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The effects of web based educational drills in competitive atmosphere on motivation and learning

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Abstract

The aim of this study is to carry out a structure, in which the desire of having a high score and seeing the name in the top list is used, in web-based drills and help students to be more willing in test solving. At the end of the study, the effects of the application on students' test solving motivation have been analysed. Furthermore, the effects of the application on students' achievement in the course dealt with within the scope of the study have also been analysed. According to the findings of the research, the website that has the competitive atmosphere has a positive effect on students' achievement in their lessons. The application led to a change in students' aim to visit the website and the frequency of their visit.

Keywords: Competitive; games; score; motivation; web based drills.

1. Introduction

The development of the technology and communication has also changed the traditional learning concept and provided the verification of learning independent from time and place. It's known that web-based educational software, which provides motivation to learners, makes contributions to meaningful learning as well. (Hung-Pin Shih 2008; Yenilmez, Cebeci and Koçak, 2003; İçten, 2006)

According to Alessi and Trollip, in web based educational software, exercises and repeats have an important role in reinforcement of learning. At the same time, learners spend time and efforts to learn something when they are motivated and they have the will to learn and to use them in the future. (Malone 1980). In exercises and tests, the motivation of students is low. Because, exercise means repeating. In many exercises degree of productivity is very low. This is a sufficient reason for students to find exercises boring. To solve these problems, some techniques

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aimed at increasing motivation can be used. In these techniques, different types of competitions, which increase motivation of students, can be used. (Alessi and Trollip, 2001)

The competitions can be 1. among students; 2. with the self; 3. against time 4. against the computer. The competition among students can be done in two ways. The first one is doing exercises synchronously. The second one is the computerized comparison of individual success of students. The competition with the self means comparison of students' previous success with their current success through drills and tests. And the possibility of comparison of students' success with their friend's can be a way to increase the motivation on web-based drills and tests. The competition against time is used to see the change of the student's success after some period of time. Here, time is determined according to students' previous success. (Allen, G. D., Nguyen, Diem M., Hsieh,Y., 2006**;** Alessi ve Trollip, 2001).

According to Yee's study in 2007, there are lots of components in online games that provide motivation. And the most important one is the desire for success. In these studies, it was determined that in online games there is no difference in motivation between girls and boys.

On the other hand, in Tezel's study (1999) it was emphasized that competitive personality has no effect on academic success. According to the results of Kula and Erdem's (2005) study, it was observed that motivation is useful for learning, but it doesn't involve a quantitative effort. In research findings, the components in games that motivate students are: to win bonuses, to rack up points, clues, facilities, get scores, get rid of numbers, operations, to improve intelligence, music, colour and appearance.

According to Burke and Weir (Cited by Tezel, 1999), competitive people like to be strong and they like to be remembered. It's very important for them to be respected. Game's structural components' functionality reveals motivating components, educational components and periods (Prensky, 2001). According to Malone (1980), who suggests the necessity of motivation in an atmosphere which makes learning effective; interior motivation components are imagination, curiosity and challenge.

It has been tried to determine to The Effects of Web-Based Educational Drills in Competitive Atmosphere on Motivation and Learning;

1.1. Goals

1. There is a positive significant relation between students' (in competitive atmosphere) scores on the website and their academic success in history course.
2. There is a positive significant relation between the time that students (in competitive atmosphere) spend on the website and their academic success in history course.
3. There is a positive significant relation between the number of the tests students (in competitive atmosphere) solve and their academic success in history course.
4. The application period changes student's aim to visit the school's website.
5. The application period increases the frequency of student's visit to the school's website

2. Methodology

The research group, in which the post-test experimental model is used, consisted of TEB Atasehir High School Grade 2 students in the 2007-2008 Academic and Educational Year. The number of students who applied for web-based application was 157. The application has been verified within the scope of the history course. The results of the survey, which was prepared by the researchers, are used to determine the level and the reasons of student's use of the website. The survey was carried out twice, before and after the application.

In the two-week application, students were able to log in the application named "e-ogrenci" on www.atasehirlisesi.k12.tr using their own passwords and solve questions whenever they wanted. By this application developed, a "Top 5" students list was placed on the home page of the school. The list consisted of the names and photos of students, who gave the most correct answers, as well as some additional information including when he solved the questions, how much time he used, and his scores. On the website, there was also a "Bottom 5" list to make a negative motivation on students and make them solve more questions. Also for motivation purposes, the list of the students that last solved the tests was also added to the home page.

3. Findings

3.1. Hypothesis 1

There's a positive significant relation between students' (in competitive atmosphere) scores on the website and their academic success in history course.

Pearson Correlation test results that are verified with the students' scores from the databases on the website are given in Table 1. According to the analysis results, there is a positive significant relation between the web-based drills and the success in history course of the students who are in competitive atmosphere. So among the students who have a high academic success in history course, 30 percent of those students have a high score in web-based competitive atmosphere.

Table1. The Pearson Correlation Test Results for the relation between students' (in competitive atmosphere) scores on the website and their academic success in history course.

		Web Test Sc re	Exam Re ult
Web Test	Corre ation	1	,55(*)
Scor	P	.	,00
	N	157	157
Histo y	Corre ation	,55(*)	1
Com ion	P	,000	.
Exan Result	N	157	157

3.2. Hypothesis 2:

There's a positive significant relation between students' (in competitive atmosphere) time spent on the website and their academic success in history course.

Table2. The Pearson Correlation Test Results for the relation between students' (in competitive atmosphere) time spent on the website and their academic success in history course.

		Exam I esult	Time
History Co nmon	Corr lation	1	,30(*)
Exam Resu lt	P	.	,00
	N	157	157
	Corr lation	,30(*)	1
Time	P	,00	.
	N	157	157

According to Pearson Correlation test results in Table 2, there's a positive significant relation between the time that students spent on the website solving drills and their academic success in history course (r=0,30, $p < .01$)). So among the students who have a high academic success in history course ($r^2 = 0.09$), 9 percent of these students spend more time in the web-based competitive atmosphere.

Hypothesis 3: There's a positive significant relation between students' (in competitive atmosphere) number of tests they solve and their academic success in history course.

Table3. The Pearson Correlation Test Results for the relation between students' (in competitive atmosphere) number of tests solved and their academic success in history course.

		Exam Result	Number of the tests solved
Exam Result	Correlation	1	,19(*)
	P	.	,02
	N	157	157
The number of the solved test	Correlation	,19(*)	1
	P	,02	.
	N	157	157

According to Pearson Correlation test results in Table 3, there's a positive significant relation between the number of tests students solve on the website and their academic success in history course (r=0,2, $p < .05$). So, among the students who have a high academic success in history course ($r^2 = 0.04$), ~ 4 percent of them solve more tests in web-based competitive atmosphere.

3.3. Hypothesis 4

The application process changes the aim of students' visit to the school's website.

The analysis results that are verified with the pre-test and post-test results of the students, who participated in Computer Use survey, are shown in Table 4. When the table is studied, it can be observed that the percentage of the students, who use school's website to solve questions, increased from 7.6 to 63.7. It's determined that students mostly visit the website to solve the tests.

Table4. The comparison results of the aim of the visit to the website

Why do you visit the school's website?	Pre Test		Post Test	
	Person	Percentage	Person	Percentage
I don't visit	27	17,2	12	7,6
To look at the the announcements	38	24,2	15	9,6
To look at the activities	33	21,0	13	8,3
To look at the school success	14	8,9	2	1,3
To look at the school success	25	15,9	12	7,6
To look at the teachers of the classes	8	5,1	3	1,9
To solve tests	12	7,6	100	*63,7
Total	157	100,0	157	100,0

3.4. Hypothesis 5

The application period increases the students' visit to the school's website..

According to the analysis results that are verified with the pre-test and post-test results of the students who participated in computer use survey, are shown in Table 5. The frequency of students' visits shows a significant difference. It has been observed that the number of the visitors who visited once a week decrease and the visitors who visited a few times a week increase. The number of the people who do not visit decreased from 12,7 percent to 2,5.

Table5. The comparison results of the frequency of visits to the website

How often do you visit the school's website?	Pre Test		Post Test	
	Person	Percentage	Person	Percentage
I don't visit	20	12,7	4	*2,5
Once a day	11	7,0	17	10,8
A few times a day	1	,6	20	*12,7
Once a week	45	28,7	40	25,5
A few times a week	23	14,6	44	*28,0
A few times a month	57	36,3	32	*20,4
Total	157	100,0	157	100,0

4. Conclusion

With this study, it has been tried to determine the effects of web-based drills in competitive atmosphere on motivation and learning. The results obtained from the findings are as follows.

There's a positive significant relation between students' (in competitive atmosphere) scores on the website and their academic success in the history course. This result is in agreement with Liu, Li and Santhanam's (2007) results that express the desire for playing games is because of getting a high score and the desire for success.

According to the finding of another research, it is established that there is a significant positive relation between both the students' time spent and their academic success in the history course, and the number of the tests they solve and their academic success in the history course. This result can be interpreted as students spend time on the website mostly for the purpose of solving tests. The positive effect that has been observed on academic success is in contradiction with Kula and Erdem's (2005) results that suggested motivation is useful for learning, but it does not have a quantitative effect. In this contradiction, the concept of the exercise used in this application is an important factor. It can be considered to be more productive especially in logical maths operations in which paper and pen are not used and in texts consisting of oral knowledge. In these kinds of applications, use of computers and paper-pen at the same time leads to a longer period of time for question solving and feedback. This is an important effect leading to decrease in motivation. It will be worthwhile to investigate this situation through new studies consisting of different applications.

According to the research findings; it has been observed that creation of a competitive atmosphere increases the number of students participating in the application and their motivation; they also solve questions again and again. At the end of the analyses research, the number of students who do not visit decreased from 12,7 percent to 2,5. Just as in the survey result that is verified before and after the application; it has been observed that the aim of the students' visit to the school's website mostly changed through solving tests. This result shows that students can compare their success with their friends'. And this can be a way to increase the motivation in web based drills and tests.

The application has also affected the frequency of students' visit to the school's website and caused an increase in the number of visits. These results show coherence with the results of other studies (Allen, G. Donald, 2006**;** Alessi and Trollip, 2001; Horton, 2000; Yenilmez, Cebeci and Koçak, 2003; Malone, 1980) which show this application affects student's motivation positively.

The results of the study emphasize that, in web based educational applications consisting of e-transformation and distant education used in public and private sector in recent years, competitive atmosphere that is created by games and competitions can be used for the aim of motivation and increasing participation.

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