

Exploring University Students' Level Of Online Learning Acceptance

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Abstract

Problem Statement: The students' adoption process of online learning environments is important for the quality and success of learning. Studying students' levels of online learning acceptance in terms of gender, education level, and study field and examine the differences which can occur as a result of the variables such as gender, education level and field is important for creating and designing the online learning environments by higher education institutions.

Purpose of Study: The purpose of study is to examine the level of online learning acceptance of university students studying in university by using online learning systems in terms of their gender, education level and study field.

Methods: This research is a descriptive study employing a survey model. The sampling group of the research comprises 1416 university students studying in associate and undergraduate degree programs in Karadeniz Technical University. The participants attending the study continue at least two courses of undergraduate program during two academic terms by using distance learning systems. In the study, the questionnaire devel-

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oped by Lee (2000) was adapted to Turkish. The validity and reliability studies of the survey were conducted with a large group. The data were gathered via the survey.

Results: The results of this study showed that differences in terms of gender and education level emerged in the mean scores of online learning acceptance of students significantly. Male students scored significantly higher than female students on online learning acceptance. Undergraduate students also scored significantly higher than associate students on online learning acceptance. There were significant differences among the students' online learning acceptance in terms of study field. The students studying in Natural Sciences scored significantly higher than other students on online learning acceptance.

Conclusions: The results of the study showed that **university students'** level of online learning acceptance differs greatly in terms of their genders, education levels and study field.

Keywords: distance learning, adoption, online learning acceptance, technology acceptance

Much and more qualified information is needed to keep pace with the developing technology of day. The cost, supply and demand, instruments and instructor problems that are faced at university level and constantly change and development of education system as a result of technology are required to use of new technology, method, technique, information and instruments in education.

Online education is a method that universities can apply due to lack of staff and meeting their education requirement in some certain fields. Many studies show that observation and examination of instructors and learners during learning process are required to create better web based training environment. In his study, Saettler (1990) claims that constantly development of technology changes learning methods, and thus learning environments should be changed. According to Schuemer, distance learning environments are more complex than traditional ones, and there are many reasons of that (Schuemer, 2003). Ward and Newlands state that studies are generally made about the effectiveness of web based online education, but the perception of students and cognitive situation of them during learning process are not examined in web based distance education systems (Ward & Newlands, 1998). Therefore, the purpose of study is to examine the level of online learning acceptance of university students studying at university by using these systems in terms of their genders, education levels and study field.

A new learning environment requires adaptation psychologically; human behaviors are in tendency to respond new environments and different situations (Schmeck & Geisler-Bernstein, 1989). This situation creates a need for developing new learning styles and adopting new learning environments for students. According to Ramsden (1988), new learning styles that students develop in new learning

environments and adoption level of them affect their achievement. However, new technology, interaction, and studying independently from time and space and learning structures that students face in web based learning environments requires the **examination of students' adoption process of new environments and there are various factors that affect this process.**

The students' adoption process of online learning environments is important for the quality and success of learning. Information and Communication Technologies just provide us instrument for educational attainment. The effective use and adoption of these instruments by students is required to gain meaning of them (Kirkwood & Price, 2006).

Technology Acceptance Model asserted by Davis in 1989 was created to find out **individuals' acceptance level of information technology (Davis, 1999).** Technology Acceptance Model examines the effect of exterior factors in environments that computer-assisted technology are used upon interior factors belonging to individual, attitude and individual purposes by regarding cognitive and affective domains (Davis, Bagozzi & Warshaw, 1992; Pituch & Lee, 2006). If we look at from the larger point of view, Technology Acceptance Model is an assessment instrument created specifically to assess the use of innovative technologies that strength and validity is experimentally confirmed. The scale used in this study is developed by taking Technology Acceptance Model as a reference. Kirkwood and Price state that students meeting e-learning environments newly try to adapt changing learning environment with their beliefs, habits and experiences and they have no enough information about effective use of e-learning environment and used technology applications and factors affecting the use of these technologies (Kirkwood & Price, 2006).

Application of technology in educational environment is related to what kind of technology is used and when these technologies are used. For example: a student can decide whether he/she will use e-learning in his/her studies or use technology just for learning without any academic expectation. As a result, it can be concluded that the success of any technological innovation such as e-learning is directly related to the desire and adoption of students who use these technologies. It is of utmost importance to design the factors which are interrelated and prominent in the process of adopting the innovations in the field of education and affect the application most, in terms of the adoption by individuals and providing integration both to the process and the system. Regarding the web technologies, it is observed in the studies that there are significant differences terms of confidence level, attitudes towards technology, and the application of information and system (Farnko et al., 2006).

The wide spread usage of online learning environments affect the students **all around the world and researching and analyzing the factors which affect students' learning** has become important. In addition to this, with the integration of internet technologies into study field, a shift from teacher centered education to student centered education has occurred (Fotos & Browne, 2004). **Regarding this fact, students' level of online learning acceptance and using online learning environments is an important issue which has to be investigated.** This study aims to contribute to the recent

literature by studying students' levels of online learning acceptance in terms of gender, education level, and study field and it is assumed that it can provide an opportunity to examine the differences which can occur as a result of the variables such as gender, education level and field in creating and designing the online learning environments by higher education institutions.

Method

Research Design

This research is a descriptive study using survey model (Fraenkel & Wallen, 2008; Robson, 1997) which allows gathering data about a certain research problem in a short time from a sample group representing the population.

Sample

The participants of the study are 1416 university students studying in associate and undergraduate degree programs in Karadeniz Technical University. This study used stratified random sampling method to determine the sample (Fraenkel & Wallen, 2008). The participants are divided into groups of Educational Sciences, Natural Sciences, Medical Sciences, and Social Sciences according to their departments. Information about participants' genders, education levels and study fields is presented in Table 1.

Table 1

Demographic Information about the Participants

Qualification	Frequency (f)	Percentage (%)
Gender		
Male	731	51.6 %
Female	685	48.4 %
Education Level		
Associate degree	359	25.3 %
Undergraduate	1057	74.7 %
Study field		
Educational Sciences	365	34.5 %
Natural Sciences	410	38.8 %
Social Sciences	226	21.4 %
Medical Sciences	56	05.3 %

Participants attended or are still attending at least two of the courses "Ataturk's Principles and History of Turkish Revolution I-II", "Computer I", and "Turkish Language I-II" during the fall and spring semesters of 2011-2012 academic year. Within the relevant project, for each course subject, course materials including professionally designed lesson videos, books and digital content were provided to students via in-

ternet by using a password (it can be accessed via <http://uzem.ktu.edu.tr/ortakdrs/index.php>).



Figure 1. Asynchronous Course Environment and Open Course Materials

Via online web conference, participants were provided with simultaneous consultancy support. Within relevant web conference environment, written, oral, and visual communication between the lecturer and students could be established and digital information sharing could be carried out.

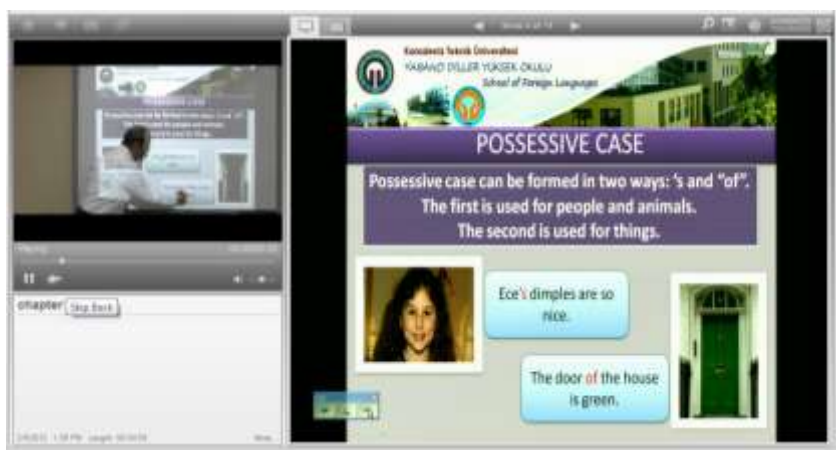


Figure 2. Simultaneous Consultancy Support and Live Lesson Environment

Research Instrument Development

At the beginning of the study, literature review about online learning adoption and e-learning acceptance issues were carried out in order to determine the data collection tool for answering the research question. As a result of literature review, us-

ing Lee's (2000) survey which was developed based on technology acceptance model, was related with the theory of diffusion of innovations, and was aimed at determining the acceptance and satisfaction about online learning systems was decided. Relevant survey was designed under four sections. It was stated that and the items about perceptions of ease of use and usefulness of online classes were taken from Technology Acceptance Model (Lee, 2000). As a result of exploratory factor analysis (EFA) done on relevant survey items, a reliable and valid four factor whose explained variance ratio was %76, perceived online education support service quality (3 item, $\alpha=.782$), perceived ease of use was (4 item, $\alpha=.931$), perceived usefulness was (5 item, $\alpha=.940$), and online learning acceptance and student satisfaction was (4 item, $\alpha=.914$) was reached. In this study, a data collection tool based on the items of three factors in the relevant survey except for "opinions about the quality of online learning support service" was developed.

In the beginning of developing scale process, relevant items in the survey developed by Lee (2000) were translated into Turkish by two expert lecturers. Then, for providing the content validity, Turkish form of scale was reviewed by 3 lecturers who work in the department of "Computer and Instructional Technology Education" and are expert in the field of e-learning. In addition to this, in order to test the comprehensibility of the items, a group meeting with 8 distance education students was held. After required corrections, a draft form was applied to 359 (%52.9 male, %47.1 female) distance learning students studying in Karadeniz Technical University.

Field (2005) states that a group of 300 respondents is enough for EFA. Based on the gathered data, item statistics and EFA (principal components analysis) were carried out. It was observed that Gathered Kaiser-Meyer Olkin value was perfect (.949), and Barlett test results were significant ($p=.000$). Relevant values providing the expected criteria revealed that the group was suitable for EFA (Hutcheson & Sofroniou, 1999). Factor reached by using EFA, component factor loadings, and significance values were presented in Table 2.

Analyzing the values in Table 2, it was determined that item factor loadings were above the acceptable criteria (.40) and a single factor emerged. Analyzing the relevant items, single factor titled "online learning acceptance" and including 13 items was reached following the theoretical basics about online learning acceptance. The scale was ranked by a Likert scale of 5 as in its original form: (1) strongly disagree - (5) strongly agree.

Table 2

EFA and Significance Analysis Results

Items	Rotated Factor Loadings
Online learning helps me do more efficient academic studies.	.891
Using online learning environments increases my productivity and helps me be more academically successful.	.887
In general, I am satisfied with attending courses via online learning.	.881
Online learning environments are more useful in completing my studies.	.875
Online learning environments help me improve academically.	.868
Using online learning environments help me learn faster.	.861
1- If I had been asked, I would have defined online distance learning as an ideal platform.	.844
I plan to use online learning for my future education and personal improvement.	.825
In online learning environments, I can understand everything clearly.	.817
I can use online learning environments easily for doing what I want.	.780
For me, being an experienced user in online education is quite easy.	.770
I may prefer online education for my post graduate education.	.758
I can easily use online learning environments.	.674
Eigenvalue	8.909
Explained Variance (%)	68.533
α	.964

It was concluded that the reliability coefficient of scale was high ($\alpha=.964$) and the total correlation values of items were between acceptable values (the lowest: .646 – the highest: .879). The survey was applied by transforming into online survey (GoogleDocs).

Data Analysis

Frequency gathered by the application of developed scale, was analyzed by PASW (Predictive Analytics SoftWare) by using descriptive statistical techniques such as mean and percentage and non parametric comparison tests. While deciding which test to apply for answering the research question, firstly whether the hypothesis of relevant test was answered or not was analyzed. As a result of Kolmogorov-Smirnov test which was applied to test the normality hypothesis, it was observed that data was normally distributed. The study used the One way ANOVA with Bonferroni and t test in addition to descriptive statistical techniques such as frequency, average and percentage. The data were analyzed using the statistics program PASW. The findings were tabulated and interpreted according to the research problems.

Ethics

The study was carried out within the frame of ethical rules (Fraenkel & Wallen, 2008). Before developing and applying "Online Learning Acceptance Scale", permission from Jung-Wan Lee developed the original form of scale, was received via e-mail. The scale was applied to volunteer participants. Participants were reassured about the study's confidentiality and gathered data would be used only for academic research purposes.

Results

In this study, it was aimed to analyze students of higher education in terms of their gender, education level and study fields. In many studies, higher education students' levels of technology acceptance (adoption) and e-learning were analyzed (Zemsky & Massy, 2004), and comparing the students' in terms of their gender and academic units appeared as a subject to be studied. The levels of online learning acceptance belonging to higher education students who participated in the study were demonstrated in Table 3.

Table 3

Levels of Online Learning Acceptance

Qualification		Frequency	Min.	Max.	M	SD
Gender	Male	731	1	5	2.859	.935
	Female	685	1	5	2.591	.820
Education Level	Associate degree	359	1	5	2.637	.875
	Undergraduate	1057	1	5	2.761	.895
Total		1416	1	5	2.729	.898
Study field (Undergraduate)	Educational Sciences	365	1	5	2.621	.828
	Natural Sciences	410	1	5	2.994	.958
	Social Sciences	226	1	5	2.584	.790
	Medical Sciences	56	1	5	2.681	.888

Analyzing the data in Table 3, it can be concluded that **male students' online learning acceptance levels were higher than female students', undergraduate students were more than associate students, and levels of online learning acceptance of students differed according to study fields.**

Table 4

The Results related to Education Levels

Group	N	M	SD	df	t	p
Associate degree	359	2.63	0.87	1414	-2,274	.023
Undergraduate	1057	2.76	0.89			

In Table 4, a significant difference between levels of online learning acceptance levels of associate and undergraduate students can be observed ($p < .05$). Associate students study for two years whereas this period changes between 4-6 years for undergraduate students.

In this study, shortness of higher education period emerged as a factor affecting online learning acceptance.

Table 5

t-test Results Related to Gender

Group	N	M	SD	df	t	p
Male	731	2.85	0.93	1414	5.733	.000
Female	685	2.59	0.82			

In Table 5, the results concerning participants' levels of online learning acceptance in terms of gender were presented. Analyzing these results, it can be observed that there is a statistically significant difference between male and female students ($p < .001$) as levels of online learning acceptance of male students ($M=2.85$) are higher than female students' ($M=2.59$).

Table 6.

ANOVA Results according to Study Fields

Group	N	M	Source of Variance	Sum of Squares	Df	F	p
Educational Sciences	365	2.621	Between Groups	36.906	3	16.002	.000
Natural Sciences	410	2.994					
Social Sciences	226	2.584	Within Groups	809.504	1053		
Medical Sciences	56	2.681					

In Table 6, it can be observed that there is statistically significant difference among levels of online learning acceptance in terms of study fields, $F(3,1053)=16.002$, $p < .001$. To obtain specific information on the differences among levels of online learning acceptance, Scheffe analysis in ANOVA was conducted. It was found that the level of online learning acceptance of the natural sciences students ($M=5.925$) is higher than that of the educational sciences students ($M=2.621$) and that of the social sciences students ($M=2.584$) significantly.

Discussion and Conclusion

One of the most important innovations in the field of education, which is online learning acceptance by higher education students in terms of gender and academic units (study fields) was analyzed and the results were presented with this study. Analyzing the online learning acceptance levels of the students who use online learning systems and individualizing these online learning systems according to the results would contribute to institution for constructing a consistent and functional online learning system (Davis, 1993).

With the developing internet technologies, educational institutions are eager to use online learning systems. If these institutions disregard individual differences in an isolated environment, they cannot guarantee the success (Rogers, 1995). Rogers in his study has acknowledged that institutions' desire in using new technology is effective in students' adopting technology and can lead to positive and negative results individually. He has also informed that institutions' disregarding individual differences in the application of new technologies can increase students' adoption to technology, yet it can lead to decrease in the quality of learning. In this study, differences in terms of gender, education level, and study field are observed among the students. Institutions using distance education in higher education should not disregard these differences and develop appropriate policies in order to succeed (Elgort, 2005).

As a result of the study, it was concluded that that students in the field of natural sciences have a higher level of online learning acceptance. In their study, Chen and

his colleagues have acknowledged that there can be difference between departments in terms of online learning adoption levels and this fact should be paid attention concerning students' success (Chen et al., 2007). In the study, it was determined that male students scored significantly higher than female students on online learning acceptance. In a study carried out by Arenas et al. (2010) in order to compare adoption to e-learning environment in terms of gender, a significant difference between male and female students was observed and male students' technology adoption levels in e-learning environment were higher.

To conclude, differences in terms of gender, education level, and study field are observed concerning the levels of online learning acceptance of higher education students. Higher education institutions planning to provide online education should pay attention to these differences while designing the learning environments which is specially suitable to education fields.

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Yükseköğrenim Öğrencilerinin Çevrimiçi Öğrenme Sistemlerini Benimseme Düzeylerinin İncelenmesi

Atıf:

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(Özet)

Problem Durumu: Çevrimiçi öğrenme ortamlarının yaygınlaşması tüm dünyadaki öğrencileri etkilemektedir. Çevrimiçi öğrenim gören yükseköğrenim öğrencilerinin öğrenmelerini etkileyen faktörleri araştırmak kritik bir önem kazanmıştır. Bu bağlamda öğrencilerin çevrimiçi öğrenmeyi benimseme ve ilgili ortamları kullanım düzeyleri araştırılması gereken bir konu olarak karşımıza çıkmaktadır. Bu çalışmanın yükseköğrenim öğrencilerinin çevrimiçi öğrenme benimseme düzeylerini cinsiyet, öğrenim düzeyi ve öğrenim gördükleri alan açısından inceleyerek ilgili literatüre katkı sağlayabilir. Ayrıca bu çalışma ile yükseköğrenim kurumlarınca kullanılacak ya da geliştirilecek çevrimiçi öğrenme ortamlarının tasarımında cinsiyet, öğrenim düzeyi ve öğrenim alanları değişkenlerinin oluşturabileceği farklılıkları inceleme fırsatı sunacağı umulmaktadır.

Araştırmanın Amacı: Çalışmanın amacı, çevrimiçi öğrenme sistemlerini kullanarak öğrenim gören yükseköğrenim öğrencilerinin çevrimiçi öğrenme benimseme düzeylerini cinsiyet, öğrenim düzeyleri ve öğrenim gördükleri alan açısından incelemektir.

Araştırmanın Yöntemi: Bu çalışma tarama yöntemi kullanılarak yürütülmüştür. Çalışmaya Karadeniz Teknik Üniversitesi'nde ön lisans ve lisans düzeyinde öğrenim gören toplam 1416 yükseköğrenim öğrencisi katılmıştır. Katılımcılar, öğrenim gördükleri bölümlerin alanlarına göre Eğitim Bilimleri, Doğa Bilimleri, Sağlık Bilimleri ve Sosyal Bilimler olmak üzere gruplandırılmıştır. Katılımcılar, 2011-2012 akademik yılı güz ve bahar dönemlerinde "Ortak Dersler" projesi kapsamında internet üzerinden yürütülen "Atatürk İlkeleri ve İnkılap Tarihi I-II", "Bilgisayar I", ve "Türk Dili I-II" derslerinden en az ikisini almıştır. İlgili proje kapsamında üretilen açık ders materyallerine (ders videoları, öğrenme nesnelere vb.) katılımcıların erişimine açılmış (<http://uzem.ktu.edu.tr/ortakdrs/index.php> adresinden erişilebilir) ve katılımcılara süreç içerisinde çevrimiçi web konferans çözümü aracılığıyla eşzamanlı danışmanlık desteği sunulmuştur. Bu çalışmada, çevrimiçi öğrenme sistemlerine ilişkin kabul ve memnuniyeti belirlemeye yönelik Lee (2010)'un geliştirdiği anket, Türkçe'ye uyum, geçerlik ve güvenilirlik çalışmaları yapılmıştır. İlgili çalışmalar ile ulaşılan 13 maddeden oluşan tek faktörlü (Çevrimiçi Öğrenme Benimseme Ölçeği) yapıya sahip anket, veri toplamak amacıyla bu çalışmada kullanılmıştır.

Araştırmanın Bulguları: Veri analizleri sonucunda elde edilen bulgular; yükseköğrenim öğrencilerinin çevrimiçi öğrenme benimseme düzeylerinin cinsiyet, öğrenim düzeyleri ve öğrenim gördükleri alan açısından anlamlı farklılık gösterdiği belirlenmiştir. Erkek öğrencilerin kız öğrencilerden, lisans düzeyindeki öğrencilerin ön lisans düzeyindeki öğrencilerden ve Fen Bilimleri alanında öğrenim gören öğrencile-

rin diđer lisans öğrencilerinden daha yüksek çevrimiçi öğrenme benimseme düzeyine sahip olduğu belirlenmiştir.

Araştırmanın Sonuç ve Önerileri: Yükseköğrenim öğrencilerinin çevrimiçi öğrenme benimseme düzeyleri arasında cinsiyet, öğrenim düzeyi ve öğrenim gördükleri alan açısından farklılıklar olduğu belirlenmiştir. Çevrimiçi öğrenme ortamlarında eğitim verecek olan yükseköğrenim kurumlarının çevrimiçi öğrenme ortamlarını tasarlar-ken bu farklılıklara dikkat etmeleri ve öğrenme alanlarına özgü çevrimiçi öğrenme ortamları tasarlamaları gerekmektedir.

Anahtar Kelimeler: çevrimiçi öğrenme benimseme, uzaktan öğrenme, benimseme, teknoloji kabul