FACULTY OF EDUCATION STUDENTS' ATTITUDES TOWARD INTERNET AND IMPLICATIONS FOR ONLINE LEARNING

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ABSTRACT

The purpose of this study is to develop an attitude scale toward Internet and to investigate whether faculty of education students' attitude levels differ significantly according to their gender, Internet experience, opinions about Internet as an instructional medium and their preferences between Internet-based and face-to-face learning. The research data were obtained from 249 undergraduate (100 male, 149 female) faculty of education students. Three factors, named as practicability, communication and usage skill, were identified after an explanatory factor analysis. The results of factor analysis and internal reliability coefficients suggest that the scale is a valid and reliable instrument. According to the t-test results, while there were no gender differences on the practicability and communication subscales, male students demonstrated significantly higher attitude levels than the females did on the usage skill subscale. The students, who prefer to participate in an Internet-based course, expressed significantly higher attitudes on the three subscales than the students who prefer face-to-face learning. The students with more Internet experience tended to have higher attitude levels on the three subscales than the students with less Internet experience. Two-way ANOVA results indicated that students' desire to participate in an internet-based course and their Internet experience had main effects on their attitudes toward Internet. Implications for online learning are suggested depending on literature and the findings of the study.

Keywords: Attitude toward the Internet, Gender, Internet experience, Internet as an educational medium, Online learning.

EĞİTİM FAKÜLTESİ ÖĞRENCİLERİNİN İNTERNETE YÖNELİK TUTUMLARI VE ÇEVRİMİÇİ ÖĞRENME İÇİN ÇIKARIMLAR

ÖZET

Bu çalışmanın amacı İnternete yönelik bir tutum ölçeği geliştirmek ve eğitim fakültesi öğrencilerinin İnternete yönelik tutumlarının cinsiyet, İnternet tecrübesi, öğretimsel bir araç olarak İnternet hakkındaki düşünceleri ve İnternet-tabanlı ve yüz-yüze öğrenme arasındaki tercihlerine göre değişip değişmediğini incelemektir. Araştırma verileri lisans düzeyindeki 249 (100 erkek, 149 bayan) Eğitim Fakültesi öğrencisinden elde edilmiştir. Açıklayıcı faktör analizi sonrası pratiklik, iletişim, ve kullanım becerisi olarak adlandırılan üç faktör ortaya çıkmıştır. Faktör analizi ve iç güvenirlik katsayısı sonuçlarına göre ölçek yeterli güvenirlik ve geçerliğe sahiptir. T-testi sonuçlarına göre, pratiklik ve iletişim alt boyutlarında cinsiyete göre faklılık bulunmazken kullanım becerisi alt boyutunda erkeklerin lehine anlamlı farklılık bulunmuştur. İnternet-tabanlı öğrenmeyi tercih eden öğrencilerin yüz-yüze öğrenmeyi tercih edenlerden üç alt boyutta da daha yüksek tutuma sahip oldukları gözlenmiştir. Ayrıca, İnternet tecrübesi daha yüksek olan öğrencilerin üç alt boyuttaki tutumları İnternet tecrübesi daha az olanlardan daha yüksek olarak gözlenmiştir. İki yönlü ANOVA sonuçları öğrencilerin İnternet-tabanlı bir derse katılma istekleri ve İnternet tecrübelerinin onların İnternete yönelik tutumları üzerinde ana etkiye sahip olduklarını göstermiştir. İlgili literatür ve bu çalışmanın bulgularını dikkate alarak çevrimiçi öğrenme için çıkarımlar yapılmıştır.

Anahtar Kelimeler: İnternete yönelik tutum, Cinsiyet, İnternet tecrübesi, Eğtimsel araç olarak İnternet, Çevrimiçi öğrenme.

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INTRODUCTION

Internet usage rates in many societies have increased rapidly since its inception. The number of computers, which were connected to the Internet, was only 213 in 1981. However, the number had grown to more than 400 million by 2000. By the end of 2005, the number of Internet users in the world was estimated to reach 1 billion (Microsoft Encarta Online Encyclopedia, 2007). The Internet has introduced new opportunities to individuals, companies, and educational institutions. For instance, many individuals in contemporary societies use the Internet as a communication, research and learning tool. In addition, educational institutions in many countries use the Internet in communication, research and distance education activities such as distributing online courses and course materials to the learners (Havick, 2000; Klobas & Clyde, 2000; Microsoft Encarta Online Encyclopedia, 2007). Besides, many educational institutions apply the Internet in designing blended learning environments in which the learners may benefit from strong sides of both face-to-face classroom learning and online learning activities (Osguthorpe & Graham 2003). It seems that Internet influences and will continue to influence educational practices of institutions when providing training and delivering courses to the both on-campus and off-campus students.

Many researchers, educators and marketers have been interested in individuals' attitudes toward the Internet which has rapidly effected communication, research, and educational practices in many societies. According to Coffin and MacIntyre (cited in Tsai et al, 2001) learners' attitudes toward the Internet may have an impact on their motivation and interest toward learning to use Internet. Therefore, investigation and determination of students' Internet attitude levels through valid and reliable instruments may help teachers and students when deciding to use Internet as a teaching and learning tool. In prior studies researchers in different societies (e.g., Tsai et al., 2001; Liaw, 2002; Zhang, 2005; Ford et al., 2005; Altun, 2003) developed reliable and valid Internet attitude scales with various subscales for different student populations. For instance, Tsai et al (2001) validated an Internet attitude scale with four subscales for high school students. Each scale may have additional contributions to the field of education by providing more alternatives to educators when examining behavioral, cognitive and affective components of Internet attitude. The purpose of this study is to develop an Internet attitude scale for faculty of education students. Besides, this study investigates whether faculty of education students' attitudes toward Internet differ significantly according to their gender, Internet experience, opinions about Internet as an educational medium, and their preferences between Internet-based and face-to-face learning.

LITERATURE REVIEW
Gender and Internet Attitude

The results of prior studies, which investigated the relationship between gender and attitude toward the Internet conflict with one another. Although some studies (i.e., Durndell & Haag, 2002; Tsai et al., 2001; Schumacher & Morahan-Martin, 2001) indicated that male students tend to reflect more positive attitudes toward the Internet usage, some other studies (i.e., Whitaker; 2007; Carswell et al., 2000, Altun, 2003) showed that female students' attitudes toward the Internet usage in educational environments are not lower than that of males. For instance, Whitaker (2007) investigated whether differences between Internet and paper-and-pencil administration modes lead to differential survey or questionnaire responding for males and females. The results demonstrated that both sexes use the same psychological metric when providing satisfaction ratings regardless of Internet or paper-and-pencil administration. In addition, Carswell et al. (2000) study indicated that the number of female students in an Internet-based study group was slightly higher than in a conventional distance-based study

group. According to this finding, female students were not discouraged from studying a course in the Internet environment.

However, there is a tendency to find that male students may have on average more positive attitudes toward the Internet than females (e.g., Durndell & Haag, 2002; Tsai et al., 2001; Schumacher & Morahan-Martin, 2001). For instance, in a study with 74 female and male Romanian university students Durndell and Haag (2002) found that males tending to report greater computer self efficacy, lower computer anxiety, more positive attitudes toward the Internet and longer use of the Internet than females.

In addition, Schumacher and Morahan-Martin (2001) investigated whether Internet and computer experiences, skills and attitudes are related, using evidence from two studies of incoming college students, in 1989/90 and 1997. In 1989/90, male students were more experienced with computers, and reported higher skill levels in computer applications than the female students. However, incoming students in 1997 were more experienced with using a computer than the students in 1989/90. The findings indicated that the overall competency and comfort level for students was significantly higher for computers than for the Internet in 1997. In general, female students reported higher levels of incompetence and discomfort for both computers and Internet although gender differences in computer experience and skill levels diminished in some areas in an eight year period from 1989 to 1997. According to Schumacher and Morahan-Martin (2001), competence and comfort levels with the computers and Internet were highly inter-correlated, and both predicted Internet skills and experiences.

Internet Experience and Internet Attitude

Prior studies (e.g., Maurer, 1994; Levin & Gordon, 1989; Smith et al., 2000) which investigated the relationship between computer experience and computer attitude indicate that individuals with higher computer experience reflect higher attitudes toward computers. Similarly, most prior studies indicated that individuals with higher computer experience tended to have lower computer anxiety (e.g., Cambre & Cook, 1987; Kernan & Howard, 1990; Chu & Spires, 1991; Haris & Davison, 2002; Gürcan-Namlu & Ceyhan, 2003; Bross, 2005). In addition, a few researchers (Tsai et al., 2001; Durndell, & Haag, 2002) investigated whether Internet experience has a similar impact on the individuals' attitudes toward Internet. They found that greater level of Internet experience associated with more positive attitude toward the Internet similar to the effect of computer experience on the individuals' attitudes toward computers.

Attitudes of Students toward Internet as an Instructional Medium

Students' attitudes relevant to instructional medium (e.g., computer, Internet) as well as technological experience and skills may effect their success in an Internet-based instructional program (Duggan et al., 1999; Volery, 2001; Koroghlanian & Brinkerhoff, 2000-2001; Brinkerhoff & Koroghlanian, 2005). A study conducted by Brinkerhoff and Koroghlanian (2005) revealed that while students were generally neutral toward Internet-based instruction, those with prior Internet-based experience regarded such instruction incorporating the Internet more positively. Brinkerhoff and Koroghlanian's (2005) study suggest that students' technological skills and attitudes toward Internet should be considered when designing Internet-delivered instruction. In addition, Wu and Tsai (2006) state that appropriate attitude toward the Internet is a prerequisite for successful Internet-based instruction. According to the findings of Liaw's (2002) study, students' attitudes toward the Internet have considerable impact on its acceptance and usage. Therefore, determination of learners' thoughts and attitudes toward Internet as an instructional medium is quite important

for effective and successful implementation of instructional programs incorporating the Internet.

METHODOLOGY

Participants

The participants of the study were undergraduate faculty of education students at Abant Izzet Baysal University. The data were collected through a questionnaire that consists of a demographical information form and an attitude scale toward Internet. The data were collected during the 2006- 2007 academic year. A total of 256 students voluntarily participated in this study. However, seven participants' responses on the questionnaire were incomplete, and therefore their data were excluded from statistical analyses. Thus, the data obtained from 249 (100 male, 149 female) participants were used in the statistical analyses.

Development of the Research Instrument

The researcher wrote 20 items and collected them in a pool in order to develop an attitude scale toward the Internet. Some of the items were modified from prior Internet attitude scale (i.e., Tsai et al. 2001; Altun, 2003) and computer anxiety rating scale (Heinssen et al, 1987) (see Table 2). Then, the initial items were represented on a five-point Likert Scale (from "1=strongly disagree," "2=disagree," "3=undecided," "4=agree," to "5=strongly agree"). The items in the Internet attitude scale were presented to the participant students in Turkish. A linguist validated the translation of the items from Turkish to English in this study. The Internet attitude scale in Turkish is included in the Appendix.

After collecting the data from the faculty of education students, the researcher performed Barlett's Test of Sphericity and Kaiser-Meyer-Olkin (KMO) measure of sampling adequacy in order to examine whether the data set was appropriate for a factor analysis. Barlett's Test of Sphericity was also highly significant (chi-square = 1716.91 with 190 degree of freedom at P=0.000). The KMO statistics indicated 0.855 at a significance level of 0.000. According to these results, a factor analysis of the scale items would be convenient.

The researcher, then, applied an explanatory factor analysis, principle component analysis with varimax rotation, in order to analyze the items and to clarify the structure of the Internet attitude scale. The analyses identified five factors with eigenvalues greater than one. However, results in the rotated component matrix indicated that item 17, "I believe I can attain Internet skills", had very close factor loadings (.479, .434) for the fourth and fifth factors. Therefore, this item was removed from the initial scale. Then, factor analysis with the same procedure was reapplied for 19 items and this analysis identified four factors with eigenvalues greater than one. Nevertheless, at this time item 7, "Learning how to use Internet is very exciting", had very close factor loadings (.499, .485) for the first and second factors. Thus, item 7 also was removed from the initial scale and factor analysis with the same procedure was reapplied for 18 items. The analysis identified four factors with eigenvalues greater than one. There were only two items (item 13, "Face-to-face communication has a better quality than Internet-based communication" and item 15, "Face-to-face communication is more natural and realistic than Internet-based communication) left under the forth factor. The researcher removed this factor with two items from the scale because of its low cronbach alpha reliability (α= .38). After that, factor analysis with the same procedure was reapplied for 16 items in order to finalize the scale. This final analysis identified three factors with eigenvalues greater than one (i.e., 5.30, 1.46, 1.31) and they accounted for the 50.54 % of variance (see Table 1). None of the items was removed from the scale at this time since the factor loadings of the items for the remained three factors were satisfactory (i.e., greater $\pm$ 0.40 on the relevant factor).

The factors or subscales were named according to the contents of the relevant items. The practicability factor measures the students' feelings and perceptions about the usefulness of the Internet. The communication factor measures the students' thoughts and reflections about communication and interaction with others through the Internet. The usage skill factor measures the students' anxiety about their usage capabilities in Internet-based activities such as research. The responding factors and retained items in the attitude scale are represented in Table 2. Eight items in the scale out of 16 were scored in a reverse manner. In this way, the higher scores of the participants on the scale and subscales indicate better attitudes toward the Internet.

The factor loadings of the items differ between 0.833 - 0.431 0.702 - 0.505, and 0.766-0.695 respectively for practicability, communication and usage skill factors. In general, the factor loading of some items in the scale are satisfactory. Most of the items, except item 6, have factor loadings over 0.45. Therefore, the factor loadings of the items at satisfactory levels can be an evidence for factorial and construct validity of the attitude scale toward the Internet (Thompson & Daniel, 1996). In addition, as it is displayed in Table 1, the internal reliability coefficients are sufficient ($\alpha= 0.79$, $\alpha= 0.73$, $\alpha= 0.67$) respectively for factor 1 (practicability), factor 2 (communication) and factor 3 (usage skill), and for the entire attitude scale ($\alpha= 0.85$).

Table 1. Rotated factor loadings and Cronbach's   coefficients for the three factors (subscales) of the Internet attitude scale.

Item	Factor 1 Practicability =0.79	Factor 2 Communication =0.73	Factor 3 Usage skill =0.67
20	0.833		
10	0.685		
9	0.664		
19	0.632		
18	0.499		
3	0.485		
6	0.431		
5		0.702	
14		0.679	
11		0.597	
12		0.586	
4		0.527	
2		0.507	
16			0.766
8			0.721
1			0.695
Eigenvalue	5.30	1.46	1.31
% of variance	19.27	16.93	14.34

Overall   = 0.85, total variance explained is 50.54

Table 2. Retained items on the Internet attitude scale.

Item No.	Subscale	Question
20	Practicability	Internet can make each person's life easier. [a]
10	Practicability	Internet is a useful tool for everyone.
9	Practicability	Every ambitious person can learn how to use Internet.[c]
19	Practicability	Internet is a useful tool for communication.
18	Practicability	Internet usage does not arouse my interest. [*]
3	Practicability	I can reach a lot of beneficial information through Internet. [b]
6	Practicability	I want to use Internet in every part of my life.
5	Communication	I hesitate to communicate in the Internet environment. [*]
14	Communication	It is difficult to share feelings and thoughts in the Internet environment. [*]
11	Communication	I like to chat through the Internet. [a]
12	Communication	Communicating through the Internet is unnecessary. [*]
4	Communication	Information obtained in the Internet environment is not reliable. [*]
2	Communication	I enjoy using the Internet.
16	Usage skill	I experience difficulty to conceive technical sides of Internet usage. [*][c]
8	Usage skill	Researching in the Internet environment is difficult and complex. [*]
1	Usage skill	Internet usage is very complex and difficult. [*]

[a] Modified from Altun (2003).
[b] Modified from Tsai et al. (2001).
[c] Modified from Heinssen et al. (1987).
[*] Scored in a reverse way.

Moreover, the inter-correlation matrix in Table 3, displays that all correlation coefficients (0.608; 0.431; 0.385) among the three subscales are significant at 0.01 level. According to these results, the three factors measure the attitude toward the Internet in a consistent manner.

Table 3. Inter-correlation matrix of three subscales in the Internet attitude scale.

Factors	Practicability	Communication	Usage skill
Practicability	-		
Communication	0.608*	-	
Usage skill	0.431*	0.385*	-

*P<0.01

Data Analysis

After the explanatory factor analysis, independent t-test and one-way-analysis of variance (ANOVA) were applied to analyze the differences between the mean scores. Furthermore, after the one-way ANOVA procedures, post-hoc analyses were conducted by using Tukey's honest significant differences (HSD) to perform multiple comparisons among the means. Besides, two-way ANOVA was conducted to observe possible interactions between the variables.

FINDINGS

Participants' scores on the scale

Ranges, mean scores ($\bar{x}$) and standard deviations (SD) on the three subscales are displayed in Table 4. According to the results, the average scores per items are 4.20 (i.e., 29.43/7), 3.47 (i.e., 20.841/6), and 3.59 (i.e., 10.79/3) respectively for practicability,

communication, and usage skill subscales. These results indicate that the students scored highest on the practicability subscale followed by the usage skill and communication subscales. However, in general, the participants have positive attitudes toward the Internet when we consider the average scores per items.

Table 4. Participants' scores on three subscales of attitude scale toward Internet.

Subscales	Items	Possible range	Actual range	Mean ($\bar{x}$)	SD
Practicability	7	7-35	12-35	29.43	4.53
Communication	6	6-30	6-30	20.84	4.62
Usage skill	3	3-15	3-15	10.79	2.60

Students' Attitudes toward the Internet Depending on Gender

According to the results in Table 5, male and female students' mean attitude scores on practicability and communication subscales do not differ significantly. However, the results show that there is a statistical difference between the male and female students' mean scores on usage skill subscale at 0.05 significance level. The higher mean score indicates the higher level of attitude toward the Internet. Therefore, male students indicated significantly more positive attitudes toward the Internet on the usage skill subscale than female learners did.

Table 5. Gender comparisons on three subscales of Internet attitude scale.

Subscale	N	Gender	$\bar{x}$	SD	t	P
Practicability	100	Male	29.97	4.41	1.556	0.121
	149	Female	29.06	4.59		
Communication	100	Male	21.03	4.81	0.510	0.610
	149	Female	20.72	4.49		
Usage skill	100	Male	11.51	2.45	3.657*	0.000
	149	Female	10.30	2.59		

*P<0.05

Students' Attitudes toward the Internet Depending on Internet Experience

In prior studies (e.g., Chua et al., 1999; Gürcan-Namlu & Ceyhan, 2003; Bozionelos, 2004) variables such as computer usage level, computer usage frequency, computer ownership, computer education, and amount and breadth of time in the use of computers are used as indicators of computer experience. In this study, the researcher used similar variables such as Internet usage level, Internet usage frequency, Internet access at home and school are used to define the Internet experience.

Students' Attitudes toward the Internet depending on Internet Access at Home

When the students asked on the questionnaire whether they have Internet access at home, 75 students answered "yes", and 174 students answered "no". Students' scores on three subscales of Internet attitude scale depending on Internet access at home are represented in Table 6. The results indicate that there were statistical differences between the students' mean scores on all three subscales (i.e., practicability, communication, usage skill) depending on Internet access at home at 0.05 significance level. According to these results, the students who have Internet access at home indicated significantly more positive attitudes toward the Internet on the three subscale than the students who do not have Internet access at home.

Table 6. Students' scores on three subscales depending on Internet access at home.

Subscale	N	Internet access at home	Mean ($\bar{x}$)	SD	t	P
Practicability	75	Yes	31.13	3.88	4.018*	0.000
	174	No	28.68	4.60		
Communication	75	Yes	22.54	3.92	3.918*	0.000
	174	No	20.11	4.71		
Usage skill	75	Yes	11.60	2.59	3.281*	0.001
	174	No	10.44	2.53		

*P<0.05

Students' Attitudes toward the Internet depending on Internet Access at School

When the students asked on the questionnaire whether they access the Internet at school 177 students answered "yes" and 72 students answered "no". Students' scores on three subscales of Internet attitude scale depending on Internet access at school are represented in Table 7. The there were statistical differences between the students' mean scores on the three subscales (i.e., practicability, communication, usage skill) depending on their opportunity to access Internet at school at 0.05 significance level. According to these results, the students who access the Internet at school indicated significantly more positive attitudes toward the Internet on the three subscale than the students who do not access the Internet at school.

Table 7. Students' scores on three subscales depending Internet access at school.

Subscale	N	Internet Access at School	Mean ($\bar{x}$)	SD	t	P
Practicability	177	Yes	29.94	4.50	2.898*	0.004
	72	No	28.13	4.37		
Communication	177	Yes	21.22	4.64	2.040*	0.042
	72	No	19.91	4.46		
Usage skill	177	Yes	11.12	2.58	3.282*	0.001
	72	No	9.95	2.48		

*P<0.05

Students' Attitudes toward the Internet depending on Internet Usage Frequency

The students pointed out their Internet usage frequencies on the questionnaire as very-often (n=25), often (n=90), sometimes (n=107), seldom (n=23) and never (n=4). The never users of the Internet were excluded from the statistical analysis in this section since the data obtained from four participants were not enough to consider in parametric tests such as one-way ANOVA.

Table 8. Students' Attitude Scores on the Subscales depending on Internet Usage Frequency.

Internet Usage Frequency	N	Practicability $\bar{x}$ (S.D.)	Communication $\bar{x}$ (S.D.)	Usage skill $\bar{x}$ (S.D.)
(1) Very-often	25	32.72 (2.55)	23.48 (4.02)	13.00 (2.08)
(2) Often	90	31.18 (3.41)	22.28 (4.51)	11.53 (2.06)
(3) Sometimes	107	28.21 (4.52)	19.94 (3.94)	10.16 (2.50)
(4) Seldom	23	25.34 (4.93)	17.04 (5.31)	9.13 (2.70)
F (ANOVA)		18.132*	11.06*	16.04*
Tukey HSD		(1)>(3)>(4)* (2)>(3)>(4)*	(1)>(3)>(4)* (2)>(3)>(4)*	(1)>(2)>(3)* (1)>(2)>(4)*

*P<0.05

As it is displayed in Table 8, seldom users of Internet have the lowest mean scores and very-often users have the highest mean scores on the three subscales of Internet attitude scale. In addition, often users' mean scores are higher than sometimes and seldom users' mean scores on the three subscales. The results indicate that when the students' Internet usage frequencies increase their Internet attitude mean scores on the three subscales increase gradually. According to the one-way ANOVA results on differences based on Internet usage frequencies in Table 8, the differences in Internet attitude levels of the students on three subscales are significant at 0.05 level.

Furthermore, post-hoc analysis revealed that very-often and often users have significantly higher attitude levels than sometimes and seldom users on the practicability and communication subscales. Similarly, sometimes users have significantly higher attitude level than seldom users on the practicability and communication subscales. In addition, the analysis indicated that very-often users have significantly higher attitude level than often, sometimes, and seldom users on the usage skill subscale. Also, often users have significantly higher attitude level than sometimes and seldom users on the usage skill subscale.

These findings suggest that when the students' Internet usage frequencies increase, their attitude levels on the three subscales increase significantly as well.

Students' Attitudes toward the Internet depending on Internet Usage Level

According to the results in Table 9, beginner users of Internet have the lowest, intermediate users have the medium and advanced users have the highest mean scores on the three subscales of Internet attitude scale. The results show that students' Internet attitude mean scores on the three subscales increase gradually while their Internet usage levels increase from beginner to advanced.

Table 9. Students' Attitude Scores on the Subscales depending on Internet Usage Level.

Internet Usage Level	N	Practicability $\overline{\times}$ (S.D.)	Communication $\overline{\times}$ (S.D.)	Usage skill $\overline{\times}$ (S.D.)
(1) Advanced	61	31.44 (3.79)	22.42 (4.60)	12.60 (2.10)
(2) Intermediate	155	29.18 (4.55)	20.74 (4.34)	10.55 (2.34)
(3) Beginner	33	26.84 (4.21)	18.42 (4.91)	8.54 (2.43)
F (ANOVA)		12.67*	8.63*	35.45*
Tukey HSD		(1)>(2)>(3)*	(1)>(2)>(3)*	(1)>(2)>(3)*

*P<0.05

The one-way ANOVA results on differences based on Internet usage levels in Table 9 reveal that the differences in Internet attitude levels of the students on three subscales are significant at 0.05 level. Moreover, Post-hoc analysis indicated that advanced users have significantly higher attitude levels than intermediate and beginner users on the practicability, communication and usage skill subscales. Besides, intermediate users have significantly higher attitude level than beginner users on the practicability, communication and usage skill subscales. According to these findings, students' attitude levels on the three subscales increase significantly while their Internet usage levels increase.

Students' Attitudes toward Internet as an Instructional Medium

In this study, students' attitudes toward the Internet were also investigated depending on their opinions about the Internet as an instructional medium and their preferences between face-to-face learning and Internet-based learning.

Students' Preferences between face-to-face and Internet-based learning.

The students were asked on the questionnaire whether they prefer to participate in a course in the Internet environment or face-to-face classroom environment. While 50 students prefer to take a course in the Internet environment 199 students replied that they prefer to take a curse in a face-to-face classroom environment (see Table 10).

Table 10. Students' scores on three subscales depending on their preferences between face-to-face and Internet-based learning.

Subscale	N	Preferences	$\overline{\times}$	SD	t	P
Practicability	50	Internet,	31.06	3.19	-2.892*	0.004
	199	Face-to-face	29.01	4.73		
Communication	50	Internet,	22.66	4.62	-3.158*	0.002
	199	Face-to-face	20.39	4.51		
Usage skill	50	Internet,	11.20	2.37	-1.243	0.215
	199	Face-to-face	10.68	2.65		

*P<0.05

According to the results in Table 10, there are significant differences between mean attitude scores of the students who prefer face-to-face learning and the students who prefer Internet-based learning on the practicability and communication subscales. The difference between the mean attitude scores on the usage skill subscale is not significant. As a result, the students who prefer Internet-based learning demonstrated significantly more positive attitudes toward the Internet on the practicability and communication subscales than the students who prefer face-to-face learning.

Students' Opinions about the Internet as an Instructional Medium

The students were asked about their opinions whether the Internet can be an effective Instructional medium. While 174 students answered "yes", 75 students answered "no". The results in Table 11 show that on the practicability and communication subscales students who have positive opinions about Instructional effectiveness of the Internet demonstrated significantly higher attitude levels toward the Internet than the students who have negative opinions about Instructional effectiveness of the Internet. The mean attitude scores of the students on the usage skill subscale did not differ significantly.

Table 11. Students' scores on three subscales depending on their opinions about effectiveness of the Internet as an instructional medium.

Subscale	N	Effectiveness	$\overline{\times}$	SD	t	P
Practicability	174	Yes	30.39	4.21	5.397*	0.000
	75	No	27.18	4.47		
Communication	174	Yes	21.93	4.22	6.024*	0.000
	75	No	18.33	4.53		
Usage skill	174	Yes	10.98	2.52	1.776	0.077
	75	No	10.34	2.74		

*P<0.05

Effects of Students' Desire to Participate in an Internet-based course and Internet Experience on the Internet Attitude

Main and Interaction Effects on the Internet Practicability Subscale

The students were asked on the questionnaire whether they have a desire to participate in an Internet-based course or not. While 172 students answered "yes", 77 students answered "no". According to the two-way ANOVA results in Table 12, students' desire to

participate in an Internet-based course (IBC) has an significant main effect on their Internet attitudes on the practicability subscale. Similarly, the results indicate a significant main effect of students' Internet-usage level on their Internet attitudes on the practicability subscale. However, an interaction effect between desire to participate in IBC and Internet-usage level was not significant (P = 0.081) although approached 0.05 significance level. These findings suggest that students' attitudes on the practicability subscale are effected by their desire to participate in IBC and their Internet experience.

Table 12. Two-way ANOVA results on the Practicability Subscale depending on Students' desire to participate in a Internet-based Course (IBC) and Internet-usage Level.

Source	Sum of Squares	df	Mean Square	F	P
Desire to Participate in an IBC	269.22	1	269.22	15.373*	0.000
Internet-Usage Level	303.09	2	151.54	8.654*	0.000
Desire to Participate in an IBC **X** Internet-Usage Level	89.04	2	44.52	2.542	0.081
Error	4255.54	243	17.51		
Total	220703.00	249			

*P<0.05

Main and Interaction Effects on Communication Subscale

The two-way ANOVA results in Table 13 indicated that students' desire to participate in an Internet-based course (IBC) has an significant main effect on their Internet attitudes on the communication subscale. Besides, the results revealed a trend to significant main effect of students' Internet-usage level on their Internet attitudes on the communication subscale (P = 0.062). Furthermore, an interaction effect between desire to participate in IBC and Internet-usage level approached significance (P = 0.067). These findings indicate that students' Internet attitudes on the communication subscale are effected by their desire to participate in IBC and their Internet experience. Furthermore, the results suggest that students' desire to participate in IBC and their Internet-usage level tended to have an interaction effect on their Internet attitudes on the communication subscale.

Table 13. Two-way ANOVA results on the Communication Subscale depending on Students' desire to participate in a Internet-based Course (IBC) and Internet-usage Level.

Source	Sum of Squares	df	Mean Square	F	P
Desire to Participate in an IBC	440.88	1	440.88	23,777*	0.000
Internet-Usage Level	104.46	2	52.23	2.817	0.062
Desire to Participate in an IBC **X** Internet-Usage Level	101.23	2	50.61	2.730	0.067
Error	4505.77	243	18.54		
Total	113515.00	248			

*P<0.05

Main and Interaction Effects on Internet Usage skill Subscale

The two-way ANOVA results indicated that students' Internet-usage level has a significant main effect on their Internet attitudes on the usage skill subscale (F = 27.504, df = 2 - 243, P =.000). However, students' desire to participate in an Internet-based course (IBC) does not have an significant main effect on their Internet attitudes on the usage subscale (P = 0.217).

Also, an interaction effect between desire to participate in IBC and Internet-usage level was not significant (P= 0.443). These findings indicate that students' Internet attitudes on the usage skill subscale are effected by their Internet experience such as Internet-usage level.

DISCUSSION

The purpose of this study was to develop a scale to analyze attitudes of faculty of education students toward the Internet, and to investigate whether their attitudes differ significantly according to their gender, Internet experience, opinions about Internet as an instructional medium and their preferences between Internet-based and face-to-face learning. The Internet attitude scale appears to be a valid and reliable measure. The adequate or satisfactory factor loadings of the items under the responding factors (i.e., practicability, communication, usage skill) can be an evidence for the construct validity of the scale. The reliability coefficients (α) were sufficient and high for the subscales (i.e., 0.79, 0.73, 0.67) and for the entire attitude scale (0.85). Moreover, correlations coefficients among the three subscales were significant. According to these findings, the three subscales of the scale measure the students' attitudes toward the Internet in a valid, reliable and consistent manner. In addition, the findings of this study regarding the attitudes of the students toward the Internet depending on gender, Internet experience and their opinions about Internet as an instructional medium support the related literature.

The results of this study indicated that on most of the subscales (practicability and communication) male and female learners' attitudes toward the Internet do not differ significantly. This finding is consistent with the findings of prior studies (Whitaker, 2007; Carswell et al., 2000, Altun, 2003) which revealed that male and female learners tended to have similar attitudes toward the Internet. Particularly, the findings of this study on the communication and practicability of the Internet subscales are parallel to the findings of Altun (2003) study which indicated that male and female learners have similar attitudes on the communication and usefulness of the Internet subscale. On the other hand, the results of this study demonstrated that male learners' attitude level is notably higher than that of females on the Internet usage skill subscale. This finding support the finding of Tsai et al. (2001) study which revealed that male learners reflect higher attitudes on the perceived control of the Internet subscale than the female learners do.

In this study, furthermore, students' Internet attitudes were investigated depending on their Internet experience such as students' Internet access at home, at school, Internet usage level, and Internet usage frequency. The findings revealed that the students' Internet experience played a significant role on the mean attitude scores of the three subscales. For instance, the students who have Internet access at home demonstrated significantly more positive attitudes toward the Internet on the three subscale than the students who do not have Internet access at home. In addition, the students who access the Internet at school tended to have significantly more positive attitudes toward the Internet on the three subscale than the students who do not access the Internet at school. Also, the post-hoc analyses after one-way ANOVA results on differences based on Internet usage frequencies indicated that the differences in Internet attitude levels of the students on three subscales were significant in favor of the students who use the Internet more frequently. In addition, the post-hoc analyses after one-way ANOVA results on differences based on Internet usage levels revealed that students' Internet attitude mean scores on the three subscales increase significantly while their Internet usage levels (i.e., beginner, intermediate, advanced) increase gradually. As a result, the students who have more Internet experience tended to have significantly more positive attitudes toward the Internet on the three subscale than the students who have less Internet

experience. These findings support the literature, which indicated that greater level of Internet experience associated with more positive attitude toward the Internet (Tsai et al., 2001; Durndell, & Haag, 2002) and Internet-based instruction (Brinkerhoff & Koroghlanian, 2005).

Moreover, students' attitudes toward the Internet were also investigated according to their preferences between face-to-face learning and Internet-based learning and their opinions about the Internet as an instructional medium. The findings revealed that the students who prefer Internet-based learning demonstrated significantly more positive attitudes toward the Internet on the practicability and communication subscales than the students who prefer face-to-face learning. Similarly, the findings indicated that on the practicability and communication subscales students who have positive opinions about Instructional effectiveness of the Internet demonstrated significantly higher attitude levels toward the Internet than the students who have negative opinions about Instructional effectiveness of the Internet. In addition, the findings of this study suggest that students' desire to participate in an Internet-based course and their Internet-usage levels tended to have significant main effects on their attitudes on the practicability and communication subscales. These findings supports the related literature (Liaw 2002; Brinkerhoff & Koroghlanian, 2005; Wu & Tsai, 2006) which suggest that appropriate attitude toward the Internet is a prerequisite for successful Internet-based instruction.

As a result, because distance learning continues to expand by using Internet-based technologies, it is important to recognize learners as clients of education and to be concerned about their attitudes toward Internet and their satisfaction with services provided (Mayzer, & Dejong, 2003). According to the related literature, (e.g., Cramer et al, 2002) high student attitudes toward distance learning and distance learning technologies (e.g., Internet) can mean lower dropout rates, and higher levels of learner motivation and commitment to the distance learning program. Therefore, the findings of this study and the related literature suggest that attitudes of students toward the Internet-based technologies should be taken into consideration by the distance educators in order to implement an effective and successful online learning program.

Implications for the Online Learning Environments
Based on the findings of this study and related literature, the following implications are offered for a successful implementation of online learning programs:

● Students' attitudes toward the Internet and online technologies should be considered by the distance educators since the students, who prefer Internet-based learning, tended to reflect significantly more positive attitudes toward the Internet than the students who prefer face-to-face learning.
● The students, who have positive opinions about instructional effectiveness of the Internet, demonstrated significantly higher attitudes toward the Internet than the students' who have negative opinions. Therefore, the students, who are willing to participate an online learning environment should have positive opinions about instructional effectiveness of the Internet-based technologies.
● The students, who are willing participate in an online course, should have appropriate Internet experience (i.e., usage level) since it has main affect on the students' attitudes toward the Internet.
● As suggested in prior literature (e.g., Liaw 2002; Brinkerhoff & Koroghlanian, 2005; Wu & Tsai, 2006), adequate Internet experience and attitudes of students toward the Internet should be considered as prerequisites for a successful online learning environment.

CONCLUSION

According to the results of factor analysis and internal reliability coefficients, the Internet attitude scale developed in this study appears to be a valid and reliable instrument. Besides, the consistency between the literature and the results of this study also reflect an evidence for the validity of the Internet attitude scale.

Moreover, since the role of Internet-based technologies continues to expand for both delivery and supports of the distance education courses (Brinkerhoff & Koroghlanian, 2005) it is quite important to consider about learners' attitudes toward Internet and online technologies. The findings of this study and the related literature indicated that students' prior Internet experience has notable impact on their attitudes toward the Internet (e.g., Tsai et al. 2001; Durndell, & Haag, 2002) and Internet-based learning (e.g., Brinkerhoff & Koroghlanian, 2005). Therefore, students' prior Internet experience and appropriate attitudes toward the Internet-based technologies should be taken into account by distance educators for successful and effective implementation of online learning programs.

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APPENDIX

The Internet attitude scale in Turkish with retained items after the factor analysis.

Faktor analizi sonucu Internet tutum ölçeğinde kalan maddeler.

Madde No.	Faktörler	Maddeler
20	Pratiklik	İnternet her insanın yaşamını kolaylaştırabilir.
10	Pratiklik	İnternet her insan için faydalı bir araçtır.
9	Pratiklik	İstekli olan herkes İnternet kullanmayı öğrenebilir.
19	Pratiklik	İnternet iletişim için kullanışlı bir araçtır.
18	Pratiklik	İnternet kullanmak hiç ilgimi çekmiyor. [a]
3	Pratiklik	İnternet aracılığı ile birçok yararlı bilgiye ulaşabilirim.
6	Pratiklik	Hayatımın her döneminde İnternet kullanmayı isterim.
5	İletişim	İnternet ortamında iletişim kurmaktan çekiniyorum. [a]
14	İletişim	İnternet ortamında duygu ve düşünceleri paylaşmak zordur. [a]
11	İletişim	İnternet ortamında sohbet etmek hoşuma gidiyor.
12	İletişim	İnternet aracılığı ile iletişim kurmak gereksizdir. [a]
4	İletişim	İnternet ortamından edinilen bilgiler güvenilir değildir. [a]
2	İletişim	İnternet kullanmaktan zevk alıyorum.
16	Kullanım Becerisi	İnternet kullanmanın teknik yönlerini anlamada güçlük çekiyorum. [a]
8	Kullanım Becerisi	İnternet ortamında arama yapmak zor ve karmaşıktır. [a]
1	Kullanım Becerisi	İnternet kullanmak çok karmaşık ve zordur. [a]

[a] Ters yönde puanlanmıştır.