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The Impact of Using Multimedia Technologies on Students Academic Achievement in the Bakirköy Final College

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Abstract: *The aim of this page is to find out the impact of using animation on college level students' academic achievement in the Bakırköy Final College. 28 students were selected and it is divided into two equal groups. Modern technologies are used for first group and traditional approaches are preferring for second group. This study observed a significant relationship between students' use of animation technology and their achievements in geography course. This paper reports on the results of the exam, documenting what was revealed regarding how technology is used among students at the Final College, as well as the important benefits on their achievements during geography courses. Animation technologies usage might produce comparatively more significant increases in geographic academic achievement than would non usage.*

Keywords: *Education, Geography, Bakırköy Final Caollege, Modern Information Technologies, Multimedia, Animation, Achievement*

1. INTRODUCTION

Effective teaching and learning is impossible nowadays without the use of various techniques based on modern ICTs and innovations of the so-called 'digital' pedagogy. Within a high-tech information educational environment, multimedia is one of the powerful tools that assists teachers to enhance their professional capacity and helps students to achieve their educational goals (Badarch, 2013: 4). Moreover, modern multimedia in combination with social media and open educational resources contribute to reaching one of the Bakırköy Final Schools main goals in education to make quality education more accessible for all.

The concept of multimedia is defined in many ways. Most of the definitions agree on the characteristic that multimedia contains texts, graphics, animations, video and sound in an integrated way and the content can be structured and presented differently. So multimedia represent the consolidation of all elements of technology as they combine sound, image, video, drawing & text with a high quality in addition to the interactive environment (Fouda, 2008, p. 386). Multimedia technologies present reactive, proactive, and mutual interactions (RhodesandAzbell, 1985; cited in Schulmeister, 1997).

Multimedia can be viewed as a learning tool and a means of communication. Within learning situations, multimedia products and online services can be used creatively and reflectively. Furthermore, multimedia can be used to foster learning subject matters and cross-curricular.

Multimedia is very helpful and fruitful in education due to its characteristics of interactivity, flexibility, and the integration of different media that can support learning, take into account individual differences among learners and increase their motivation (Aloraini, 2005, p. 55–75).

The provision of interaction is the biggest advantage of the digital media in comparison with other media. It refers to the process of providing information and response. Interactivity allows control over the presented content to a certain extent: learners can change parameters, observe their results or respond to choice options. They can also control the speed of applications and the amount of repetition to meet their individual needs. Furthermore, the ability to provide feedback tailored to the needs of students distinguishes the interactive multimedia from any other media without a human presence. However, many aspects need to be taken into account when using multimedia in education (Andresen and Brink, 2013:23-26)

Multimedia can appeal to many types of learning preferences – some students profit more from learning by reading, some by hearing and some by watching, etc. In addition, the use of multimedia allows for different ways of working – students can decide on their own how to explore the materials as well as how to use interactive and collaborative tools.

Moreover, students can adjust their own learning processes according to their abilities and preferences. They can work according to their interests, repeat material as much as they want reducing embarrassment concerning their learning outcomes. The use of multimedia can thus be tailored to the students' differences in interests, social and cultural backgrounds, learning preferences and rates, etc.

Individual learning can promote active, self-directed learning. In addition, multimedia applications can be used to facilitate group work. Small groups of students can work through multimedia applications together – in order to learn from each other as well as to improve their dialogue skills. (Andresen and Brink, 2013:25-26).

2. OBJECTIVES

This study was conducted to investigate the possible relationship between students' use of technology and their achievements in geography courses at Bakırköy Final College. The study will help us identify data regarding the way educators employ multimedia strategies in achieving the instructive activities in different subjects in the compulsory curricula and what the effects on the cognitive development of children. Especially in geography lessons such as plate tectonics, volcanic activities, natural hazardous the use of multimedia is more effective. Furthermore this article also aims to emphasize this feature as well.

3. METHODOLOGY

This study was conducted on 40 students studying geography during their only one geography lesson about subject of plate tectonic. To this end, an experiment of two equivalent groups was designed, one of the groups is taking lesson as an modern (experimental) and the other is traditional (control); each of them consists of 20 students.

The lecture was given to the first group using an animation (Figure 1) which uses multimedia treated as an experimental group, while the second group was given the same lecture using the traditional method which uses the dialog and discussion technique treated as a control group.

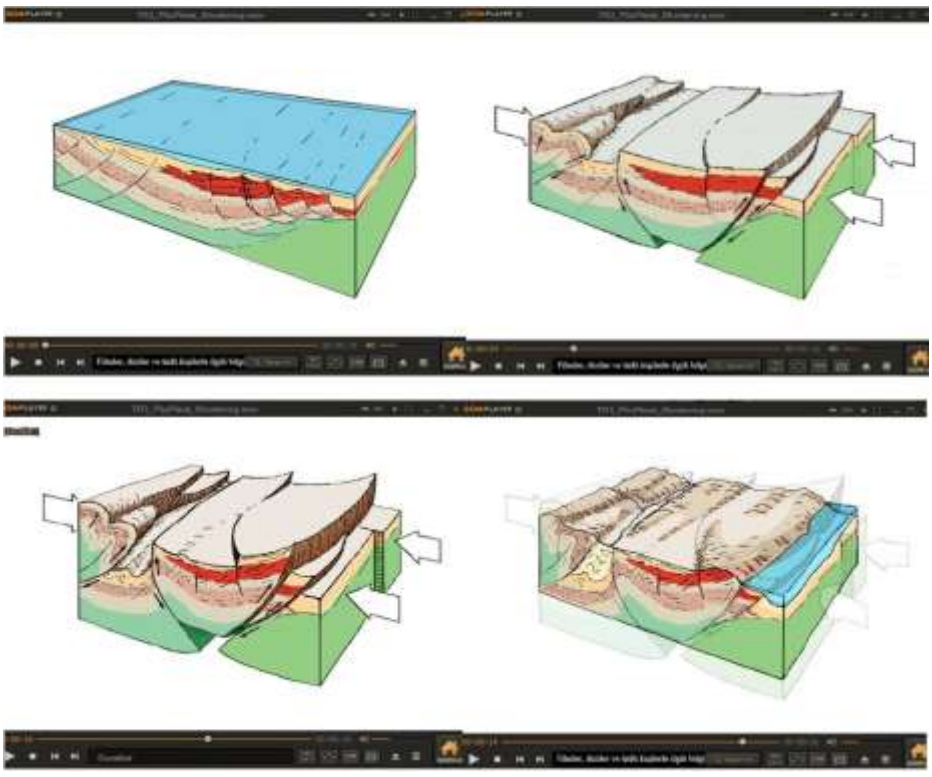


Figure1. *Different images from the parts of the animation*

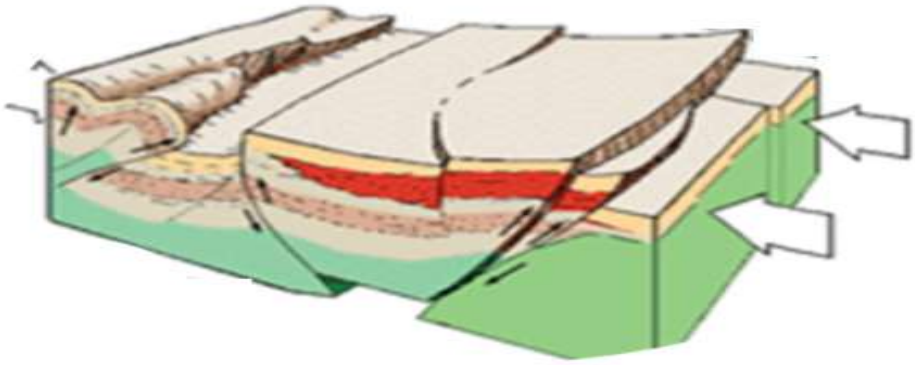
An exam (Figure 2) regarding understand of geography lesson was sent to the both of the student groups. Both groups were subjected to tests in the subject tackled by the lecture.

DERS KAZANIM DEĞERLENDİRMESİ - *COURSE EVALUATION*

Ders - *Lesson*: Coğrafya - *Geography*
Konu: *Subject*: Plaka tektoniği - *Plate tectonic*
İsim – *Name:*

Anahtar Kelimeler - *Key words*

Diyagramda fay ve kıvrım hatlarını gösteriniz.
Label This diagram showing a fault and fold systems



Plaka tektoniğini tanımlayınız.
Describe the formation of plate tectonics

Diyagrama göre plaka tektoniğinin etkisiyle oluşan şekiller nelerdir?
What are landforms formed by plate tectonics on diagram?

Figure2. *Course Evaluation Form*

The correlation coefficient and descriptive statistics were implemented to study the frequency of, and relationship between, multimedia technologies and learning achievement in Geography courses.

The researchers in the following statistical processing used the Statistical Package (SPSS) for analysing all processes:

- Calculating the median, the standard deviation and the variant, etc.
- F- Test, T-Test and Mann Whitney U test to examine the difference between the performance of control and experimental groups.

4. RESULTS

After applying the experiment, the researcher conducted an academic achievement test then he analysed the study outcomes to figure out the impact of using multimedia on students' academic achievement and the results were as follows:

Meanwhile, the analysis result of the test showed the following: There are statistically-significant differences between the experimental group and the control group. (Figure 3, Table 1, Table 2).

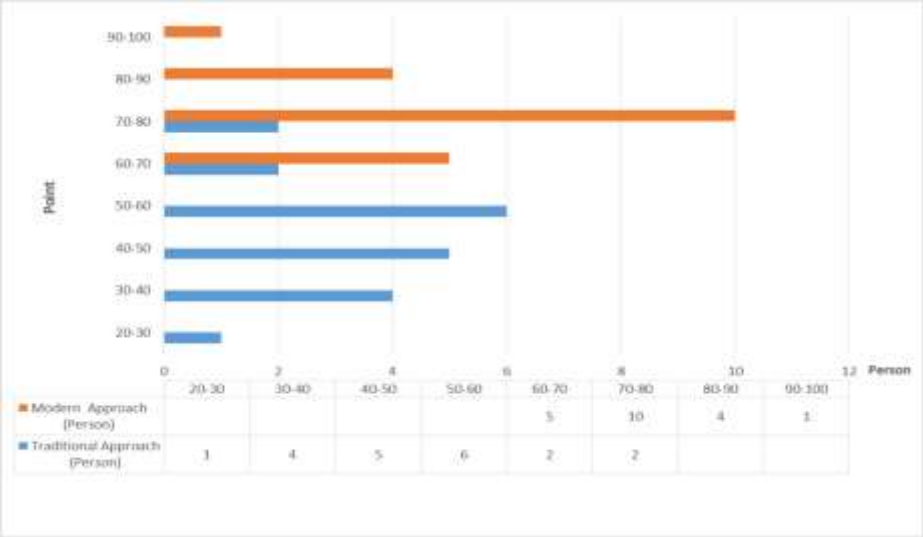


Figure3. *Frequency results of the academic achievement test for the groups*

Table 1 shows statistically significant differences between the control and experimental groups.

Table1. *Frequencies of Numbers in the Sequence*

Point	**TraditionalApproach (Control Group)**			**Modern Approach (Experimental Group)**		
	Frequency	Difference from Average	Average Differences of Numbers Squares	Frequency	Difference from Average	Average Differences of Numbers Squares
20	1	-25	625			
30	4	-15	225			
40	5	-5	25			
50	6	5	25			
60	2	15	225	5	-10,5	110,25
70	2	25	625	10	-0,5	0,25
80	-	-	-	4	9,5	90,25
90	-	-	-	1	19,5	380,25

The standard deviation, the median, the variant, F Test, and T Test were calculated for both the control and experimental groups in the academic achievement test as shown in Table 2.

Table2. *Results of the academic achievement test for the groups.*

Groups	**Traditional Approach**	**Modern Approach**
Number	20	20
Mean - Median	45	70,5
Lowest point	20	60
Highest Point	70	90
Standard Deviation	13,57242	8,25578
Variant (Standard Deviation)	184,21053	68,15789
Population (Standard Deviation)	13,22876	8,04674
Variant (Standard Deviation of Population)	175	64,75
Mode	45	70,5
Mode frequency (Peak number of repetitions)	45	10
Range	6	30
Standard Error	50	1,8460
The sum of the squares of the differences of the mean of the numbers	3,034	1295
Coefficient of Change	3500	11,710
Sum of numbers in the series	30,16	1410
F-Test Value	0,091168	
T –Test Value	3,6653	

The F-Test / ANOVA (Analysis of Variance) was used to test the hypotheses about the significance of the difference between the means of two or more groups of variance analysis. The above tables contain descriptive statistics and variance analysis values for our data. The Mean values in the Descriptive table indicate the average grades of the students. The mean values of the students prepared by the traditional method were low with (45); the average of those who learn the lesson with modern approach is higher (70.5).According to the F test result made at the 95% confidence level, F-score = 0.091168 <F-table (19, 19; 0.05) = 2.11. The significance level of the notes was found to be p <0.05.If p <0.05, the HA hypothesis is accepted. For this reason, the variances are not homogeneous for bipartite probability. So; the mean grades of both groups differ significantly.

In addition, by comparing the average of the two groups taking courses with traditional and modern methods, it was decided by the result of the Paired-Samples "T test" that the difference is coincidental or not statistically meaningful. The two unequal variances were calculated to be 3.6563 in two directions. T Account = 3.6653> T Table (FD = 20 + 20-2 = 38, α / 2 = 0.025) = 2.0121

P <0.05.In this case the difference between the two groups' mean is statistically significant.

The Mann-Whitney U test was used for the significance test of the difference between the two means.

U1=n1.n2+((n1(n1+1)/2))-R1=530.5

U2=n1.n2-U1=-130.5

U=Max (U1,U2)=530.5

α= 0.05.

The table statistic is 238 with a 0.05 error level and (FD:19,19) degrees of freedom.

U Account = 530.5> U Table = 238

The Ho hypothesis is thus invalidated and proves that there are significant differences between the notes of the two groups.

After getting the statistical results of the academic achievement tests of the control and experimental groups, the positive impact of using multimedia was clear on geography teaching. Multimedia and its uses in geography education and on better scientific academic achievement of the experimental group compared to the results of the control group, which proves that using multimedia in education is an effective means of reaching a better learning.

5. DISCUSSION

According to the study results which indicated the effective use of multimedia compared to the traditional methods of teaching, the study recommends the following:

The dramatic growth of multimedia creates new opportunities for engaging college students. Multimedia techniques should be used judiciously in the learning process. Multimedia can be used to motivate discussions. The trends up updating and improving the teaching strategies subscribe to increasing the multimedia strategies of the teaching process, developing active-creative teaching, within the multitude of educational strategies, the issue that merges is of an efficient, contextual combination of formal and informal strategies, traditional and modern strategies, according to criteria of complementarity, compensation and mutual support. The use of multimedia by students needs to be supported by very skilled teachers. They must guide students through the learning process and provide them with appropriate and effective learning strategies. Like the use of textbooks, the use of educational multimedia fosters teaching strategies, where the teacher's role is not just that of information provider but the one of guide, supporter and facilitator.

6. CONCLUSION

Multimedia often requires more equipment to deliver a message than more traditional mediums. Whenever equipment is involved, there is the chance that the equipment will fail. Time is a precious commodity and you don't want to spend time with your customer, client or business associates trying to fix presentation equipment, change a light bulb, get a new computer or search a hard drive for a missing multimedia file.

The quality of the multimedia is very important. Given that multimedia clips can vary greatly in quality, you may be sending the wrong message inadvertently. Throwing together a bunch of unrelated images or poorly recorded sounds can be annoying to those receiving your message. On the other hand, high-quality multimedia can be expensive to create or purchase.

Even with software making multimedia easier than ever to develop and incorporate into messages, it still takes time (smallbusiness.chron.com).

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