma bilgi verilmektedir. Sanatçıların çalışmaları, görüşleri ve düşünceleri topluma ulaşabilmektedir.

Kitle iletişim araçları birer kültür taşıyıcısı ve aktarıcısı durumundadır. Günümüzde Avrupa'da hemen hemen her ciddi gazetenin kültür ve sanat olayları üzerine söyleşilerin ve tartışmaların yer aldığı geniş kapsamlı bir sayfası bulunmaktadır. Bu sayfalar aracılığıyla toplumla kültürel açıdan kurulan iletişim de süreklilik kazanmaktadır. Dolayısıyla Batı medyasında kültür ve sanat alanında uzmanlaşma son derece önemlidir. Bu alanda habercilik yapan muhabirin kültürel ve sanatsal anlamda nitelikli ve donanımlı olması gerekmektedir. Bu bağlamda İletişim Fakülteleri uzmanlaşmaya önem vererek bu alanda nitelikli gazetecilerin yetişmesini sağlamalıdır.

1.KÜLTÜR VE SANAT KAVRAMLARINA GENEL BAKIŞ
Kültür kavramı hakkında ilk açık ve kapsamlı tanımlama İngiliz Antropolog Edward B. Tylor'a aittir.

Tylor kültürü; bilgi, inanç, sanat, hukuk, ahlak, adet, gelenek ve toplumun bir üyesi olarak kişinin yaşayarak kazandığı huylar ve yetenekler bütünü olarak tanımlar.

Tomlinson'a göre kültür; insanların sembolik temsil pratikleri yoluyla anlam inşa etmeye çalıştıkları bir yaşam düzeni olarak görülebilir. (Tomlinson, 2004:33) Kültür bir bakıma toplumsal araçlarla aktarılıp iletilen herşeyi anlatmaktadır. Kültürün yaygın kullanımı kimi zaman sanatlarla sınırlı kalmaktadır.

Kültür bir yaşama biçimidir ve bir topluma özgü bütün ifade, etkileşim biçimleri bu tanımda yer almaktadır. Aynı zamanda kültür duyuş, düşünüş ve davranış biçimidir. Günlük yaşamımıza dair hemen hemen herşeyi içermektedir. Sanat yaşama dair bir üretimdir. Çeşitli ifade biçimleriyle; renklerle, seslerle, sözcüklerle içeriğe biçim vererek bir anlam yaratmaktır.

Sanat da tıpkı kültür gibi insanoğlunun her döneminde var olan bir kavramdır ve tıpkı onun gibi tanımlarında farklı yorumlara sahiptir. Anlamlı biçimlerin özgürce yaratılması demek olan sanat, isteklerimize ve dünyayı algılamamıza biçim verir. (Tanilli, 2006:206)

Sanat "Birçok alanı, akımı, müzesi, sergi salonu, uygulayıcısı olan bir sosyal kurumdur. Sanatın ne olduğu konusu çağlara, toplumlara ve sanat alanına göre bazı değişiklikler göstermektedir. Günümüzde sanat, yaygın olarak, her ne kadar görsel sanatlar için kullanılsa da, kavram yüzyıllar boyunca sürekli olarak değişti. İlk zamanlar, çok geniş olarak insanın tüm yaratıcı davranışlarının tanımlamak için kullanıldı; muhtemelen insanın üreme ve hayatta kalma gibi eylemlerini de içeriyordu…Sanat teriminin İngilizce karşılığı 'art' terimidir. 'Art' Latince bir terim olan ve 'düzenleme' ya da 'düzenlemek' anlamına gelen 'ars' teriminden gelir. Bu, sanatın en temel, evrensel tanımlarından biridir." (Keser, 2005:291)

Sanat, toplumdaki bireylerin birbirleriyle iletişim kurma araçlarından en çeşitli ve en yaratıcı olanıdır. Sanatın içinde hayal gücü, estetik, yaratıcılık, yetenek yer alır. Sanat, insanların duygularına hitap eden ve birtakım mesajlar vererek onları derin düşüncelere sevk eden bir olgudur. İlk çağlardaki mağara resimleri de sanattır. Rönesans ve Reform dönemlerinde yapılanlar da sanattır. Sanat yapıtları, bize denemeleri, yaşama dair göremediğimiz farklı boyutları, yaşanılan deneyimleri anlatır.

Sanat, bir bilim alanı değil, gerçekçi ya da gerçeküstü de çalışabilen bir yaratım alanı, bir iletişim evrenidir. Kurallarla var olamaz, soluk alamaz, kurallar onu öldürür. Bu nedenle özerklik ve öznellik arayışından hiç vazgeçmez. (Aydın, 2009:261) Sanat toplumda yaşayan bireylerin yaşamlarını etkiler ve toplum sanatın olası içeriğini ve işlevini belirler. Bu ağın birleştiği noktadadır sanatçı ve onun yaptığı işler. (Baynes, 2004:28)
 Toplumsal yaşamın ürünü olan sanatın amacı ise insanların duygu, düşünce ve heyecanlarını biçimlendirmek ve başkalarına ulaştırmaktır. Bir bakıma insan duygularının aktarımıdır. İnsanoğlu sanat yoluyla kendini ifade eder, bir anlamda diğer insanlarla iletişim kurar. Sanat yapıtları belli bir varlığı anlatır, belli olayları simgeler. İnsanla doğadaki nesnel gerçekler arasındaki estetik ilişki olarak da nitelendirebileceğimiz sanatın insanlığın başlangıcından beri varolduğu bir gerçektir.

Sanat, bir başkasının yansıttığı duyguları görerek ya da duyarak algılayan birinin, bu duyguların aynısını yaşaması timeline dayanan bir etkinliktir. (Tolstoy, 2010:49) Dolayısıyla sanat duyguları aktarmanın bir aracıdır.

Sanatın amaçları içinde en önemlisi yaşamın yerini tutması, insanla çevresi arasında bir denge sağlamasıdır. İnsanları bireyselliklerinden kurtararak toplumsallaştırmasıdır. Bunu da başkalarında gördüğümüz yaşam biçimlerinin bizim olabileceğimizi düşünmemizle sağlayabilir. Duygu ve düşünceleri paylaşma yeteneğini yansıtır. İnsanla yaşadığı çevre arasında hangi toplumda olursa olsun hiçbir zaman tam bir denge sağlanamadığı için her dönemde sanat toplumlara gerekli olmuş ve olacaktır. Toplumların gereksinimleri ve düşünce yapıları değiştikçe sanatın işlevi de değişecek, yeni görevler yüklenecektir. İnsanlığın kendini aşmasına yardım edecektir. (Ersoy, 2002:43)

2.KÜLTÜR VE SANAT GAZETECİLİĞİ

Profesyonel gazetecilik ideolojisi, 19. yüzyıl boyunca basının kapitalleşmesinin, diğer bir deyişle haberin pazara sunulan bir metaya dönüşmesiyle yaşanan değişim sonucunda ortaya çıkmıştır. Medyada basın işletmelerinin sayısı arttıkça ve medya sahip olduğu güçle öne çıktıkça gazetecilere ilgi daha da artmıştır. Teknoloji ve iletişim dünyasında meydana gelen değişim ve gelişmeler de medyada yeni arayışlara neden olmuş, bu arayışlar doğrultusunda çeşitli düzenlemeler yapılmıştır. Bu gelişmelerden birisi de mesleki uzmanlaşmadır. Profesyonel gazetecilik ideolojisinde uzmanlaşmak olgusu, siyasetten, ekonomiye, kültür sanat, spor ve adli konulardaki haberlerin doğruluğunu tartışmasız kılacak kişilerce hazırlandığını vurgulamaktadır. Sıralanan haber kategorilerinin özel alanlar olduğunu vurgulayan bu ilke, kendi alanında yoğunlaşmış, belirli bir bilgi birikimi sonucunda görüşleri ve edindiği becerileri ile ayrıcalık kazanmış uzmanların bu donanımlarını kamu yararı doğrultusunda kullandıklarını belirtmektedir.(Erdik, 2011:60)

Kültür sanat muhabirliği, toplumların kültür ve sanat dahilinde gerçekleştirdiği her türlü etkinliğin haber olarak okurlara/izleyicilere sunulduğu uzmanlık alanıdır. Toplumun, toplumsal bir altyapı birimi olarak medyanın gelişmişlik düzeyi ve kültürel, sanatsal faaliyetlere gösterdiği ilgiyle, kültür sanat haberciliğinin gelişimi arasında doğru orantı vardır.

Kültür alanında gazetecilik yapabilmek zor olduğu kadar keyif vericidir. Zorluğu alanın oldukça geniş bir bilgi birikimi içermesinden kaynaklanır. Arkeoloji, sanat tarihi, tarih, antropoloji, sosyoloji, güzel sanatlar gibi en temel alanlarda bilgi sahibi olmak gereklidir. Gazeteci soru sorabilmek, araştırma yapabilmek için en temel bilgilerden birkaçını bilmelidir, aksi halde gördüğü bir olayı toparlaması, ondan haber çıkarabilmesi neredeyse olanaksızdır. Aynı zamanda muhabirin kavramları doğru algılaması ve aktarması için entelektüel birikiminin yeterli düzeyde olması gerekir.

Kültür ve sanat alanında çalışan muhabir örneğin ziyaret ettiği bir serginin haberini oluştururken öncelikle kendi gözlemlerini ifade eder. Kendi gözlemlerinin yanı sıra kişi ya da kurumdan aldığı bilgiler doğrultusunda haberini tamamlar. Gazetecilerin, kendilerine bilgi sağlayan kurumlar arasındaki iletişim kanalları açık olmalıdır. Kültür ve sanat muhabirinin, kültür merkezleri, üniversiteler, vakıflar ve dernekler, bakanlık, yerel yönetimler, konsolosluklar, sergiler gibi bu alanın önde gelen kurum ve kuruluşları ile bağlantısı olmalıdır.

Kültür-sanat haberciliği edebiyat, sinema, tiyatro, müzik, plastik sanatlar gibi sanatın her dalını kapsayan haberleri içerir. Kültür sanat sayfaları diğer sayfalardan farklı olarak rutin ve özel haber dışında olaylar hakkında eleştiri yazılarını da içerir. Çünkü kültür sanat haberi alımlayıcısı haberi yapılan konu hakkında olumlu/olumsuz bir görüş bekler, bu görüş doğrultusunda etkinlikte bulunup bulunmamaya karar verir. Bu nedenle kültür sanat haberi yapacak muhabirin alanında uzman olması, yetkin olması gerekir. Sadece olayın haberini yapıp bırakmamalı, o olay hakkında yorum yazısı da yazabilmelidir. (Odyakmaz,2013:206)

Kitle iletişim araçlarından yazılı basın alanında gazeteyi ele alacak olursak, gazetelerde yalnızca kültür ve sanat olayları ile ilgili haber, tartışma ve çeşitli konuların yer aldığı sayfalara yer ayrılmaktadır. Bu sayfaların sayısı gazetenin türüne göre değişiklik göstermektedir. Hatta bazı gazetelerde bu tür özel sayfalara hiç yer ayrılmayabilmektedir. Fikir gazeteciliğini yayın kimliği olarak belirlemiş medya organizasyonlarında, kültür sanat servisleri uzman ve dinamik bir kadro ile çalışmaktadır. Sayfa yapısı 2'ye çıkmıştır. Kültür sanat etkinliklerine geniş yer verilirken, yorum, eleştiri ve ayrıntılı röportajlarla sayfalarını zenginleştirmektedirler. Ayrıca gazetenin hafta sonu eklerinde de kültür-sanat konusuna ayrıntılı biçimde yer verilmektedir.

Kültür ve sanat alanında uzmanlaşan gazeteciler zamanla ilgili bir kaygı yaşamadıkları için diğer alanlarda çalışan gazetecilere oranla daha avantajlıdır. Kültür sanat gündemi çoğu zaman önceden belli olduğu için muhabir haber yazımını günlere yayabilir. Örneğin bir sergi ya da sanat fuarının yapılacağı tarih önceden belirlidir, dolayısıyla muhabirin konuyla ilgili gerekli araştırmaları yapacak zamanı vardır. Bu nedenle kültür-sanat alanında çalışan gazeteciler daha rahat bir çalışma olanağına sahiptirler.

KÜLTÜR VE SANAT GAZETECİLİĞİ EĞİTİMİNİN ÖNEMİ

Kültür ve sanat toplumların gelişmişlik düzeyinde büyük önem taşımaktadır. İnsanı insan yapan sanata, sanat eğitimine, sanat eserlerinin korunmasına, sanatçıların yetişmesine ve desteklenmesine, kültürel aktivitelerin devamlılığını sağlamaya özen gösterildiği, kültürel politikalarını oluşturarak kültüre ciddi bir bütçe ayıran devletler, toplumlar uluslararası platformda da saygınlık görmektedirler. Toplumlar geliştikçe, ilkel benliklerini tatmin eden faaliyetlere daha az, entelektüel beğeniyi tatmin eden faaliyetlere daha çok zaman ayırmaktadırlar.

Gazetelerin kültür-sanat sayfalarında, ulusal ve uluslararası alanda kültür ve sanatla ilgili etkinlikler, yenilikler ve konuyla ilgili yorum yazılarla fotoğraflara yer verilmektedir. Edebiyat, müzik, tiyatro, sinema, resim, plastik sanatlar, opera, bale ve hatta çeşitli müzayedeler vb. kültür-sanat sayfalarında rastlayabileceğimiz konulardır. Bu sayfaların hazırlanmasında görev alan kültür-sanat gazetecileri genellikle yurt içinde kimi zaman da yurt dışında düzenlenen sanatsal ve kültürel etkinlikleri takip ederler. Sergiler, festivaller, konserler, sinema ve tiyatro gibi etkinlikleri izleyerek bu konular hakkında görüşlerini yazılarına aktarırlar. Ya da ajanda etkinliği adı verilen, sadece etkinlik hakkında tarih, saat, yer ve kimlerin katılacağı ile ilgili genel bilgiler içeren haberler verirler. Gazeteciler ayrıca hükümetin kültür ve sanat politikasında meydana gelen değişikleri ve yeni yasa ve uygulamaları izleyerek haberlerine aktarırlar. Genellikle kültür-sanat politikasındaki aksaklıkların ve yanlış tutumların üzerine gidip, bunların düzeltilmesi için yazılarında çeşitli öneriler de getirebilirler.

Her alanda olduğu gibi, medya alanında da eğitilmiş işgücüne duyulan ihtiyaç giderek artmaktadır. Ancak, mesleki eğitim sadece mesleğe yeni kabul edilecekler açısından değil, herhangi bir yolla mesleğe kabul edilmiş,

medya çalışanları açısından da belirgin bir ihtiyaç olarak durmaktadır. Başta gazetecilik olmak üzere medya alanına giren uğraşların belli bir eğitim gerektiren meslek olduğu yolundaki görüşler ağırlık taşısa da mesleğe girişte, bu alanda eğitim görmüş olmanın bir ön şart olarak kabul edilmeyişi, hatta ilköğretimden üniversiteye kadar farklı düzeylerde eğitim görmüş kişilerin bu alanda çalışıyor olması önemli bir sorun oluşturmaktadır. (Altun,2005:76)

Kültürel ve sanatsal duyarlılığın toplumsal gelişmedeki önemi kuşkusuz büyüktür. Günümüz toplum yapısında sanatın her dalı kitle iletişim araçları ile bireye ve topluma sunulmaktadır. Medya bu alanda uzmanlaşmış gazeteciler ile birer takipçi haline gelmektedirler. Bu bağlamda kültür ve sanatın medyadaki temsil eksikliğinin giderilmesi, daha sık ve nitelikli bir biçimde ele alınmasını özendirmek için kültür sanat gazeteciliği alanında uzmanlaşmanın sağlanması ve yaygınlaştırılması önem taşımaktadır. (Erdik, 2011:70)

Kültür sanat muhabirinin sinema, müzik, sahne sanatları, edebiyat, fotoğraf, mimarlık, resim gibi sanatın alt dallarından birinde uzman olması beklenir. Türkiye'de medyada çok ciddi bir uzmanlaşmanın olmadığını görüyoruz, ancak kültür sanat alanında uzmanlaşma giderek artmaktadır. Özellikle fikir gazeteciliğini yayın kimliği olarak benimsemiş medya organizasyonlarında kültür sanat servisleri uzman ve dinamik bir kadro ile çalışmaktadır. Cumhuriyet gazetesi kültür ve sanata birkaç sayfa ayırırken, Hürriyet, Milliyet gibi gazeteler magazin başlığı altında kültür ve sanat haberciliğine yer vermektedir. Magazin haberleriyle harmanlanarak tüketiciye ulaştırılmaktadır. Örneğin vizyona giren bir sinema filmi hakkındaki haberlerin konusunu filmin vermek istediği mesajdan çok, fragmanında yer alan sansasyonel sahneler veya oyuncular ile ilgili varsa skandal haberler oluşturmaktadır. Bu süreçte 'sanat' kavramının içi boşaltılırken, 'sanatçı' kavramı da olumsuzlanmaktadır.

Ülkemizde ise kültür ve sanat haberciliğinin varlık ve etkinlik alanı dünya standartlarına göre son derece gerilerdedir. Örneğin, Türkiye'nin en iddialı kültür sanat dergisi olan Milliyet Sanat Dergisi 10 bin satış grafiğini yakaladığında bunu büyük bir başarı saymaktadır. Türk medyası çoğunlukla politika ve ekonomi haberlerine ağırlık vermektedir. Kültür-sanat haberleri farklı bir alımlama gerektirdiğinden ve ciddi içerikli olduğundan dolayı genellikle magazin haberlerinin içine yedirilerek basitleştirilir, eğlenceli, herkes tarafından tüketilebilir hale getirilir.

SONUÇ

Gazeteciliğin çeşitli alanlarında –ekonomi, sağlık, kültür-sanat vb.- uzmanlaşma haberin güvenilirliği açısından önem taşımaktadır. Haberin kaynağının konuyla ilgili yetkinliği aktarılan bilginin daha çabuk kabul görmesini sağlamaktadır. Konusunda uzman bir gazeteci tarafından hazırlanan haber daha fazla ilgi çekmektedir. Dolayısıyla gazetecilikte uzmanlaşma son derece önemlidir. Bu alandaki uzmanlaşma aynı zamanda medya kuruluşunun kurumsal itibarı açısından da önemlidir.

Medya organizasyonlarının kültür ve sanat ürünleri üzerine kurguladıkları metinlere baktığımızda; küresel kültürün yansıması olan popüler kültür ürünlerinin dayatıldığını, buna karşılık var olan güç odaklarına muhalif, bilgilendirici ve bilinçlendirici ürünlerin yok sayıldığını rahatlıkla söyleyebiliriz. Oysa bize ait olan ortak değerler ve anlamların bütününü oluşturan kültürümüz ve onun taşıyıcısı sanat, toplumsal uyanışımızın ve birlikteliğimizin temel taşlarıdır. 1980 sonrası yaratılan ve günümüzde sermayenin ellerine teslim edilen Türk medyasının küresel güçlerden ayrı hareket edebileceğini düşünmek hayalcilik olsa da kültür ve sanat alanında emek harcayarak bunun farkında olması ve özellikle görülmek istenmeyeni görmeye çalışarak farkındalık yaratması gerekir. (Odyakmaz, 2013:205)

Yurt dışındaki Columbia, Lincoln, Missouri gibi üniversitelerde kültür ve sanat gazeteciliği alanında eğitimler verilmekte, bu alanda uzman gazeteciler yetiştirilmektedir.

Dünyada çağdaş anlamda iletişim eğitiminin ilk olarak 1908 yılında ABD'de Missouri Üniversitesi'nde kurulan gazetecilik okulunda başladığı bilinmektedir. (Tokgöz, 2016)

Özellikle Avrupa ülkelerinde yayınlanan gazetelerin kültür-sanat sayfalarına baktığımız zaman bu alandaki muhabirlerin tiyatro, edebiyat, müzik, sinema vb. alt başlıklar altında uzmanlaştıkları görülmektedir. Türkiye'de ise bu alandaki uzmanlaşma yeni yeni gelişme göstermektedir.

Bu bağlamda uzmanlaşmanın önemi göz önünde bulundurularak nitelikli eleman yetiştirmek açısından İletişim Fakülteleri ile medya kuruluşları işbirliği içinde olmalıdır. Medyada kültür ve sanat haberlerinin temsil eksikliğinin giderilmesi, bu alandaki haberlerin daha nitelikli bir biçimde hazırlanması için kültür sanat gazeteciliği alanında uzmanlaşmanın sağlanması son derece önemlidir.

Her geçen gün sayıları artan ve daha fazla mezun veren İletişim Fakültelerinin ders programlarında özellikle gazeteciliğin uzman alanlarına yer verilmelidir. Kültür ve sanat ile ilgili dersler verilerek bu alanda öğrencilerin

bilgi sahibi olmaları sağlanmalıdır. Ancak o zaman kültür ve sanata ilişkin konularda toplumsal bilinç gelişebilir. Sanatsal düşünce ve davranış biçimlerinin geliştirilmesinde eğitimin gerekliliği tartışılamaz bir gerçek olmuştur.

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