How Open and Distance Education Students use Technology? A Large Scale Study

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Abstract

The purpose of this study was to determine the use of e-learning tools and ICTs by open and distance education students. From 40 different programs, 86,842 students in the school year 2013-2014 at Anadolu University participated to the study. A survey form were developed and used as data collecting tool. According to the results of the research, open and distance students own at least one of the tools out of computer, smartphone and tablet. Almost all of the students have a smart phone and internet access. It was determined that the majority of students use e-learning tools provided by University, no matter which ICT tools they have. Internet accessibility increase the e-learning tools usage. But, remarkably high e-learning tools usage level observed also for students with limited internet accessibility. This result show that the variety and richness of provided e-learning tools have critical importance for students with limitations and disabilities.

Keywords: Open and distance education; e-learning tools; ICT tools

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1. Introduction

The trend of Information and Communication Technologies (ICT) has taken over the world with the emerging and spreading of the computers and Internet. These technologies expended to all level of society. Especially computer and internet technologies have become indispensable for different eras including education, business, science, economy, culture, transportation, law and military. The consequences of the computer and Internet emerging becoming widespread on education were quite strong and helped important innovations in the field.

Emerging of Open and Distance Education (ODE) and widespread use of these technologies revealed the idea of a more democratic, independent of time and place education for all. Especially the critical role of ODE for students with limitations and disabilities has attracted the attention of the universities and governments. Use of ICTs and e-learning tools for students with limitations and disabilities opened the way for equal opportunities in education in a real sense. Contemporary ODE service is based on ICTs. ICT is one of the key concepts in distance education. Without ICTs, implementing distance education applications is almost impossible.

About the connectivity and technology infrastructure, notable developments have monitored especially in the Middle East and Africa, Eastern Europe and Latin America. However, compared to developed countries the gap is still at significant size. Nevertheless, some developing countries are competing with the developed countries and demonstrates better performance in some circumstances. Turkey is a good example to those countries. To the Turkish Statistic Institution, Household Information Technology Usage research, 69.5's% of households have Internet access opportunities (TSI, 2015). These statistics are significantly above the global average (42.3%).

In ODE systems e-learning resources have critical position. To Bates, (2005) e-learning and e-learning resources have determinative and dominant effects on ODE today. Therefore, pre-research, analyze, evaluation, production and re-evaluation process of e-learning resources development gain crucial importance for ODE institutions (Firat, 2014).

In related literature, e-learning is defined as learning by electronic tools and environments such as computers, internet technologies and environments or mobile devices which facilitate independent and interactive learning (Clark & Mayer, 2011). e-Learning is widened its borders with the development of new information and communication technologies (Moore & Kearsley, 2011). Thus, concepts such as lifelong learning, self-directed learning and continuous education that occupy the current agenda of education could be said to emphasize the importance of e-learning in ODE (Bolhuis, 2003; Wilhelm & Beishuizen, 2003).

It is possible to access to descriptive studies in the related literature about the ICT ownership of ODE students (Bharuthram & Kies, 2013; Yemisi, Owolabi, Chidinma, Kayode, Odu-Mojoyinola & Jumoke, 2014; Fernández-Pascual, Ferrer-Cascales, Reig-Ferrer, Albaladejo-Blázquez & Walker, 2015). But there are limited studies which compare the usage of e-learning tools such as interactive books, audio books, TV programs and owned İCTs.

1.1 Research Purpose

The purpose of this study was to determine the use of e-learning tools and ICT by open and distance education students. In this context answers of the following questions are sought:

1. What are the ICT tools that students have?

2. What are the Internet accessibility status of the students?

3. What are e-learning tools usage status of the students?

4. How e-learning tools usage change according to owned ICT tools and Internet accessibility?

2. Methodology

This study is a survey research aiming to determine the use of e-learning tools and İCT by ODE students of Anadolu University. From 40 different programs, 86.842 students in the school year 2013-2014 at Open and Distance Education System, Anadolu University participated in the study. A survey was developed for data collection. In the process of developing survey form; first, drafts were formed using the literature review, drafts were presented to four field experts and were edited in the light of the feedback received. Survey form were applied to 12 students. Thus, pilot application was performed and survey was finalized. Permission was obtained from the faculty dean for research and data collecting tool was transferred to online survey system. In this way, feedback was received from students. In this study, the quantitative data were collected and analyzed. Electronically collected data were downloaded in MS Excel format and transferred to SPSS 15 program. The data were analyzed in the SPSS 15 package program.

3. Figures

Obtained results were given under this title. The results were given under four titles according to the research questions.

3.1 What are the İCT tools that students have?

Most used İCT tools such as Smartphone, PC, TV and Tablet questioned in order to determine the usage statuses of students. Data regarding the technologies owned by 86842 students was given below in Figure 1.
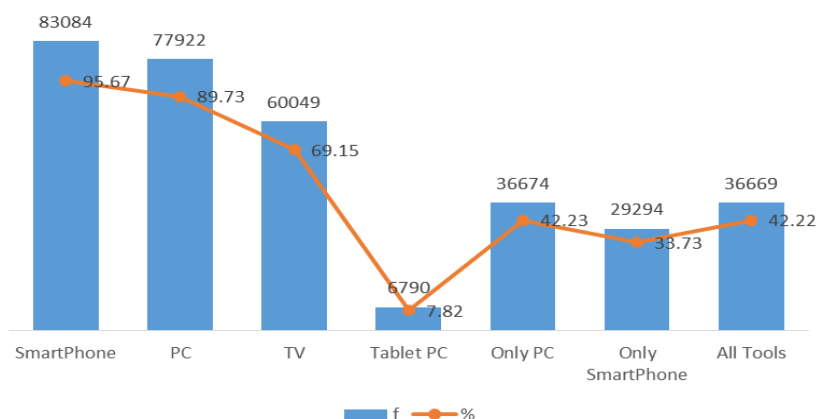

Figure 1. ICT tools owned by ODE students

In the Figure, it can be seen that 95.67% of ODE students own a Smartphone and 89.73% own a PC. However, 42.23% of ODE students own only a computer, 33.73% only a smart phone. 42.22% of participants own PC, Smartphone, TV and tablet. On the other hand, tablet usage is observed to be low as 7.82%. In general, it is determined that all ODE students own at least one of the tools out of computer, smart phone and tablet.

3.2 What is the Internet accessibility status of the students?

In order to determine Internet accessibility status of the students a 5-choice question were added to the survey. Information regarding to Internet accessibility of Open Education students is summarized below in Figure
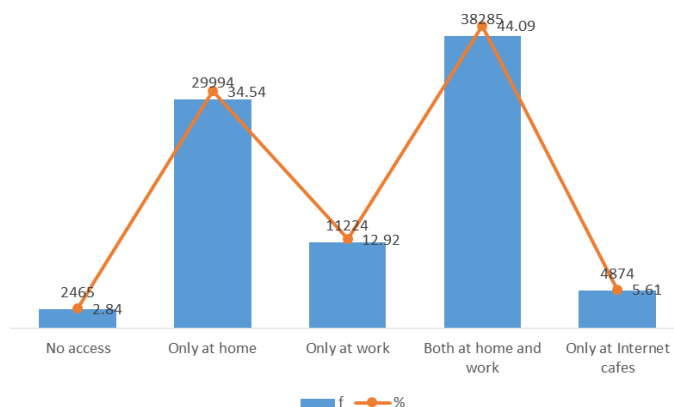

Figure 2. İnternet accessibility of students

As can be seen on the Graph 2 - internet accessibility of students have considerable differences. 44% of ODE students have internet access both at home and work, 34.54% of students have internet access only at home. This findings show that the %97 of students have Internet connection, almost half of the students have internet access both at home and at work.

3.3 What is the e-learning tools usage frequency of the students?

In order to determine ODE students' usage level of e-learning tools provided by the University a 3-choice (1=rarely, 2, frequently, 3=always) question were added to the survey. Information regarding to e-learning tools usage frequency of Open Education students is summarized below in Figure 3.
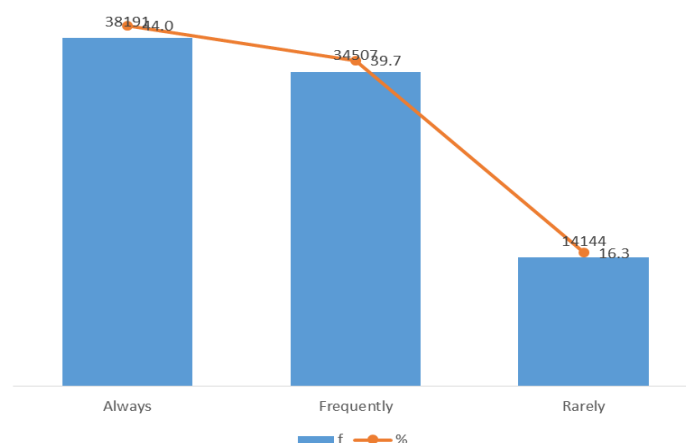
Figure 3. e-learning tools usage levels of students

As shown in Graph 3, 44% of students "always" use e-learning tools provided by the University. Only 16% of students who participated in the study stated that they "rarely" use e-learning tools. This finding show that Anadolu University ODE students considerably ($\bar{X}$=2.27) benefit from e-learning tools provided by the University.

3.4 How e-learning tools usage frequency change according to owned İCT tools and Internet accessibility?

Students' e-learning tools usage compared according to owned ICT tools. Related findings given below in Table 1.

Table 1. e-learning tools usage levels according to owned İCT tools

ICT tools	e-Learning Tools Usage ($\bar{X}$)
SmartPhone	2.282
PC	2.276
TV	2.287
Tablet PC	2.255
All Tools	2.260

Considering that the highest e-learning tools usage level was 3, the majority of students use e-learning tools provided by University in a high frequency ($\bar{X}$_ict>2.25), no matter which ICT tools they have. The obtained results show that the level of use of e-learning tools don't change according to owned ICT tools. Students' e-learning tools usage levels compared also according to their internet accessibilities. Revealed findings given below in Figure 4.
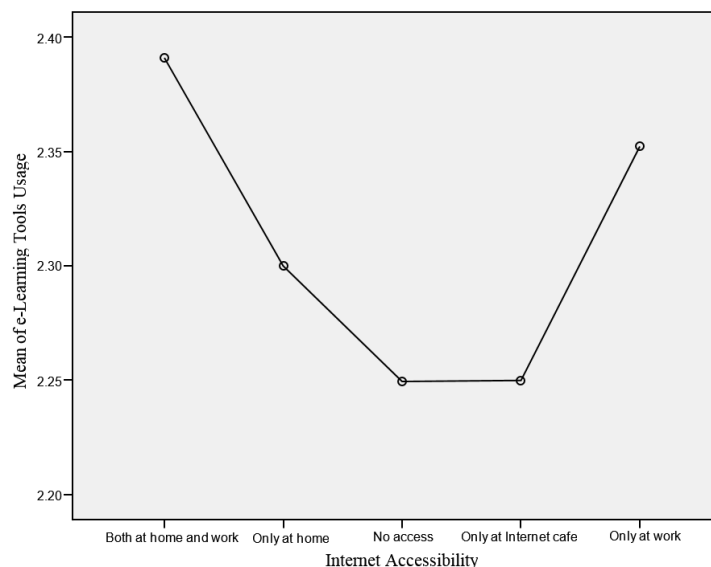
Figure 4. e-learning tools usage levels according to internet accessibility

As can be seen in the Graph, students' e-learning tools usage means changed in the range of .15 according to internet accessibility. e-Learning tools usage of students with limited internet accessibility was about ($\overline{X}$=2.25). However, e-Learning tools usage of students with high internet accessibility (both at home and work) was higher ($\overline{X}$=2.40). These findings show that internet accessibility and e-Learning tools usage ranged in parallel. But, students with limited internet accessibility also have a high level of e-learning tools usage over the average. Richness of e-learning tools provided by the university may have caused this situation. e-Learning tools such as e-books, interactive books, e-exams, e-training, e-consultation and e-audiobooks provided by Anadolu University, Open and Distance Education System can be used offline and online.

4. Conclusions and Suggestions

A total of 86842 students from 40 different programs of Open and Distance Education System of Anadolu University participated in the research which was conducted to determine the use of e-learning tools and İCT by ODE students. For this purpose four research questions were specified on İCT tools that students have, Internet accessibility status of the students, e-learning tools usage status of the students, e-learning tools usage change according to owned İCT tools and Internet accessibility. The data were collected by a developed questionnaire. Collected data analyzed in the SPSS package program and descriptive statistics such as percent (%), medium ($\overline{X}$) and frequency (f) were used. Some important conclusions revealed from findings.

According to the ownership of İCTs, almost all of 86842 students have a Smartphone, one of ten students have a tablet pc. But, in general, it is determined that all Open Education Faculty students own at least one of the tools out of computer, smartphone and tablet. Internet accessibility of students have considerable differences. According to the findings of the research, almost all students have internet connection, and half of the students have internet access both at home and at work. According to the findings on the use of e-learning tools, Anadolu University ODE students use e-learning tools provided by University in a high frequency, no matter which İCT tools they have. Obtained results show that the level of use of e-learning tools don't change according to owned İCT tools.

Students' e-learning tools usage levels were also examined in accordance with internet accessibilities. Internet accessibility and e-Learning tools usage of students ranged in parallel. But,

remarkably high e-learning tools usage level over the average observed also for students with limited internet accessibility. It is thought that the variety and richness of e-learning tools provided by Anadolu University, Open and Distance Education System caused this situation. Anadolu University, Open and Distance Education System provide e-learning tools such as e-books, interactive books, e-exams, e-training, e-consultation and e-audiobooks which can be used online and offline. In addition, students can watch the videos and the courses again without an internet connection on Anadolu University TRT School Channel. As a result of the analysis about the first research question, all students who participated in the study own at least one of the tools out of computer, smartphone and tablet. Students are using e-learning tools offered by the University by using these ICTs.

Based on the results obtained in this study, it is possible to suggest that ODE systems need to enrich and diversify their e-learning tools and environments in accordance with the principle of equality of educational opportunity for democratic education, lifelong and continuous education. The results showed that the variety (online and offline etc.) and richness (interactive books, audio books, TV programs etc.) of provided e-learning tools have critical importance for students with limitations and disabilities. In this way, equality of opportunity in education can be provided to citizens who struggle with geographical, economic and social limitations and especially people with disabilities. Future experimental and review studies can be conducted with regard to other factors of e-learning tools and ICT usage statuses of students as well as their Internet literacy. Similar researches from different universities with high numbers of participants will contribute to the literature to understand e-learning readiness of ODE students.

4.1 Acknowledgement

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