

THE EFFECT OF WEB-BASED EDUCATION EXPERIENCES ON NURSING STUDENTS' USE OF THE INTERNET AND THEIR ATTITUDES TOWARD WEB-BASED EDUCATION

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ABSTRACT

The aim was to determine the effect of web-based educational experience on nursing students' Internet use and their attitudes toward web-based education and the correlation between these two.

This study is planned as semi-experimental in a single group pretest-posttest pattern. Population and sample of the study consist of all nursing students studying at a nursing faculty in the academic year 2011-2012 and taking Web-based Patient Education course in the fall term (n: 164). It was carried out with the participation of 158 volunteer students. A questionnaire form, the Internet Use Attitude Scale, and the Web-based Education Attitude Scale was utilized to obtain data for the research. SPSS version 11.5 was used for data analysis.

It was found out those students' average score for attitude toward Internet use was 108.59 ± 15.79 at the beginning of web based education while it was 127.27 ± 19.03 at the end of web based education. There was a statistically significant difference between total average scores for attitude toward Internet use at the beginning and end of web based education ($t_{\text{§}} = .201$ $p = .015$). It was found out that students' average score for web-based education attitude was 84.62 ± 12.07 at the beginning of web based education while it was $91.15 \pm .75$ at the end of web based education. There was a statistically significant difference between total average scores for web-based education attitude at the beginning and end of web based education ($t_{\text{§}} = 1.050$ $p = .029$). There was a positive correlation at advanced level was determined between their attitudes toward Internet use and web-based education at the beginning and end of web based education (beginning of web based education: $r = .675$ $p > 0.01$ end of web based education: $r = .702$ $p > 0.01$).

Keywords: Web-Based Education, Internet, Distance Education, Nursing Education, Nursing Student.

INTRODUCTION

It is an undisputable fact that information accumulation is increasing each passing day and it is vital to benefit from such an accumulation in today's world where information and communication technologies are frequently utilized. Such a situation has brought about the development of information technologies which make the accumulation, protection and transfer of information possible. The Internet is one of these technologies (Altunçekiç & Aksu, 2011; Atack, 2003; Liaw, Huang & Chen, 2007; Westebrook, 1999).

The Internet whose significance has increased and which has become widespread because of globalization is a platform/tool which surrounds the world, creates a global network, which consists of data such as current information, graphic and audio from a variety of institutions or individuals and provides service over the net (Cragg, Edwards,

Yue, Xin & Hui, 2003; Özgür & Tosun, 2010). Its advances started especially by the end of the 1990s and it first took its place in our daily lives as a result of the rapid advancements in information and communication technologies. People started to use the Internet in education for various reasons such as providing students and educators with a platform which made access to information and sharing it possible, presenting an interactive environment for communication, enabling people to make worldwide research and searches in a very short time, saving time and assisting in pace of learning and supporting life-long learning (Cragg et. al., 2003).

Background

The Internet offers opportunities for written, voice and video communication and it is one of the most important and common tools which can be used for educational purposes (Atack, 2003; Erdoğan, Bayram & Deniz, 2007). Web-based education which appeared with the use of web in education is an educational platform which insures a new approach to education changing from teacher-centred education in the traditional education system to a learner-centred education system and individualizes education (Haznedar & Baran, 2012; Özgür & Tosun, 2010; Wilkinson, Roberts & Alison, 2010).

One of the most important components of web-based education is the students (Erdoğan, Bayram & Deniz, 2007; Haznedar & Baran, 2012; İşleyen, Bozkurt & Zayim, 2008). Interests, expectations and needs of the students differ greatly from those in the traditional approach to education (Frith & Kee, 2003). Nursing students, the target group of the study, constitute the largest professional group that will benefit from the Internet, thereby students on web-based education programs, in order to adapt themselves to changes and developments in healthcare services, enhance their individual and occupational skills and it helps them maintain life-long learning after their graduation. Web-based education will eliminate time and space dependency and provide nurses with an opportunity to fulfil their occupational and individual roles in a flexible framework, maintain their education, have a career and equip themselves in their profession (Atack, 2003; Karaman, 2011; Roberts & Alison, 2010; Twomey, 2004; Yu & Yang, 2006; Wilkinson,). For this reason, students' knowledge and skills of using the Internet and participation in web-based education will affect their perception of the Internet and their attitudes toward the Internet and web-based education positively (Liaw, Huang & Chen, 2007; Sanders & Morrison-Shetlar, 2001; Westebrook, 1999). Related studies also show that students exhibited positive attitudes toward Internet use and web-based education after they participated in a web-based education program. They also show that students who used the Internet primarily to access information, and do research had more positive attitudes toward web-based education (Altunçekiç & Aksu, 2011; Ando, Takahira & Sakamoto, 2004; Cragg et. al., 2003; Erdoğan, 2005; Kurubacak, 2000; Manzanares 2004; Paris, 2004; Yu & Yang, 2006; İşleyen, Bozkurt & Zayim, 2008; Liaw, Huang & Chen, 2007; Özgür & Tosun, 2010; Şenyuva, 2007). In addition, their attitudes toward web-based education are extremely influential on their registration into current programs (Alomyan & Au, 2004; Frith & Kee, 2003; İşleyen, Bozkurt & Zayim, 2008). Students' attitudes toward internet and web-based education affect their education programs related to their learning environment, learning method as well as student and teacher roles.

For this reason, knowing the duration of students' Internet use, their purposes, and affective characteristics such as knowledge, expectation, and attitudes toward Internet use and web-based education helps and will help educators to design, develop, organize and implement web-based education platforms effectively.

It also helps and will help students to benefit from such platforms (Alomyan & Au, 2004; Erdoğan, 2005; Erdoğan, Bayram & Deniz, 2007; Haznedar & Baran, 2012; Tavşancıl & Keser, 2002; Wilkinson, Roberts & Alison, 2010). For all these reasons, it is of great

importance to determine perceptions and attitudes of nursing students who have experienced web-based education towards the Internet and web-based education.

In this respect, apart from contributing to literature, the current study holds importance in that it sheds light on the structuring of web-based education programs.

Aim and Research Questions

The aim was to determine the effect of web-based educational experience on nursing students' Internet use and their attitudes toward web-based education and the correlation between these two.

The answers to the following questions are sought in this research:

- What are nursing students' attitudes toward internet use and web-based education at the beginning of web based education?
- What are nursing students' attitudes toward internet use and web-based education at the end of web based education?
- Is there any difference between nursing students' attitudes toward internet use and web-based education at the beginning and at the end of of web based education?
- Is there any difference between nursing students' gender, secondary education school, finding these features important and their critical thinking disposition and emotional intelligence at the beginning and end of academic year?
- What is the correlation between nursing students' attitudes toward internet use and web-based education?

METHODS

Design

This study is planned as semi-experimental in a single group pretest-posttest patter.

Sample

Population and sample of the study consist of all nursing students studying at a nursing faculty in the academic year 2011-2012 and taking Web-based Patient Education course in the fall term (n: 164).

Due to missing data, six of them were not included. It was carried out with the participation of 158 volunteer students. 97,3% of the study group were contacted.

Of the students comprising the research 83.5% were women, and 16.5% were male. The age range of the students was minimum 17 to maximum 31 and their mean age was above 20.66 ± 1.89 . 57% of them were Anatolian high school graduates and 38.0% are general high school gradutes (Table 1).

Instrument

A questionnaire form, the Internet Use Attitude Scale, and the Web-based Education Attitude Scale were utilized to obtain data for the research.

Information Form

The researchers in the light of literature developed it. It consists of 9 questions aimed at determining students' socio-demographic characteristics, Internet use purposes and their willingness to participate in a program/course provided through web-based education.

Internet Use Attitude Scale

It was developed by Tavşancıl and Keser (2002). Total cronbach alpha coefficient was found to be .89. The scale consists of 31 items and the following six sub-dimensions: use of the Internet in education (1,2,3,4,5,6,7,8. items-eight items), use of the Internet in

research (9,10,11,12,13,14,15. items-seven items), use of the Internet in social interaction (16,17,18,19. items-four items), enjoyment of Internet use in education (20,21,22,23. items-4 items), use of the Internet in communication (24,25,26,27. items-four items), use of the Internet in information sharing (28,29,30,31. items-four items). Items 12,13,15,21,24 and 25 have positive statements while the rest have negative statements. Options of the scale with five likert nature range from "I totally agree scale (5)" to "I totally disagree (1)" The lowest and highest scores of the scale are 31 and 155, respectively. The higher the scores students get from each item, the more relevant characteristics they have (Tavşancıl & Keser, 2002). Total cronbach coefficient was found to be .90.

Web-based Education Attitude Scale

It was developed by Erdoğan, Bayram and Deniz (2007). Its total cronbach coefficient was .92. It consists of 26 items and 2 sub-dimensions: efficiency of web-based education (1,2,3,4,5,6,7,10,12,16,18,20,22,23,24,25 and 26. items-17 items), resistance to web-based education (8,9,11,13,14,15,17,19 and 21. items-9 items). Items comprising efficiency of web-based education are positive while those comprising resistance to web-based education are negative.

It is a five-likert type scale and its options range from I totally agree (5) to I totally disagree (1). The lowest score which can be obtained is 26 and the highest is 130. Any high score obtained from each sub-dimension is considered as positive attitude while being low indicates a negative attitude (Erdoğan, Bayram & Deniz, 2007). Total cronbach coefficient was .91.

Ethical Considerations

The data was collected because of voluntary participation in the fall semester 2011-2012 after obtaining the written consent of the Dean of the Nursing Faculty. Oral information is given to the participants before beginning to collect data; they were requested to fill in the forms after making the required explanations.

Data Analysis

SPSS version 11.5 was used for data analysis. Continuous variables were represented as arithmetic average, standard deviation whereas categorical variables were shown as frequency and percentage.

Paired-Samples T test was used to determine whether there was a considerable difference between the scores obtained from the scale and sub-dimensions at the beginning and end of web based education.

In order to determine whether the obtained scores show any significant difference compared to variables, Mann-Whitney U test was chosen to compare scores of two groups. Comparison of three or more groups was conducted by using Kruskal-Wallis test. As for the correlation between item scores, Pearson Correlation test was used. Level of significance was determined as .05 in comparisons (Özdamar, 2001).

Study limitations

The study is limited to the students taking the course Web-based Patient Education at a Nursing Faculty in the fall term of 2011-2012 academic years. It cannot be generalized to all nursing students.

RESULTS

Findings related to nursing students' state of using computer-internet, correlation between attitudes toward the Internet and web-based education are presented in tables.

Nursing Students' State of Internet Use

Table 1.
Nursing students' state of internet use (n: 158)

		n	%
Having Their Own Computer	Yes	134	84.8
	No	24	15.2
State of Using Computer-Internet	Yes	158	100.0
Primary Objectives of Using Internet*	Course Enrollments, Not Tracking	156	98.7
	Research, Information	152	96.2
	For Educational Purposes	138	87.3
	E-mail	130	82.3
	For Games, Film, Music Download	90	57.0
	Cose	84	53.2
	Shop	50	31.6
	Meeting new people	22	13.9
Places Access of Internet *	Computer Laboratory of the School	128	81.0
	Own Computer	118	74.7
	Internet Cafes	36	22.8
	Home	36	22.8
	Friends' Computers	6	3.8
Web-Based Education for a Given Subject / Request to Participate in the Program	Yes	106	70.8
	No	52	29.2

* Marked more than one option

Of the students 84.8% had personal computers and those who did not have a personal computer benefited from computer labs and Internet cafes (Table 1).

It was found out that all the students (100%) use Internet and 81.0% of them have access to the Internet in school computer labs while 74.7% logged onto Internet through their own computers.

98.7% stated that they used the Internet to register and follow their grades and 96.2% used it to do research, and access to information. 87.3% of the participants used internet to do their assignments, prepare PowerPoint etc. (Table 1).

Of the students 70.8% stated that they were willing to attend a course/program provided through web-based education while the rest expressed their unwillingness to do so.

Nursing Students' Attitudes toward Internet Use and Web-based Education at the Beginning and End of Web Based Education Average Scores and Their Comparison

Table 2.
Nursing students' average scores for attitude toward Internet use and their comparison (n: 158)

Attitude toward Internet Use	Beginning of Web Based Education		End of Web Based Education		t§	p
	Median	Aver ± SS	Median	Aver ± SS		
Use of Internet in education	29.00	29.33 ± 5.91	39.00	38.72±3.83	3.521	.011*
Use of Internet in research	27.00	26.87 ± 3.92	36.00	34.17±6.71	.459	.570
Use of Internet in social interaction	12.00	11.53 ± 3.43	16.00	15.15±.65	1.050	.209
Enjoyment of Internet in education	18.00	17.53 ± 3.43	22.00	22.17±6.52	3.210	.001*
Use of Internet in communication	15.00	14.76 ± 2.56	16.00	16.03±4.31	1.462	.127
Use of Internet in information sharing	15.00	14.85 ± 2.97	19.00	19.03±3.06	1.009	.216
Total	109.00	108.59 ± 15.79	226.00	127.27±19.03	.201	.015*

t§ Paired-Samples T testi

It was found out those students' average score for attitude toward Internet use was 108.59±15.79 at the beginning of web based education while it was 127.27±19.03 at the end of web based education (Table 2). Of all the sub-dimensions of attitude toward Internet use, use of the Internet in education was at the top of the list at the beginning (29.33±5.91) and end of the web based education (38.72±3.83). Use of the Internet in social interaction ranked at the bottom of the list at both the beginning (11.53±3.43) and end of web based education (15.15±.65) (Table 2). There was a statistically significant difference between total average scores for attitude toward Internet use at the beginning and end of web based education (t§= .201 p= .015).

Table 3.
Nursing students' average scores for web based education attitude and their comparison (n: 158)

Web-Based Education Attitude	Beginning of Web Based Education		End of Web Based Education		t§	p
	Median	Aver ± SS	Median	Aver ± SS		
Efficiency of web-based education	57.00	56.38 ± 13.56	39.00	62.75±4.17	2.431	.011*
Resistance to web-based education	29.00	28.24 ± 7.00	36.00	27.17±3.71	1.357	.047*
Total	85.00	84.62 ± 12.07	92.00	91.15±.75	1.050	.029*

t§ Paired-Samples T testi

When it comes to sub-dimensions, however, there was a statistically significant difference between use of Internet in education (t§= 3.521 p= .011) and enjoyment of Internet in education (t§= -3.210 p= .001) at the beginning and end of web based education (p≤0.05) (Table 2).

It was found out that students' average score for web-based education attitude was 84.62±12.07 at the beginning of web based education while it was 91.15±.75 at the end of web based education (Table 3).

Of all the sub-dimensions of web-based education attitude, use of the efficiency of web-based education was at the top of the list at the beginning (56.38 ± 13.56) and end of the web based education (62.75 ± 4.17). Use of the resistance to web-based education ranked at the bottom of the list both at the beginning (28.24 ± 7.00) and end of web based education (27.17 ± 3.71) (Table 3).

There was a statistically significant difference between total average scores for web-based education attitude at the beginning and end of web based education ($t_{\xi} = 1.050$ $p = .029$). When it comes to sub-dimensions, however, there was a statistically significant difference between efficiency of web-based education ($t_{\xi} = 2.431$ $p = .011$) and resistance to web-based education ($t_{\xi} = 1.357$ $p = .047$) at the beginning and end of web based education ($p \leq 0.05$) (Table 3).

Correlation Between Nursing Students' Attitudes Toward Internet Use and Web-based Education

Tablo 4.
Correlation between nursing students' attitudes toward internet use and web-based education (n: 158)

WEB-BASED EDUCATION ATTITUDE	ATTITUDE TOWARD INTERNET USE	
	Beginning of Web Based Education	End of Web Based Education
	.675	.702
.000	.000	

Pearson Correlation * $p > 0,01$

There was a positive correlation at advanced level was determined between their attitudes toward Internet use and web-based education at the beginning and end of web based education (beginning of web based education: $r = .675$ $p > 0.01$ end of web based education: $r = .702$ $p > 0.01$) (Table 5). It was found that sub-dimensions of 'Internet use attitude scale' namely use of the Internet in education, use of the Internet in research, enjoyment of the Internet in education, use of the Internet in communication and use of the Internet in information sharing had a positive meaningful correlation with the sub-dimension of efficiency of web-based education ($p > 0.01$) (Table 4).

It was also observed that sub-dimensions of Internet use attitude scale' namely use of the Internet in education, use of the Internet in research, enjoyment of the Internet in education, use of the Internet in communication and use of the Internet in information sharing had a negative meaningful correlation with resistance to web-based education, one of the sub-dimensions of web-based education attitude scale ($p > 0.01$) (Table 4).

DISCUSSION

The majorities of the participants were female and age averages range from 18 to 31. Students used the Internet primarily to register online, follow their grades, do research, access information and they are willing to attend a course/program delivered through web-based education.

Atack (2003) states tat, Internet use is of great importance in today's technological environment. Familiarity with the Internet is necessary for many practical nursing

applications. McCannon & O'Neal (2003) emphasized the most crucial aspects of using Internet skills required by nursing students and nurses.

According to previous research, Internet usage by students can be distributed into the following categories: 97.8% email, 97.2% search engines, 86.7% file download.¹⁰ McNeil, Elfrink, Bickford, Pierce, Beyea, Averill & Klappenbach (2003) suggested that health care delivery increasingly relies on Internet for effective decision-making and care delivery.

All of the students use the Internet and they also use the Internet to do assignments and prepare Powerpoint presentations etc. (Table 1). These findings correspond to those found by Taşocak, Kaya, Şenyuva, Işık & Bodur (2011), Özgür & Tosun (2010), Şenyuva (2007), Koç (2006), Farrell, Cubit, Bobrowski & Salmon (2006), Adams & Timmis (2006) and Cragg et. al. (2003) it was attributed to the fact that participant students within the scope of the study gradually and more commonly benefit from the Internet effectively and efficiently. In addition, when such a finding is analyzed in line with related literature, which emphasized Internet use as one of the major skills in web-based education, it is of importance because Internet plays an important role in education.

The majority of the students would like to attend another course/program which is provided through web-based education. This finding gave rise to thoughts that students are aware of the benefits (flexibility in time and space) they could get in education thanks to their web-based educational experiences and thereby they are more enthusiastic to benefit from web-based educational programs which can enable them to improve their occupational skills.

The research showed that students' attitudes toward internet use is medium at the beginning and end of web based education (Table 2). Study results show that students adopt a positive attitude toward Internet use at a medium level (Table 2). This finding is in parallel to those found in studies conducted by Taşocak et al. (2011), Özgür & Tosun (2010), Şenyuva (2007), Koç (2006), Farrell et. al. (2006), Adams & Timmis (2006), Atack (2003), McNeil et al. (2003), McCannon & O'Neal (2003) and Cragg et. al. (2003).

It shows that students' attitude toward Internet use is not up to the mark. Therefore, it makes one think that opportunities for Internet use are to be increased and their attention should be directed towards what can encourage them to use internet in order for them to benefit from Internet effectively and efficiently in maintaining their individual and occupational developments and benefiting from web-based education.

Averages scores for sub-dimensions of attitude toward Internet use at the beginning and end of web based education are as follows for each dimension from the highest to the lowest:

Internet in education followed by use of the Internet in research, enjoyment of Internet use in education, use of the Internet in information sharing and use of the Internet in social interaction (Table 2).

Use of the Internet in the education system is the field where the biggest progress has been made in today's world. The reason is that Internet provides service to anybody irrespective of time and space by removing the concepts of space, time and borders.

It is always ready to use, it is interactive and it gives immediate feedback and provides information. This feature has led to the development of web-based education along with Internet. It can be said that nursing students are willing to use the Internet for educational purposes thanks to participation in web-based education.

The fact that average scores for enjoyment of Internet use in education are as high as those of use of Internet in education might result from students' having a web-based education/course experience and being satisfied with this education. Students got another high score from the sub-dimension of use of the Internet in research. The Internet is a platform which makes access to information at any point of the world quite rapid through e-library and e-journals. Therefore, this finding gives rise to thoughts that students benefit from opportunities that enable them to do literature reviews related to their research topic in the fastest and shortest way possible over Internet.

The research showed that students' attitudes web-based education is medium at the beginning and end of web based education (Table 3). Wilkinson, Roberts & Alison (2010), Adams & Timmis (2006), Yu & Yang (2006), Reiners (2005), McNeil et al. (2003), and Atack & Rankin (2002) also observed in their studies that students have positive attitudes toward web-based education and support web-based education.

This finding suggests that students will be willing to participate in ever-increasing numbers of web-based education programs after their graduation in order to maintain their occupational development.

There was a meaningful positive correlation at a medium level between students' attitudes toward Internet use and web-based education at the beginning and end of web based education (Table 4). It was found out that sub-dimensions of Internet use attitude scale namely use of the Internet in education, use of the Internet in research, enjoyment of the Internet in education, use of the Internet in communication and use of the Internet in information sharing had a positive meaningful correlation with the sub-dimension of efficiency of web-based education which has been designed under web-based education attitude scale ($p > 0.01$) (Table 4). On the other hand, they had a negative meaningful correlation with resistance to web-based education, one of the sub-dimensions of web-based education attitude scale ($p > 0.01$) (Table 4).

Paris (2004) stated that students' positive attitudes towards the Internet affected their cognitive, efficiency and behavioural attitudes toward web-based education positively. Ando, Takahira & Sakamoto (2004) put forward that increasing Internet use led to increased motivation for learning, self-sufficiency and interest in the learning material. Altunçekiç & Aksu (2011) also said that web-based educational platforms affected students' attitudes toward Internet use.

Senyuva (2007), Liaw, Huang & Chen (2007), McNeil et al. (2003), and Cragg et al. (2003) found out that students adopt a positive attitude towards Internet use and web-based education. They also put forward that students who use the Internet primarily to access information, and do research have a more positive attitude towards web-based education. These findings also bear similarity with those of the current study.

It was decided that web-based educational experiences affect students' attitudes towards Internet use and web-based education positively and support it.

CONCLUSION and RECOMMENDATIONS

Research results showed that;

- Nursing students have a medium level of attitude toward Internet use both at the beginning and end of web based education,
- Nursing students have a medium level of web based education attitude both at the beginning and end of web based education,

- There was a statistically significant difference between their attitudes toward Internet use and web based education at the beginning and end of web based education,
- There was positive correlation and advanced level between students' attitudes toward Internet use and web based education at the beginning and end of web based education,

In line with these results, it is suggested that:

- Undergraduate, master, doctorate and continuing education programs should be structured in such a way that they can increase students' web-based education experiences, enhance and support their attitudes towards Internet use and web-based education. Students' ideas concerning Internet use and web-based education should be investigated in depth with different sample groups.

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