

THE EFFECT OF INTERNET-BASED EDUCATION ON STUDENT SUCCESS IN TEACHING OF 8TH GRADE TRIANGLES SUBJECT

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ABSTRACT

In the study, it was researched the effect of internet-based application on student success. Internet-based application was used at the teaching of triangles subject which is included in 8th grade units of triangles and algebra. The study was carried out over the internet with a computer software program: Vitamin Program. The study was carried out with total 37 8th grade students in two separate classes in a study centre in 2011-2012 school years. It was carried out internet-based teaching material on the [experiment group](#) and also conventional teaching method and materials on the control group. In the research, "the achievement test consisting of triangles subject" was carried out as a data collection tool in pre-test and post-test both groups. As a result of the research, success grade of experiment group which was carried out internet-based application applied with Vitamin Program is higher than success grade of control group in which was used conventional teaching method. In consequence of the study, it was suggested that internet-based teaching programs, which call and attract students' attention must be used in a more frequent way.

Keywords: Triangles, internet-based education, student success, vitamin program

INTRODUCTION

Of course, the system of education has also been impressed by repercussions of dizzily developing technology world. This interaction is valuable from the point of that education dynamics will develop healthfully in future. This is because nowadays, the skills being able to benefit from electronic authorship, information and communication technologies and getting essential efficiency from this process are important for communities' future (Altun, 2003). In this sense especially in recent years, necessities of computer usage in education have enormously increased due to the fact that the number of students have increased by leaps and bounds, the time have been insufficient, the amount of information have increased, the content get more complicated, the number of teachers have been insufficient, individual talents and differences have gained importance (Alkan, 1998, Trans., Yanpar, 2006).

In parallel with these necessities, present-day developing technology and changing needs have also made important changes in education and commonly used learning methods (Erkunt and Akpınar, 2002). The results arising from internet usage and its effects are rank at the origin of the change.

The internet, which also affects education and learning process, enriches the process and offers rich experiences to students and teachers (Akkoyunlu and Yilmaz, 2005). The most distinct purpose of all these changes is to gear up education learning activities. According to Wiesenmayer and Meadows (1997), the internet provides a wide range of facilities as online access to graphic, sound, lesson plan and data sources for educators and researchers.

One of the above mentioned functions is also Internet-Based Education application, which its usage sweeps in learning environment. The internet-based education is one kind of distance education and a teaching system in which the internet technologies are used to transfer course materials to students (URL. <http://tr.wikipedia.org>). The internet-based education means the fact that the applications to be furthered education are made via internet rather than the fact that education is exactly carried out over the internet. Thanks to the internet-based education, educators move studies which are necessary for lesson to outside the classroom and thus they can easily orient students to extracurricular applications which are necessary for reinforcement of learning (Karaman et al., 2009). The integrity and equality are provided in applications thanks to the internet-based education. In other words , blended learning integrate approaches like intramural and extramural face to face interactive relation , online experiences , that person conducts himself or is conducted by a guide , digital references and group communications to achieve personal and organizational targets (Sethy, 2008). Thus both the usage of technology becomes widespread and learning functionality is supported in students. We can array the roles of the information technologies, which are used in education environments as follows:

- To sensitize students to informatics,
- To facilitate scientific terms to be learned,
- To develop cognitive talent of students,
- To create educational materials (Pekdağ, 2005).

One of the opportunities that technology offers is the opportunity of utilization from education technologies via the internet. Network-based learning programs, which work over internet or intranet and are independent of a certain time and place, are generally known to be referred to as e-learning. E-learning programs are composed of new communication and interaction channels which educational activities as learning material, communication, handholding to student, giving feedback and evaluation are done via electronic ways (Erkunt and Akpınar, 2002). The quality of material that are conveyed in learning environment with these channels is also important because 25 percent increase in remembrance and between 40 and 60 percent decrease in learning time are enabled in accordance with conventional classroom environment with well-designed material (Kruse and Keil, 2000). Internet-based learning has many advantages differently from conventional learning methods. The differences between classrooms in conventional system and internet-based education can be summarized in Table-1 as follows:

Table: 1
Comparison of Conventional Education and Internet-Based Instruction

Conventional education environment	Internet-based instruction
Lesson based	Discussion based
Structural	Flexible
Purposive	Oriented results
Generally teacher centered	Independent student
Large classrooms	Small classrooms
Teacher is the source of information	Teacher leads the students to information resources.

(Source: data, which located in Table: 1, obtained from Çetin, Çakıroğlu, Bayılmış and Ekiz, 2004, page 147.)

Becoming widespread power of technology in education environment all over the world has also made itself evident in recent years in our country. It is exhibited a summary of studies which have been made aimed at the fact that information and communication technologies are used in education-learning environments in our country as below:

- In 1988, the first multimedia lab was established.
- In 1990, the first computer aided education application began.
- In 1992, MPEG technology was began to be used in education.
- In 1994, rich contents were formed thanks to generation of 3D simulations.
- In 1996, SEBİT was established.
- In 1998, Academia was put into service of students.
- In 2000, Vitamin High School was put into service of students.
- In 2001, Vitamin Primary Education was put into service of students.
- In 2006, Ministry Of National Education started Self-Access Portal project.
- In 2007, Vitamin Online Project started.
- In 2008, Vitamin School was taken to be used at public schools.
- In 2008, Vitamin was offered houses over internet service provider (Pekdağ, 2010).

Vitamin Program is a computer software program, which has perhaps the most common usage in the above-mentioned information and communication technologies and can be complimentarily used at schools via teachers by Ministry Of National Education. Vitamin Program is an education support service used over the internet that was generated and was developed by SEBİT according to the curriculum of Ministry Of National Education. Vitamin, which is a computer based education product, has been put into service of teacher and students with cooperation among SEBİT, Turk Telekom and Ministry Of National Education (Pekdağ, 2010). Vitamin has been used as interactive support program in Math, Turkish, Social Studies, Revolution History and Kemalism, Science and Technology Lessons at primary levels. When current literature related to the usage of Vitamin software program in Science and Technology Lessons is analyzed , it is observed that studies as its effect on success , persistency and attitude are at current literature (Karaduman and Emrahoğlu, 2011; Hangül and Üzel, 2010; Derviş and Tezel, 2009; Pektaş, Çelik and Katrancı, 2009; Kara and Yeşilyurt, 2007; Çetin and Günay, 2007). Vitamin provides teachers and students with great numbers of opportunities:

- Prepared presentation oriented lecturing,
- reaching contents in school book,
- interactive activities with 3D model type,
- animations,
- simulations,
- experiments,
- classroom activities,
- examples with solution,
- question and answer activities,
- screening tests,
- pilot tests for SBS,
- additional resources (Pekdağ, 2010).

Karamustafaoğlu, Bacanak and Gencer (2012) inferred from the study termed "student views of usage of Vitamin Program in science and technology lesson" that current interactive activities and applications of Vitamin Program are liked and Vitamin Program can be easily used by students in case of making up shortages of the program. Ersoy and Türkkan (2009) inferred from the study named "perception of internet in pictures of primary school students" that students mention more issues concerning their perceptions of internet in their verbal expressions and also focus on one or a few of them in their pictorial expressions.

Moreover, they indicated that students reflect their perceptions of internet to pictures, which they did by focusing single function of internet as research, game and communication in the internet.

This study was carried out to determine whether or not learning levels of students are good according to conventional method while 8th grade primary school students were learning triangles subject through Vitamin Program.

METHOD

Semi-experimental method was used in the research. Groups are tested once before the beginning of the experiment and once after the end of the experiment. The test, which is carried out at the beginning, is termed pre-test and the test which is carried out after the application is termed post-test (Karasar, 2002; Çepni 2007). This figure includes a experiment group and a control group, but participants can't be determined randomly. If there isn't a significant difference between pre-test points of groups, it can be said that groups are equivalent. While hypotheses are testing , points which show the change from pre-test to post-test of both groups are compared to determine whether a significant difference is between the points (Bulduk, 2003; Christensen, 2004).

The Universe and The Sample

This study was carried out with 37 volunteer students in a study centre. The experiment group consists of 18 students and the control group consists of 19 students.

Data Collection Tool and Data Analysis

"Achievement test about triangles" was carried out as data collection tool in the research. While the achievement test was preparing, it was benefited from the schoolbook and various references. 5 points was given for each correct question in the achievement test, which consist of total 20 questions. Hence the highest score to be gotten is 100 points. The content of the test was chosen in compliance with target and behaviors in Mathematics Instruction Program. Opinions of 3 mathematics teachers and 3 field educators were taken to provide content and face validity of the achievement test. The final form of the achievement test is carried out to 125 8th grade students who are different from experiment and control groups in order to do its pilot scheme and specimen analysis. KR-20 reliability coefficient of multiple-choice assessment instrument, which took its final form and have 20 questions was founded .78. The obtained data were constructed with analysis of "t" test at 0.05 significance level. For this, it was benefited from SPSS 11.5 (Statistical Package for the Social Science) package in computer environment.

Application of Experiment Group

This study includes subject of the "Triangles and Algebra" unit and sub-learning domain and learning domain of which is respectively triangles and geometry in the Mathematics program of the Ministry of Education. The study was carried out in 2,5 weeks (in 10 course hours) by lesson teacher. Before carrying out the achievement test, it was given as pre-test in order to test whether there was a significant difference between the experiment and control groups, after carrying out it; it was given as post-test in order to compare the achievements. The conventional teaching methods were used in control group in the research. Teaching of the "Triangles" subject being sub-learning domain of the "Triangles and Algebra" unit was carried out in lesson process by Vitamin Program on the experiment group. The lesson content consists of attainments in the "Algebra and Geometry" unit in teachers' guide book in accordance with decision dated 14.02.2008 and numbered 113 of Ministry Of National Education [Head Council of Education and Morality](#) and decision dated 08.03.2011 and numbered 886 of Publications Department. The attainments are as follows:

- determines correlation between sum or difference of lengths of two edges and length of third edge of triangle,
- determines correlation between edge lengths of triangle and angle measures opposite these edges,
- designs a triangle, which sufficient number measures of its elements, is given,
- inscribes median, perpendicular bisector, angle bisector and height on triangle. Lesson contents were carried out in classroom environment by internet-based application in the form of package.

Thus it was benefited from information technology during lecturing and interactive applications were carried out over internet. Visual materials used in internet-based Vitamin applications are as follows.

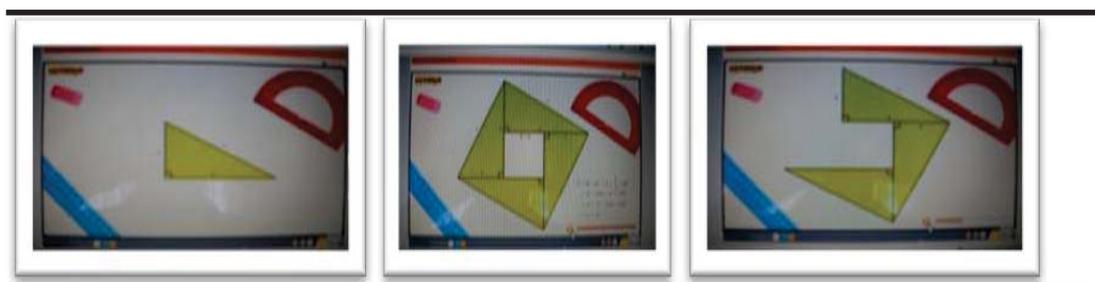


Figure. 1
Lecturing by Vitamin and Interactive Activity Samples
(Source: <http://www.vitaminegitim.com>)

FINDINGS AND INTERPRETATIONS

In this part, findings obtained from pre-test and post-test applications of "Achievement test about triangles" of experiment and control groups were evaluated. Whether or not a significant difference was in pretest scores of students in control and experiment groups was analyzed using Independent Samples t Test. The results of the analysis are shown on Table-2.

Table: 2
T-test Results of Pre-test of Students in Experiment and Control Groups

Groups	N	\bar{X}	S	t	P (significance level)
Control group	19	51,68	13,66	-0,270	.789
Experiment group	18	50,38	15,55		

As seen on Table: 2, when it is looked at analyses of t-test done depending on pre-test results of control and experiment groups, a statistically significant difference could not be found between groups carried out internet-based education and conventional method before starting education ($t=-0,270$, $p=.789>0.05$). The average of the test of control group was 51,68 and the average of the test of experiment group was 50,38. This result shows that preliminary information concerning the subject of students in groups is close at the beginning. The scores obtained from posttest of groups studying the "Triangles and Algebra" unit whit internet-based education (experiment group) and conventional method (control group) were compared using Independent Samples t Test and the obtained values are shown on Table: 3.

Table: 3
T-test Results of Post-test of Students in Experiment and Control Groups

Groups	N	\bar{X}	S	t	P (significance level)
Control group	19	56,42	10,03	3,058	0,004
Experiment group	18	67,22	11,02		

As seen on Table-3, as a result of the analyses of t-test done in compliance with the results of the post-test, a statistically significant difference was found between the groups studying with internet-based education and conventional method ($t= 3,058$, $p=0,004 < 0.05$). The average of the test of control group was 56,42 and the average of the test of experiment group was 67,22. As a result, it has ensured that there is a significant difference in favor of experiment group between success levels of the experiment group studying with internet-based education and the control group studying with conventional method.

RESULT, DISCUSSION AND SUGGESTIONS

As a consequence of the study named "Importance of Education for Technologic Development and Position in Education of The Internet-Based Instruction" which was carried out by Çetin and his friends in 2004; it was specified that the distance between students should not be a problem in internet-based education, even if students are away from each other for miles and miles due to their geographical position, they can be close to each other.

Even if they are in the same classroom environment, they can be away from each other for miles and miles. It was emphasized that everything depends on whether or not student want to learn. It can be mentioned that students using internet in accordance with their purposes can mostly develop their skills of communicating, researching, reaching the information, communion and students increasing their skills will come more advantageous position in the matter of the usage of information technologies (Akbaba and Altun, 2000).

It is observed that teaching of triangles subject via Vitamin Program-based over internet is more effective on students' success in comparison with conventional methods. Its reason can be explained with the fact that students experience with learning materials catering to great numbers of senses in education environment, their attention against lesson increase or their motivation levels against lesson become a good level. It follows from similar studies carried out in this direction that the usage of technology in education environment strike positive chords on students (Taş, Köse and Çepni, 2006). It is observed that education applications carried out by similar programs increase academic achievements of students. In Physics field, Karamustafaoğlu and his friends (2005) inferred from their study named "[Simple Harmonic Motion](#)" that education carried out by simulation program with dynamic system on experiment group is more successful in comparison with education carried out by conventional methods on control group.

Accordingly, as a consequence of Hırça and his friends (2011)'s study named "The Effects Of Developed Materials Considering 5E Modal On Students' Attitudes To Conceptual Change And Physics Lesson:

The Example Of "Work, Power, Energy" Unit" they come to a conclusion that it can be said that using different materials, unifying of subjects with everyday life, being enriched of materials to be used in visual sense, combination of conceptions with games and shows in video, that student is actively located in education activities are important with regards to remove their negative attitudes against physics lesson and to endear students to physics.²⁰⁷

After this type of instructional materials had been carried to classrooms with the help of technology, positive effects occurred on their mental development.

Instructional programs are software which present content of subject to be taught, provide possibility to practice for learning of content, give feedback, evaluate students' performance, orientate students, the sum and the substance of them, provide an active learning environment by assuming teacher's role (Kuzu, 2007). Those below have been suggested in consequence of the study.

- Internet-based education programs, which call and attract students' attention, must be used more frequently.
- It should be set up sufficient substructures concerning internet-based programs for the fact that these embody learning and contribute to students' academic achievement in a positive way.
- It is observed that internet cater to every field of life and there is increase in number of connecting to internet by mobile. These types of applications in rapport with mobiles can go a long way toward attracting students' attention and they can use the applications, while they are spending time on mobiles.
- It should be mostly focused on research and development services oriented internet-based education programs. Projects carried out in this direction should be supported and it should be focused on curriculum development efforts carried out with students.
- Teachers should be raised awareness about internet-based education applications and applications should be practically shown them at a push.

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URL-1: <http://www.vitaminegitim.com/>

URL-2: http://tr.wikipedia.org/wiki/%C4%B0internet_Destekli_%C3%96%C4%9Fretim