

*Full Length Research Paper*

# Investigation of students' attitudes towards e-learning in terms of different variables—A case study in a technical and vocational high school for girls

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**This study aims at determining the attitudes towards e-learning among the students of technical and vocational high school for girls and examining them in terms of certain variables. Singular and relational survey methods were used. The sample consisted of 119 students of technical and vocational high school for girls. Data were collected through a paper based survey consisting of two parts. In the first part of the survey, there are fifteen items about personal and demographic information of the students. In the second part, there is a scale examining the attitudes towards e-learning. Data were analyzed in SPSS-21 by means of percent, frequency, mean, mode, median, t-test and One Way ANOVA analysis. The results showed that there were not significant differences between the attitudes of students of technical and vocational high school for girls towards e-learning with respect to gender, experience in the use of computers, frequency of using internet and motivation style. One Way ANOVA Analysis indicated that way of learning, way of the studying and learning methods had significant impacts on the students' attitudes towards e-learning.**

**Key words:** e-learning, attitude, students of technical and vocational high school for girls.

## INTRODUCTION

With rapid development and widespread use of e-mail, social networks, electronic books, chat rooms, web conferences, interactive multimedia applications and internet technologies, internet came into use as educational environment (Yamamoto et al., 2010; Yapıcı and Akbayın, 2012). This new learning environment has been accompanied by such concepts as online learning, distance learning and e-learning. The concept of e-learning covers numerous processes and applications including computer-based learning, web-based learning, virtual classes and digital cooperation. Therefore, e-

learning is today accepted as an umbrella concept and refers to trainings based on electronic tools/media (Haznedar, 2012). When internet has become capable of serving people in all parts of daily life, its use in the field of education has also become more probable. Currently, internet is on the point of becoming an indispensable element for educators. In general terms, widespread use of computers and internet led to recognition of technology in education (Yalman et al., 2013). Teaching materials enriched with the use of technology as a teaching tool have become increasingly more widespread and have

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been accepted as a part of education and even a reason of preference (Keşan and Kaya, 2007; Yalman et al., 2013). One of the most important factors affecting effective and efficient use of technology in education is the attitudes of teachers and students (Köse and Gezer, 2006; Liaw et al., 2007). In general, attitude is a prejudiced reaction that an individual displays towards a certain object. Attitude can be developed positively by organising appropriate learning environments in individuals (Yapıcı and Akbayın, 2012).

With the advancement of technology, it has become possible for everybody to learn anywhere. Reaching individuals at long distances with advanced technologies and solving education requirements practically have made the process of distance education popular throughout the world (Yamamoto et al., 2011). Owing to increasing distance education demands and technological advancements, e-learning has gained ever-increasing prominence. According to Gülbahar (2009), e-learning is to carry out teaching activities in the electronic environments by ensuring access to information time- and space-independently and establishing interaction with multimedia applications via information and communication technologies and such local and wide area networks as internet and intranet.

Zhu (2009) emphasizes that the learner and the teacher are two important actors in e-learning environments. Understanding student characteristics is especially crucial when e-learning is implemented. Previous research focus on as having an impact of students' adoption and use of computers (Kennedy et al., 2008; Zeng, 2011; Mac Callum, 2014) and students' attitudes to computer use and learning with a computer (Bouhnik and Marcus, 2006; Liaw, 2008; Yanık, 2010; Buabeng-Andoh, 2012). According to Zhu (2009), research has found that based on certain characteristics such as age, background, computing ability, computing attitude and motivation all have an impact on the likeness of students using a computer to support their studies. Therefore this study will look at some of these variables and characteristics in terms of e-learning attitudes.

As to the student variables, we focus on examining students' characteristics related to gender, motivation type, way of the learning, way of studying, learning methods, frequency of using internet and experience in using computer. In literature, there is a lack of studies with design of students' individual differences such as motivation type, way of the learning, way of studying. This study responds to this gap in the literature.

## **THEORETICAL BACKGROUND AND RESEARCH QUESTIONS**

According to Moore, Dickson-Deane and Galyen (2011), the origin of the term of e-learning is not certain although it is suggested that it most likely originated during 1980s

within the similar time frame of another delivery mode online learning. E-learning not only covers content and instructional methods delivered via CD-ROM, the Internet or an Intranet but also includes audio- and videotape, satellite broadcast and interactive TV (Moore et al., 2011; Benson et al., 2002; Clark, 2002). When literature is examined, e-learning can be defined as a learning and teaching method where education environments can be established without time and space limits and students learn at their own paces simultaneously or non-simultaneously by using information and communication technologies (ICTs) (Haznedar, 2012; Horton, 2001; Gülbahar, 2009; 2001; Khan, 2005; Urdan and Weggen, 2000). Advances in information technology and new developments in learning science provide opportunities to create well-designed, learner-centred, engaging, interactive, affordable, efficient, easily accessible, flexible, meaningful, distributed and facilitated e-learning environments (Khan, 2001). Hall (2001) notes that e-learning is the fastest-growing and most promising market in the education industry.

Panda and Mishra (2007) point out that a large amount of literature exists on e-learning covering technical features, pedagogical processes, advantages, and problems associated with designing web-based courses. Some of the studies related to faculty and students' attitude towards learning, and barriers to participate in it (Keller and Cernerud, 2002; Drennam et al., 2005; Graff, 2003; Jamlan, 2004; Nawaz and Kundi, 2011a). Then, many published articles focused on analyses of the identifying and analyzing the factors which aimed to predict or explain why faculty adopt (or do not adopt) to different forms of web-based Technologies (Huang and Hsia, 2009; Alebaikan and Troudi, 2010; Panda and Mishra, 2007; Yu et al., 2010). Some researchers are interested in formulating an e-learning model (Shutimarrungson et al., 2014; Nawaz and Kundi, 2010; Nawaz, 2012; Nawaz et al., 2011b). Labach (2011) emphasised that a systematic search of the literature identified at least 39 articles published between 2006 and 2010 with a focus on the impact of web-based learning technologies on academic faculty in higher education settings.

It is seen that e-learning is commonly addressed in the literature. In the studies related to e-learning, such topics as factors affecting student satisfaction in e-learning (Kantoğlu et al., 2013; Gülbahar, 2012; Palmer and Holt, 2009; Işık, 2008; Ilgaz, 2008; Shin, 2002), factors affecting success, preparedness in e-learning (Gülbahar, 2012; Shraim and Khlaif, 2010), success (Güngör and Aşkar, 2004), family support (Chu and Chu, 2010), seniority (Ağır, 2007), intrinsic and extrinsic motives (Yoo et al., 2012) and continuation in e-learning (Levy, 2007) were examined. Besides, researches on attitudes towards e-learning (Yıldız, 2011, Haznedar, 2012; Çiftçi et al., 2010; Richardson, 2007; Özgür and Tosun, 2010; Dikbaş, 2006; Ağır, 2007) were carried out. These studies mainly

determined the levels of attitudes towards e-learning and examined them in terms of gender and class level. According to Haznedar (2012), e-learning and attitude were not examined in terms of different personal characteristics in any of these studies. In the present study, the attitude towards e-learning was examined by different personal characteristics of the students such as gender, department, class level, experience in using computer, frequency of using internet, learning method, way of studying and motivation type. There are only a limited number of studies examining the attitude levels in terms of demographical attributes (Haznedar, 2012; Tekinarslan, 2008). Therefore, it is thought that the present study will contribute to meeting this deficiency in the literature. In this regard, the following research questions were asked:

1. What are the distributions of students of vocational and technical high school for girls in terms of gender, experience in using computer, frequency of using internet, learning method, way of studying, way of learning and motivation type?
2. What are the attitudes towards e-learning among the students of vocational and technical high school for girls?
3. Do the attitudes towards e-learning vary significantly among the students of Vocational and Technical High School for Nurses by: (a) gender; (b) Motivation type; (c) way of the learning; (d) way of studying; (e) learning methods; (f) frequency of using internet; (g) experience in using computer ?

## METHOD

### Research model

In this study, singular and relational survey methods were used. Singular survey method was used to determine the students' attitudes towards e-learning. Singular survey method focuses the research on a single variable and examines its change in a moment or in a period (Karasar, 2007). The other was used to indicate the relationship between some variables and attitudes towards e-learning. Relational survey method is generally used to determine interactions between several variables (Şimşek, 2010).

### Data collection tool

Data collection tool consists of two parts in the present study. While the first part includes 15 items on demographic information that will reveal students' personal characteristics and status of using information and communication technologies while the second part is the scale that Haznedar developed by adapting certain items of the attitude scale towards e-learning developed by Wilkinson et al. (2010) as an up-to-date scale which is more suitable for the conditions of our country.

The second part, which is the Scale of Attitude towards E-learning, consists of 20 items. 5-point likert type ranking, commonly used by the researchers, was preferred for the answers to be given to the items. Accordingly, the answers might be "Strongly Disagree (1)", "Disagree (2)", "Undecided (3)", "Agree (4)" and "Strongly Agree (5)".

Scale of attitude towards e-learning has a single dimension. The

reliability coefficient of this scale is  $\alpha = 0,935$ . Since the scale is composed of 20 items, the highest score to be obtained from the scale is 100 while the lowest score is 20 (Haznedar, 2012).

### Participants

Research was conducted with 119 students studying in the Vocational and Technical High School for Girls. 83 of these students (69.7%) were female while 36 (30.3 %) of them were male.

## FINDINGS

### Measures of central tendency and variability

Measures of central tendency and variability of the scores of e-learning attitudes are given in Table 1. The lowest score obtained from the "Scale of Attitudes towards E-learning" was 22 while the highest score was 100. The mean of the scores is 70.6. This result shows that general attitudes of the students studying at the Vocational and Technical High School for Girls towards e-learning correspond to 3.53 in the 5-point likert type scale; in other words, they "agree".

### Analysis of the Data

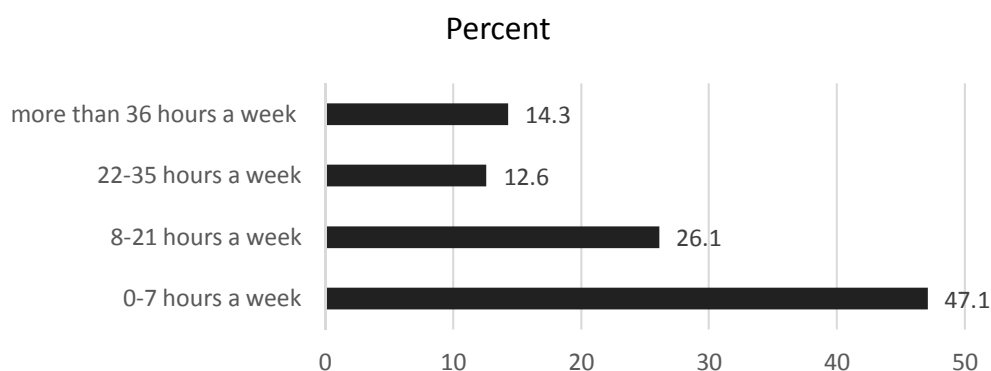
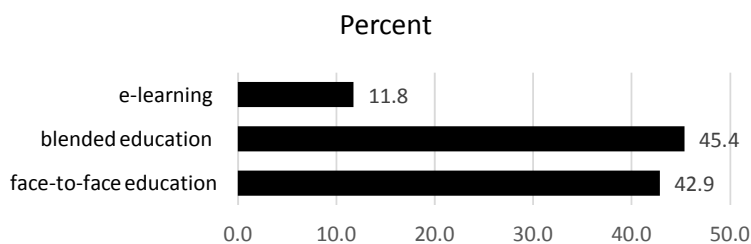
Numeric data obtained through data collection tools were coded and transferred into computer through SPSS 21.0 package program and analyses based on sub-problems were made. In the analysis of the demographic data, such descriptive statistics as frequency, percentage distribution and cross tabling were used. Kolmogorov-Smirnov test was conducted in order to determine the tests to be applied with the aim of examining the students' attitudes towards e-learning in terms of various variables and suitability of the scores to the normality was tested. p value calculated in Kolmogorov-Smirnov test of normality at the end of the test made for the e-learning attitude scores was found to be higher than .05 and it was determined that scores showed normal distribution. Since scores showed excessive deviation from normal distribution, t-test and variance analysis, which are parametric tests, were carried out to examine the impact of diverse variables on the attitudes towards e-learning. Independent Samples t-test was employed to compare two groups while One Way Anova was used to compare more than two groups.

### Descriptive Statistics Related to Demographic Attributes

Within the scope of the demographic attributes of the participating students, the experience of computer use, frequency of using the Internet, learning method, way of studying, way of learning, and type of motivation were examined. The percentage distributions of the demographic

**Table 1.** Descriptive statistics related to the scale of attitudes towards e-learning.

Units	Value
Mean	70.6
Median	72
Mod	62
Standard Deviation	1.48
Coefficient of Skewness (CS) and CS Standard Error	-.468 .222
Coefficient of Kurtosis (CK) and CK Standard Error	.404 .440
Range	78
Minimum	22
Maximum	100

**Figure 1.** Distribution of the participants' frequencies of using the Internet.**Figure 2.** Distribution of the participants by the learning method.

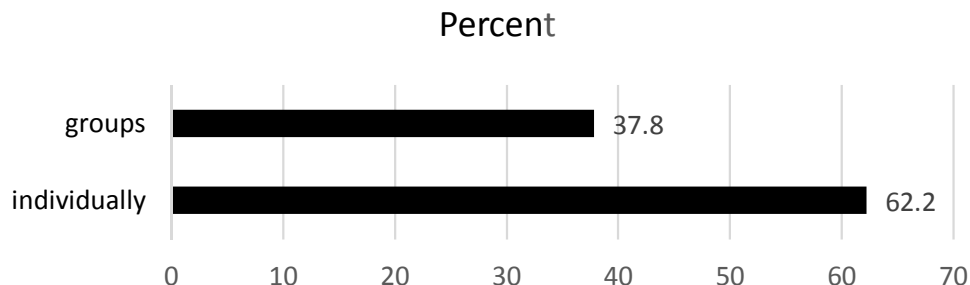
attributes of the participating students were presented in graphs.

According to the data concerning the students' frequency of using the Internet, 47.1% of them ( $N = 56$ ) use the Internet for 0-7 h a week, 26.1% of them ( $N = 31$ ) use the Internet for 8-21 h a week, 12.6% of them ( $N = 15$ ) use the Internet for 22-35 h a week, and 14.3% of them ( $N = 17$ ) use the Internet for more than 36 h a week (Figure 1).

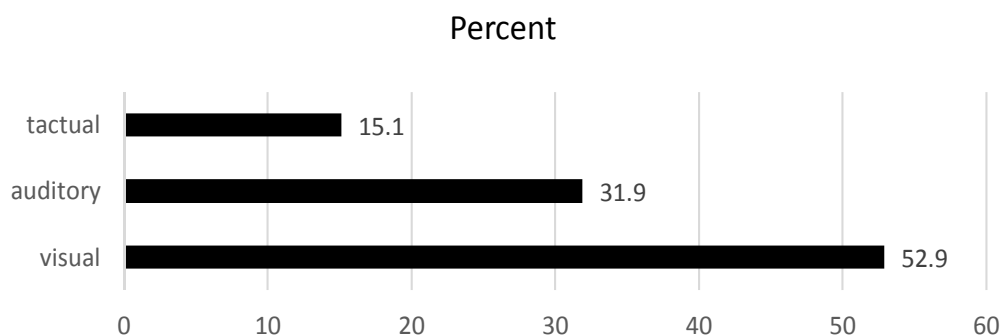
As for the learning methods, 42.9% ( $N = 51$ ) of the

students prefer face-to-face education, 45.4% ( $N = 54$ ) prefer blended education (face-to-face + e-learning), while 11.8% ( $N = 14$ ) prefer e-learning (Figure 2).

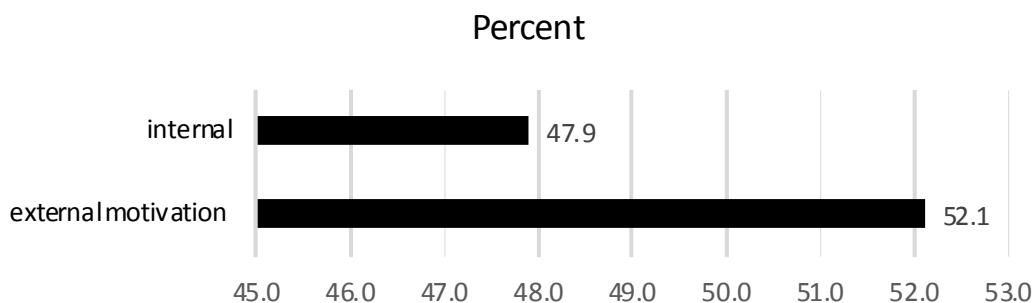
In terms of way of studying, 62.2% ( $N = 74$ ) of the students prefer studying individually while 37.8% ( $N = 45$ ) of them prefer studying in groups (Figure 3). As for the way of learning, 52.9% ( $N = 63$ ) stated that they better learn with visual aids while 31.9% ( $N = 38$ ) of them found auditory aids more useful and 15.1% ( $N = 18$ ) of them find tactual aids more useful (Figure 4). As to the



**Figure 3.** Distribution of the participants by the way of studying.



**Figure 4.** Distribution of the participants by the way of learning.



**Figure 5.** Distribution of the participants by the type of motivation.

types of motivation, 52.1% ( $N = 62$ ) have external motivation while 47.9% ( $N = 57$ ) of them have internal motivation (Figure 5).

### Effects of certain variables on attitudes towards e-learning

#### Gender

Independent samples t-test was carried out to determine whether attitudes towards e-learning among the students

of vocational and technical high school for girls varied by gender. Prior to the analysis, the assumption of equity of variances was tested. At the end of Levene Test carried out ( $p=.356$ ,  $p>.05$ ), it was determined that variances distributed homogeneously. The results obtained are given in Table 2.

When the results of the analysis related to the variable of gender are examined, it is seen that mean scores of female students in relation to e-learning ( $x= 70.97$ ) are higher than those of the male students ( $x=70.42$ ). However, difference between the mean scores was not found to be statistically significant ( $t(117)= .170$ ,  $p > 0.05$ ,

**Table 2.** Effect of gender on attitudes towards e-learning.

Gender	N	$\bar{x}$	Sd	t	df	p
Female	36	70.9722	18.39485	.170*	117	.866
Male	83	70.4217	15.25964			

\* Effect size was calculated as 0.16

**Table 3.** Effect of motivation type on attitudes towards e-learning.

Motivation type	N	$\bar{x}$	Sd	t	df	p
Extrinsic Motivator	62	73.3387	15.74171	1.955*	117	.053
Intrinsic Motivator	57	67.5965	16.28415			

\* Effect size was calculated as 0.18

**Table 4.** Effect of way of learning on attitudes towards e-learning.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Between Groups	5390.793	2	2695.397	12.235**	.000	*1-2; *2-3
Within Groups	25554.030	116	220.293			
Total	30944.824	118				

\*1= Visual, 2 = Auditory, 3 = Tactual/Kinaesthetic. \*\* Effect size was calculated as 0.42.

$r = 0.16$ ). In other words, Independent Samples t-test showed that independent variable of gender did not significantly affect attitudes towards e-learning. As a consequence, it was accepted that mean scores of the groups did not differ by the variable of gender.

### Motivation type

Independent Samples t-test was carried out to determine whether attitudes towards e-learning among the students of Vocational and Technical High School for Girls varied by motivation type. Prior to the analysis, the assumption of equity of variances was tested. At the end of Levene Test carried out ( $p = .741$ ,  $p > .05$ ), it was determined that variances were distributed homogeneously. The results obtained are given in Table 3.

Mean scores of the students with extrinsic motivators ( $\bar{x} = 73.3$ ) are higher than those of the students with intrinsic motivators ( $\bar{x} = 67.59$ ). However, this difference is not statistically ( $t(117) = 1.955$ ,  $p > 0.05$ ,  $r = 0.18$ ). This finding may imply that attitudes of the students studying in the Vocational and Technical High School for Girls did not differ statistically significantly by the variable of motivation type. As a conclusion, it was accepted that mean scores of the groups did not vary by motivation type.

### Way of learning

One Way Anova was carried out to determine the

differences based on the way of learning and results are presented in Table 4. When these results are examined, it is seen that attitudes of students studying in the Vocational and Technical High School for Girls did not differ significantly by way of learning ( $F(2,116) = 12.235$ ,  $p = 0.00$ ).

Mean scores of the participants preferring visual learning, auditory learning and tactual/kinaesthetic learning in relation to their attitudes towards e-learning were found to be  $\bar{x} = 74.86$ ,  $\bar{x} = 60.79$  and  $\bar{x} = 76.33$  respectively. It is seen that students preferring tactual/kinaesthetic learning as the way of learning have the highest mean scores. This finding may imply that there are significant differences between ways of learning and their attitudes towards e-learning. Post Hoc test was carried out to detect between which groups this difference existed. Accordingly, it was understood that there were significant differences between 1 (visual) and 2 (auditory) and 2 (auditory) and 3 (tactual/kinaesthetic) (Table 4).

As a result, One Way Anova determined that way of learning had significant effect on the attitudes towards e-learning. In other words, it was accepted that mean scores of the groups differed by the way of learning.

### Way of studying

Independent Samples t-test was employed to determine whether way of studying affects attitudes towards e-learning. Prior to the analysis, the assumption of equity of

**Table 5.** Effect of way of studying on attitudes towards e-learning.

Way of studying	N	$\bar{x}$	Sd	t	df	p
Individual	74	68.3649	18.10515	-2.149*	116.489	.034
Group	45	74.2444	11.72440			

\* Effect size was calculated as 0.22.

**Table 6.** Effect of learning method on attitudes towards e-learning.

Source of variance	Sum of squares	df	Mean square	F	p	Significant difference
Between Groups	6095.768	2	3047.884	14.228**	.000	*1-2; *1-3
Within Groups	24849.056	116	214.216			
Total	30944.824	118				

\*1=Face-to-face education, 2= Blended education, 3= E-learning; \*\* Effect size was calculated as 0.44.

variances was tested. At the end of Levene test conducted ( $p=.006$ ,  $p<.05$ ), it was determined that variances did not distribute homogeneously and results are presented in Table 5. Results were also controlled through non-parametric tests.

Mean scores of the participants preferring to study individually in relation to the attitudes towards e-learning ( $\bar{x} = 68.37$ ) are lower than the mean scores of the participants preferring to study in groups  $\bar{x} = 74.24$ . When the results of the analysis based on way of studying are examined (Table 7), it is seen that attitudes of the students did not differ significantly by the variable of way of studying ( $t(53)=-1.670$ ,  $p>.05$ ,  $r=0.22$ ). As a result, it was accepted that mean scores of the groups did not vary by the way of studying.

### Learning method

Results of the analysis based on the variable of learning method are presented in Table 6. Prior to the analysis, the assumption of equity of variances was tested. At the end of Levene test conducted, it was determined that variances distributed homogeneously for ( $p=.081$ ,  $p>.05$ ).

Mean score of the students preferring face-to-face learning method is  $\bar{x} = 62.54$  while mean scores of the students preferring blended learning method and e-learning are  $\bar{x} = 75.50$  and  $\bar{x} = 80.93$ , respectively. This finding may imply that there is a significant difference between learning methods and attitudes of the students of the Vocational and Technical High School for Girls ( $F(2,116) = 14.228$ ,  $p=0.00$ ). Post Hoc test was carried out to determine between which groups this significant difference existed.

Accordingly, it was understood that there were significant differences between 1 (face-to-face education) and 2 (blended education) and 1 (face-to-face education) and 3 (e-learning) (Table 6). As a result, it was accepted that mean scores of the groups differed by the learning

method.

### Frequency of using internet

One Way Anova Analysis was carried out in order to determine the differences based on the frequency of using internet. Prior to One Way Anova, the assumption of the equity of variances was tested. At the end of Levene test conducted, it was determined that variances distributed homogeneously for ( $p=.489$ ,  $p>.05$ ). Results of the analysis are presented in Table 7.

Mean score of the students studying in the Vocational and Technical High School for Girls using internet for 0-7 h a week is  $\bar{x} = 72.79$  while that of the students using internet for 8-21 h a week is  $\bar{x} = 71.58$ . Whereas the mean score of the students of the Vocational and Technical High School for Girls using internet for 22-35 h a week is  $\bar{x} = 65.33$ , that of the students using internet for more than 36 h is  $\bar{x} = 68.18$ . The participants using internet for 0-7 h a week had the highest mean score. As a result, One Way Anova indicated that frequency of using internet did not have a significant effect on the e-learning attitudes of the students of the Vocational and Technical High School for Girls. In other words, it was accepted that mean scores did not differ by the variable of frequency of using internet.

### Experience in using computer

One Way Anova Analysis was conducted in order to determine the differences based on the experience in using computer. Prior to the One Way Anova Analysis, the assumption of equity of variances was tested. At the end of Levene test conducted, it was determined that variances distributed homogeneously for ( $p=.427$ ,  $p>.05$ ). Results of the analysis are presented in Table 8.

When the analysis results are examined (Table 8), it is

**Table 7.** Effect of frequency of using internet on attitudes towards e-learning.

Source of variance	Sum of squares	df	Mean square	F	p
Between groups	1046.043	3	348.681	1.341**	.265
Within groups	29898.781	115	259.989		
Total	30944.824	118			

\*1= 0-7 h a week, 2= 8-21 h a week, 3= 22-35 h a week, 4= more than 36 h a week; \*\*Effect size was calculated as 0.18.

**Table 8.** Effect of experience in using computer on attitudes towards e-learning.

Source of variance	Sum of squares	df	Mean square	F	p
Between Groups	632.522	4	158.131	0.595**	.667
Within Groups	30312.301	114	265.897		
Total	30944.824	118			

\*1=Less than 1 year, 2=1-3 Years, 3=4-5 Years, 4=6-7 Years, 5=More than 7 years. \*\*Effect size was calculated as 0.14.

seen that attitudes of the students towards e-learning do not vary significantly by experience in using computer ( $F(4,114) = 0.595$ ,  $p=0.667$ ). Mean score of the students having experience for less than 1 year in relation to their attitudes towards e-learning is  $\bar{x} = 70.33$  while that of the students having experience for 1-3 years is  $\bar{x} = 65.94$ . Whereas the mean score of the students having experience in using computer for 4-5 years is  $\bar{x} = 72.89$ , that of the students having experience in using computer for 6-7 years is  $\bar{x} = 71.50$ . The mean score of the students having experience in using computer for more than 7 years is  $\bar{x} = 69.17$ . This finding may imply that there are not significant differences between students' attitudes towards e-learning and their levels of experience in using computer (Table 8). As a consequence, it was accepted that mean scores of the groups did not differ by the experience in using computer.

## CONCLUSION, DISCUSSION AND RECOMMENDATIONS

According to the results of the analysis made with the students of the Vocational and Technical High School for Girls, students' attitudes towards e-learning correspond to 3.53 in the 5-point likert type scale and, in other words, they "agree" with the items. This shows that attitudes of the students towards e-learning are positively at a good level. This result shows parallelism with some of the studies in the literature. In the study conducted by Tekinarslan (2008) with 804 university students, it was reported that they generally had positive attitudes towards e-learning and enjoyed learning in such an environment. In the study conducted with 47 pre-service teachers, Dikbaş (2006) found the mean score of the

attitudes of the participants as 3.80, which is the indicator of a positive attitude. This result is also supported by the studies conducted by Liaw et al. (2007) in order to examine the attitudes of students towards e-learning. In the study carried out by Özgür and Tosun (2010) with a sample of 200 students, differently from the present study, attitudes of the students towards e-learning were assessed after a lesson was taught in the e-learning environment and it was seen that students had more positive attitudes. According to Haznedar (2012), in the researches on attitudes towards e-learning, attitudes of the students who had received distance education or education through e-learning method were assessed after the participation in order to evaluate the programme. In this case, it will be necessary to reorganise the programme in line with the attitudes of the students. This, in turn, will lead to time and money loss. Therefore, it is of great importance to determine the attitudes before designing the e-learning programme.

This study reveals that the students of the Vocational and Technical High School for Girls towards e-learning are positively at a good level. The study does not support the findings of some studies on positive attitudes in literature. In a study conducted by Durmuş and Kaya (2011) on 104 preservice teachers studying in the Department of Computer and Instructional Technologies Teaching, mean score of the participants in relation to their attitudes towards distance education was calculated as 3.32, which is an indicator of an undecided opinion among the preservice teachers. Likewise, examining the attitudes of 129 preservice computer teachers towards distance education, Ateş and Altun (2008) found the mean score as 3.26, which refers to indecision. In the study conducted by Şimşek et al. (2010) on 56 students, their attitudes towards distance education were assessed



and the mean score was found to be 3.27, which means a moderate level of attitude. In the comprehensive study conducted by Haznedar (2012) on 2949 students in total from the Faculty of Education, Maritime Faculty, Faculty of Science, Faculty of Letters, Faculty of Fine Arts, Faculty of Law, Faculty of Economics and Administrative Sciences, Faculty of Management, Faculty of Engineering, Faculty of Medicine and Faculty of Nursing, the mean score was found to be 3.13, which corresponds to the alternative of “undecided”.

The results obtained in this study indicate that there were no significant differences between the variable of gender and attitudes of the students from the technical and vocational high school for girls. This result shows similarity to the study in the literature (Ağır, 2007; Tekinarslan, 2008). In the study by Durmuş and Kaya (2011), on 104 preservice computer teachers, it was reported that attitudes towards distance education did not differ significantly by gender. Examining the attitudes of the preservice computer teachers, Ayşe and Altun (2008) determined that gender was not a predictive variable on attitude. In the study conducted by Şimşek et al. (2010), it was reported that attitudes of the students towards distance education did not differ significantly by gender. However, according to the study of Haznedar (2012) conducted with a large sample, attitudes differ by gender. In the analysis made by Dikbaş (2006), mean score of the female students was found to be higher than that of the male students. Likewise, Richardson (2007) found there were significant differences between the attitudes of the participants and the gender.

It was determined that the variable of motivation type did not lead to significant differences in the attitudes of the students from the technical and vocational high school for girls. This finding shows there is no similarity to the study in the literature. Haznedar (2012) determined in the study conducted with the participation of a vast number of university students that attitudes of the students towards e-learning differed significantly by motivation type. In the literature, there are a limited number of studies examining the impacts of such variables as motivation. In literature exists on extrinsic and intrinsic motivators. Yoo et al. (2012) determined that intrinsic motivators (effort expectancy, attitudes, and anxiety) affected employees' intention to use e-learning in the workplace more strongly than did the extrinsic motivators (performance expectancy, social influence, and facilitating conditions). Likewise, Schifter (2000) 'concern about faculty workload' was the top barrier to use e-learning, while 'personal motivation to use technology' was the top motivating factor.

Another important finding is that attitudes of the students from the technical and vocational high school for girls towards e-learning differed significantly “way of studying”, “way of learning” and “learning method”. This finding shows similarity to the results of Haznedar (2012) with university students, attitudes of the university students towards e-learning. As stated by Swan (2004)

specific learner characteristics (i.e. high motivation, high self-efficacy, mature epistemological beliefs) and particular learning styles (i.e. visual, independent.) that are more supportive of learning online than are other learner characteristics and learning styles. In the literature, there are many studies on impacts of learning styles (Federico, 2000; Manochehr, 2006; McNutt and Brennan, 2005; Şahin, 2008; Rakap, 2010). In the literature, there are a limited number of studies examining the impacts of such variables as way of studying, way of learning and learning method.

The study revealed that the variable of frequency of using internet and experience in using computer did not lead to significant differences in the attitudes of the students towards e-learning. This was not an expected result according to the literature. As stated by Ateş and Altun (2008), there were significant differences between the variable of experience in using computer and attitudes of the students. Similar to the study by Haznedar (2012), attitudes of the students towards e-learning differed significantly by frequency of using internet. Likewise, Panda and Mishra (2007) suggest that extensive use of computers and email has a high relationship with positive attitudes towards e-learning. However, the study supported the findings of Haznedar (2012) on experience in using computer.

Therefore, it is recommended that learning methods and ways of learning preferred by the students should be taken into consideration while developing the e-learning environments. Besides, different studies should be conducted on this subject matter and the variables to be considered while developing the e-learning environments should be determined.

## IMPLICATIONS AND LIMITATIONS

Overall based on these results there seems to be no difference between the attitudes of students of technical and vocational high school for girls towards e-learning with respect to gender, experience in the use of computers, frequency of using internet and motivation style. The result shows that way of learning, way of the studying and learning methods had significant impacts on the students' attitudes towards e-learning. At the empirical level, the current findings are helpful to support the instructional design of e-learning environments in view of student' differences in learning.

The research was limited by small sample. However, due to the small sample size it is not possible to conclusively prove or disprove any perceived relationship. Therefore, based on the observed results a larger more comprehensive survey is needed.

## Conflict of Interests

The author has not declared any conflict of interests.

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