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The effect of web-based learning environments on attitudes of students regarding computer and internet

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Abstract

The purpose of this research is to determine the effect of web-based education on student attitudes towards computer and internet in comparison with traditional instruction in the course of Computer II. In this research, pretest-posttest control group semi-empirical design was used. Web-supported instruction application is independent variable and student attitudes towards computer and internet are dependent variables. As a data collection instruments Computer Attitude Scale, Attitudes toward the Internet Scale have been used. According to analysis results, traditional education practice does not affect attitudes of students towards the internet and computer and there is no significant differentiation between attitude scores of students toward both internet and computer for web-based education practice compared to traditional practice. Accordingly, it can be argued that compared to traditional education, web-based education does not affect student attitudes toward both the internet and computer.

Keywords: web based education,attitude, traditional instruction

1. Introduction

"Our world changes at a dazzling pace." This statement now becomes a stereotyped. Saying that this change takes place via technological advancement remains classic in this sense as well. Today, computers, which are the first term that comes to mind when mentioning technology, have influenced almost every aspect of life and changed human behaviors. Of course, educational institutions, where this process of change occurs planned and in stages, will naturally use these technologies in the name of keeping up with this process. Because, it is evident that computer use in education is an inevitable necessity for both individual and social reasons. Computer being able to motivate students more in learning and teaching process, support lifelong education with different distance education environments and increase flexibility are main reasons for computer use in education process (Alkan, 1997; Keser, 1988). Today, raising individuals, who are able to access, use, convey and produce information, to use technology and self-learn, in short, individuals, who learnt learning, comes foremost in main objectives of education programs (Akkoyunlu and Kurbanoglu, 2003). In this sense, learning is regarded as a concept that can not only emerge in schools and certain centers but also in every phase of live and every environment (Reigeluth, 1999). The most essential way of making people gain these abilities that they need not only in schools but also in any place or time is web-based education (Horton, 2000). Web-based learning is also the fastest developing type of distance education (Imel, 1997; Singh and Reed, 2001; Perraton, 1998). Web-based learning is also called as internet-based

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learning, network-based learning and etc. (Barron, 1998). Web-based learning allows students accessing course materials whenever and wherever they can access internet and senkron and asenkron communicating with other students (Aase, 2000). With the increase of internet use, the usage of online communication tools in educational environments gained considerable prominence. Use of computer and internet-supported communication technologies became significant in increasing the level of interaction. Computer and internet-supported communication technologies presents instructors and students an environment, where senkron and asenkron technologies can be both employed (Romiszowski and Mason, 1996; Merrill, 1997). Interaction is not only important in face-to-face environments but also in web-based environments as well (Moore, 1989; Driscol, 2002; Anderson & Garrison, 2003). According to Kearsley (1998), in the broadest sense, interaction is the centre of social expectations of education and the chief objective of bigger education process in itself and a feedback that is necessary to be set between student and instructor during learning process. As a matter of fact, Holmberg (1989) emphasized that interaction is the foundation of distance education and stated that it is essential in ensuring student satisfaction in web-based learning environments. Moore (1989) put forth that there exists three principle interactions in distance education environment. These are student-content, student-instructor and student-student interactions and these interactions should be available in web-based environments. Student-content interaction is the interaction between student and subject of study, in other words, content. Student-instructor interaction is the interaction between student and subject specialist, who prepares work materials, or other experts, who appear in as an instructor. Finally, student-student interaction is individual or in-group interaction between each other with or without instructors.

It can be said that student attitudes regarding web-supported instruction and towards internet are also critical for web-based instruction to be able to adequately contribute to academic accomplishment. When thinking in this respect, it can also be expected that a web-supported education application designed appropriately contributes positively to student attitudes regarding web-supported instruction and internet. Setting off from this premise, determining whether a web-supported instruction environment, where there is only student-content interaction, and environments, in which there are senkron and asenkron student-student and student-instructor interactions, differentiate attitudes of students towards internet and web-based instruction is intended in this research as well. In this context, the goal of this research is to determine the effect of web-based education on student attitudes towards computer and internet in comparison with traditional instruction in the course of Computer II. In this context, questions below were sought for an answer:

1. Prior to application, are groups equivalent in terms of their attitudes towards computer and internet?
2. Do education applications differentiate attitudes of students towards computer and internet?
3. Compared to traditional instruction method, does web-based learning environment differentiate student attitudes towards computer and internet?

2. Method

In this research, pretest-posttest control group semi-empirical design was used. Web-supported instruction application is independent variable and student attitudes towards computer and internet are dependent variables. Experimental and control groups were randomly assigned.

2.1 Working Group

Total of 54 students in two departments receiving education in the first class of the Department of Elementary Education Class Teaching in the Faculty of Education of Ahi Evran University during 2010-2011 spring semester constitute the study group of this research. The distribution of students with respect to groups and gender is summarized in Table 1.

Table 1. The Distribution of Students with Respect to Groups and Gender

Groups	Female	Male	Total
Control Group	20	8	28
Experimental Group	15	11	26

| Total | 35 | 19 | 54 |

2.2 Data Collection Instruments

The data of this research were collected using the Computer Attitude Scale and Attitudes toward the Internet Scale. Details concerning scales are as follows:

2.2.1 Computer Attitude Scale

The "Attitude toward Computer Scale" developed by Janes and Clarke (1994) and adapted into Turkish by Uzunboylu (1995) was employed to measure student attitudes toward computer. The 5-point Likert scale consists of 40 items and it is unidimensional. The internal consistency coefficient of the scale was calculated as 0.97. The positive items in the scale were graded from 5 to 1 and the negative items were inversely graded from 1 to 5 in options of "I totally agree- I certainly do not agree".

2.2.2 Attitudes toward the Internet Scale

The "Attitudes toward the Internet Scale", whose validity and reliability studies were performed and developed by Tavsancil and Keser (2001) was employed to measure student attitudes towards internet. The 5-point Likert scale consists of 25 items and 5 factors. These 5 factors explain 55.381% of the total variance. The first 10 items in the scale are negative and the rest 15 is positive. Negative items were coded inversely. According to analyses conducted by Tavsancil and Keser (2001), the internal consistency coefficient (Cronbach α) of the first factor consisting of 10 items and denominated as "Rejecting the Internet" is 0.87, the internal consistency coefficient of the second factor consisting of 4 items and denominated as "Trusting the Internet" is 0.72, the internal consistency coefficient of the third factor consisting of 4 items and entitled as "Believing the Benefits of the Internet" is 0.72, the internal consistency coefficient of the fourth factor consisting of 4 items and titled as "Enjoying the Internet" is 0.71 and the internal consistency coefficient of the last factor consisting of 3 items and called "Enjoying the Possibilities Presented by Internet" is 0.77. The internal consistency coefficient for the whole scale was estimated as 0.79.

2.3. Experimental Procedures

In the research, steps below were followed during experimental operation: Experimental and control groups were randomly assigned. As a result of this assignment, the group Class Teaching 1/A was assigned as experimental group and the group Class Teaching 1/B was assigned as control group. Pretests of computer and internet attitude scale were applied to both groups with the purpose of determining whether experimental and control groups are equivalent in terms of research variables and prior knowledges. At the end of the application, posttest was performed aimed at detecting the effect of dependent variable on independent variable. The application of research lasted 4 weeks in total being 4 hours a week in 2010-2011 spring semester. Instruction application incorporates subjects such as basic concepts regarding distance education, historical development of distance education, benefits provided by distance education, distance education practices in Turkey and in the world and roles, models and theories in distance education.

A web-based learning environment was designed, which both senkron and asenkron student-student, student-instructor and student-content interactions provided, for students in experimental group. Students were able to access this web-based learning environment with their own user name and passwords both in and out of class. Students studied by using the learning environment, whose content is provided by this web site, they were able to get senkron or asenkron feedback correction to their questions related to content in chat and forum environment. In part of empirical application within class, face-to-face interaction was avoided and all interaction was carried out in chat environment. In out of class applications, interaction was attempted to be provided asenkron via forum. Computer labs were kept open when there is no class under the supervision of department assistants for students to be easily able to access internet and computer out of class. Face-to-face education was provided to students in

control groups by using the direct speech method accompanied by a Power point-supported presentation presenting empirical content by researcher.

A web site incorporating basic subjects pertaining to distance education in accordance with web-supported learning approach was prepared for experimental group. Explanations of topics in the prepared web site were backed by various videos. The Dreamweaver software was used for visual design of the site, Articulate was used for content design and Ms-Sql and Php softwares were used for student administration system. There exists a student administration system, in which study durations of students, which topics are studied, answers given to practices and such information were hold, in the designed web site. Students can access topics with their own passwords. According to records in student administration system, required interferences were conducted aimed at enabling students to use the system. Sample images from the web site used in practice are presented in Figure 1 and 2.

Figure 1. Web Site Entry Page

Figure 2. Topic Explanation Page

2.4. Data Analysis

Each item in both attitude scales was scaled as never (1), rarely (2), occasionally (3), usually (4) and always (5). It is suitable to convert scores obtained in exchange for answers that students gave to 5-point Likert scale into standard scores in the way that the lowest score will be 20 and the highest will be 100. The following formula can be utilized in converting raw scores to standard scores:

$$x_{standartscore} = \frac{x_{rawscore}}{Number\ of\ scale\ items} x\ 20$$

Levels corresponding to scores obtained from subscales can be summarized in this way: 20-51: Low Level; 52-67: Medium Level; 68-100: High Level. Frequency, percentage, arithmetic average, t and the Pearson r correlation statistics were employed on the collected data. The .05 significance level was based on in the test of difference and correlations.

3.1 Data Collection Instruments

In the research, personal information form prepared by the researchers and distance education attitude scale developed by Ağır (2007) have been used. In the personal information form, questions about gender, class, knowledge level related to distance education and whether distance education was taken before or not take place. Distance Education Attitude Scale (DEAS) developed by Ağır (2007) determines the attitudes of teachers towards distance education (ARDE).
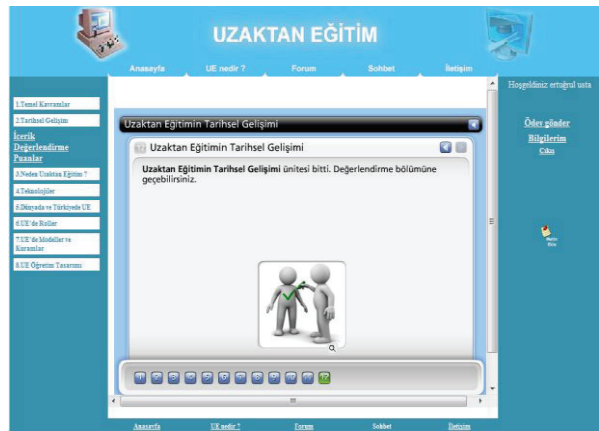
In the scale, there are 14 positive, 7 negative, 21 items in total. Scale reliability coefficient of DEAS calculated by Ağır (2007) with Cronbach Alpha method was found to be 0,835. In the study done however, reliability coefficient has been calculated as 0,795. The lowest point that can be taken from the scale is 21, whereas 105 is the highest.

3.2 Research Group

Study group has been composed of first, second and third grade student, who receive education in Ahi Evran University Faculty of Education Computer Education and Instructional Technology (CEIT) department in 2010-2011 academic year. Distribution of participants in terms of class and gender is seen in Table 1.

Table 1: Distribution of the Study Group According to Class and Gender

	Gender					
Grade	**Female**		**Male**		**Total**	
	f	%	f	%	f	%
1	27	26.0	13	12,5	40	38,5
2	16	15,4	17	16,3	33	31,7
3	15	14,4	16	15,4	31	29,8
Total	58	55,8	46	44,2	104	100,0

3. Findings

3.1. Findings regarding Equivalence of Groups before Practice

Pretest scores concerning equivalence of attitudes of students in experimental and control groups toward the internet and computer before practice were summarized in Table 2.

Table 2. Attitudes of Experimental and Control Groups toward the Internet and Computer with Respect to Pretest Scores

Variables		N	$\overline{\text{X}}$	Ss	t	sd	p
Internet Denial	Cont. Gr.	28	76,29	18,50	-,478	52	,635
	Exp. Gr.	26	78,38	13,07			
Internet Trust	Cont. Gr.	28	72,14	21,92	1,001	52	,322
	Exp. Gr.	26	66,92	15,63			
Belief in Internet's Benefits	Cont. Gr.	28	72,86	17,71	-,747	52	,459
	Exp. Gr.	26	75,96	12,08			
Enjoying Internet	Cont. Gr.	28	74,82	16,36	-,275	52	,784
	Exp. Gr.	26	75,96	13,86			
Enjoying Internet's benefits	Cont. Gr.	28	71,11	16,39	-1,129	52	,264
	Exp. Gr.	26	75,92	14,82			
İnternet Addiction Total Points	Cont. Gr.	28	74,21	14,54	-,386	52	,701
	Exp. Gr.	26	75,50	9,09			
Computer Addiction Total Points	Cont. Gr.	28	64,29	10,64	-1,658	52	,103
	Exp. Gr.	26	68,96	10,04			

As seen in Table 2, there is no significant difference between scores of experimental and control groups toward the internet and computer with regard to pretest scores. Accordingly, it can be said that prior to experimental implementation, groups are analogous in terms of their attitudes towards the internet and computer.

3.2. The Effect of Education Practices on Attitudes toward the Internet and Computer

Findings regarding the effect of traditional education practice on student attitudes toward the internet and computer are summarized in Table 3.

Table 3. Findings regarding the Effect of Traditional Education Practice on Attitudes toward the Internet and Computer

Variables		N	$\overline{X}$	Ss	t	sd	p
Internet Denial	Pretest	28	72,14	21,92	-,248	27	,806
	Posttest		73,21	18,57			
Internet Trust	Pretest	28	72,86	17,71	,311	27	,758
	Posttest		71,61	17,75			
Belief in Internet's Benefits	Pretest	28	74,82	16,36	-,460	27	,649
	Posttest		76,07	13,97			
Enjoying Internet	Pretest	28	71,11	16,39	-1,166	27	,254
	Posttest		75,00	14,15			
Enjoying Internet's benefits	Pretest	28	74,21	14,54	-,519	27	,608
	Posttest		75,54	12,19			
İnternet Addiction Total Points	Pretest	28	64,29	10,64	-,828	27	,415
	Posttest		66,54	9,41			
Computer Addiction Total Points	Pretest	28	76,29	18,50	-,534	27	,598
	Posttest		78,07	12,55			

It is seen in Table 3 that there is no differentiation in student attitudes in the aftermath of traditional education practice compared to before the practice. Accordingly, it can be asserted that traditional education practice does not affect student attitudes toward computer and internet. This case can be assessed as an already expected situation. In Table 4, findings pertaining to the effect of web-based education practice on student attitudes towards computer and internet are summarized.

Table 4. Findings pertaining to the Effect of Web-Based Education Practice on Attitudes toward Computer and Internet

Variables		N	$\overline{X}$	Ss	t	sd	p
Internet Denial	Pretest	26	78,38	13,07	-1,731	25	,096
	Posttest		83,54	6,60			
Internet Trust	Pretest	26	66,92	15,63	-1,465	25	,155
	Posttest		72,69	12,51			
Belief in Internet's Benefits	Pretest	26	75,96	12,08	-,926	25	,363
	Posttest		78,85	11,86			
Enjoying Internet	Pretest	26	75,96	13,86	-,635	25	,531
	Posttest		77,88	11,59			
Enjoying Internet's benefits	Pretest	26	75,92	14,82	-,494	25	,626
	Posttest		77,92	12,57			
İnternet Addiction Total Points	Pretest	26	75,50	9,09	-1,710	25	,100
	Posttest		79,42	7,49			
Computer Addiction Total Points	Pretest	26	68,96	10,04	-1,532	25	,138
	Posttest		71,77	6,87			

In Table 4, although an increase in student attitudes in the aftermath of web-based education practice is observed in comparison with before the web-based education, it is seen that this differentiation is not significant. Accordingly, it can be said that web-based education practice does not have an impact on attitudes of students towards computer and internet.

3.3. The Contribution of Web-Based Learning Environment to Student Attitudes toward Computer and Internet in comparison with Traditional Education

Findings intended for pretest-posttest difference scores regarding the effect of web-based education practice on student attitudes towards the internet and computer compared to traditional education are summarized in Table 5.

Table 5. Findings regarding the Effect of Web-Based Education Practice on Attitudes toward the Internet and Computer compared to Traditional Practice

Variables		N	$\overline{X}$	Ss	t	sd	p
Internet Denial	Cont. Gr.	28	1,79	17,71	-,748	52	,458
	Exp. Gr.	26	5,15	15,18			
Internet Trust	Cont. Gr.	28	1,07	22,83	-,800	52	,427
	Exp. Gr.	26	5,77	20,08			
Belief in Internet's Benefits	Cont. Gr.	28	-1,25	21,28	-,804	52	,425
	Exp. Gr.	26	2,88	15,89			
Enjoying Internet	Cont. Gr.	28	1,25	14,38	-,166	52	,869
	Exp. Gr.	26	1,92	15,43			
Enjoying Internet's benefits	Cont. Gr.	28	3,89	17,66	,363	52	,718
	Exp. Gr.	26	2,00	20,66			
İnternet Addiction Total Points	Cont. Gr.	28	1,32	13,46	-,755	52	,453
	Exp. Gr.	26	3,92	11,70			
Computer Addiction Total Points	Cont. Gr.	28	2,25	14,38	-,168	52	,868
	Exp. Gr.	26	2,81	9,36			

It is observed in Table 5 that there is no significant differentiation between attitude scores of students toward both the internet and computer for web-based education practice compared to traditional practice. Accordingly, it can be argued that compared to traditional education, web-based education does not affect student attitudes toward both the internet and computer.

4. Conclusion and Discussion

Traditional education practice does not affect attitudes of students towards the internet and computer. This is an expected situation. However, although there is a certain inclination of increase, it was detected that web-based education practice does not affect student attitudes towards the internet and computer as well. Attitudes of students towards the internet and computer being already quite high in the beginning might have caused this situation. Today, a great majority of students at higher education level in particular have somehow come across web-supported educational practices before and interacted with such environments. Of course, this situation has an effect on the occurrence of this outcome and likewise, considering social networks and sharing websites, whose use and the area of use has been becoming widespread rapidly, are extensively used in particular among students receiving higher education, readiness levels of students being high in terms of attitudes regarding the internet and computer is a natural situation. As stated in the beginning, "world changes rapidly". Individuals, who impressed a lot in every respect when they first saw web-supported learning environments, also witnessed a rapid change of web environments vis-à-vis countless answers of the question that "How do people learn better in WEB?" in particular in the last 10 years. Now, after this stage, it does not seem quite possible to expect that web-supported environments, which were prepared traditionally and whose tools for interaction were kept limited, will increase student attitudes towards the internet and computer positively.

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