TEACHERS' VIEWS OVER THE IMPACT OF EDUCATIONAL MOBILE DEVICES ON STUDENTS' ACHIEVEMENT

Asst. Prof. Dr. Murat Tolga KAYALAR

Erzincan B. Y. University, Faculty of Education, Erzincan/Turkey

Assoc. Prof. Dr. Fethi KAYALAR

Erzincan B. Y. University, Faculty of Education, Erzincan/Turkey

ABSTRACT

The rapid developments in the mobile world enable educational organizations to be more dynamic and adapt quickly to changes, while differentiating the perspectives of users. The educational organizations or private educational offices that try to keep up with the mobile world's speed are aiming to meet the expectations of the users and to increase their sales while the users make their choices among the mobile applications that meet their needs. In the study, we tried to determine the impact of educational mobile devices on students' achievements in classroom environment. We used qualitative research method and interviewed with ten teachers working in different high schools. We asked three open-ended questions to the teachers. We collected the data through recorder and transformed them into written statements. We have concluded that the students with advanced educational mobile devices have more achievements than those with inadequate educational mobile devices. Thanks to the easy accessibility and portability of mobile technologies, learning activities such as training and practice in the field of education can also be carried out of the classroom environment. Notebooks, mobile phones and tablet computers can be used in learning-teaching processes with the support of educational institutions. We have suggested that all the students in the classroom should have advanced mobile devices in order to get academic achievement. Mobile applications are used by students either in the classroom or after-school and make learning more enjoyable.

Keywords: Mobile devices, Student achievement, Educational technology, Virtual learning.

1. INTRODUCTION

With the rapid development of technology, the use of computers and internet, which has become a necessity for individuals, has gained a new dimension through the spread of mobile technologies. Thanks to the easy accessibility and portability of mobile technologies, learning activities such as practice and exercise in the field of education can be carried out outside the classroom environment (Menzi et al, 2012). It is possible to benefit from tablet computers, mobile phones and notebooks which are becoming more common in the learning-teaching processes with the support of educational institutions. One of the most important reasons for the increase in interest in mobile education and distance education programs with the spread of computer and internet is the individual's free time and space. It is really great ease and freedom for an individual to initiate the learning process at any time and place and intervene at any time (Bulun et al, 2004). Computers and the Internet had such a wide range of uses that it was unthinkable that education services would be out of the field. With the introduction of computers and the Internet, the concept of distance education has gained a whole new dimension. After this stage, concepts such as virtual classrooms, online education, synchronous-asynchronous learning entered the literature and great improvements were made in this field.

1.1. Mobile Learning

Although mobile learning is the name given to learning through a mobile phone or tablet, it is perceived by many as portability. Because of this perception, the devices and approaches that can be used are diversified and become more accessible.

Mobile learning is to provide individuals with the opportunity to learn as much as they need and the way they want when they need it. Therefore, informal learning is increasing due to the control of the

learner in learning processes and the realization of learning in the network environment. In addition, mobile technologies allow for personalization, which facilitates the personalization of learning environments.

There are basically two uses of mobile devices in education; offline and online, both of which have their own advantages and disadvantages. The advantages of offline education include speed, cost-effect and more space independence. When accessing any information, it comes very quickly, since the information comes directly from the device. There is also no connection fee and cost, as there is no online connection at the time of process. The reason for the more independence of the space is that there is no problem with the coverage field for connection. Online education also has important advantages. These can be listed as timeliness, theoretically unlimited information and the possibility of synchronous training. One of the most important issues here is to use this opportunity according to need by performing benefit analysis appropriately. Mobile Device Types for mobile learning include mobile phones, handheld computers, tablet computers, laptops, video players, mp3 players, and game consoles.

E-learning makes life easier for institutions and employees. It facilitates the internal training processes of the institutions and supports the dynamic corporate culture (Table 1).

Table 1: The advantages of e-learning

Through e-learning	• trainings are accessible from anywhere, and do not require a physical environment. • trainings are not obligatory for a certain period of time. • employees can access the course / training / subject content repeatedly at any time.
E-learning	• eliminates the necessity of the trainers and employees to be in the same environment and at the same time. • provides a dynamic flow of information within the organization through a platform established specifically for the organization, and the information reaches the individuals one by one. • provides employees with an alternative training in which they can organize their time and place. • provides a platform for employees to communicate with each other or with instructors and subject matter experts through interaction tools such as email or discussion rooms.

One of the most important reasons for the high demand for computer and internet-supported distance education programs is the individual's free time and space. It is really great freedom for the learner to initiate the learning process at any time and place and intervene at any time. Until recently, internet connection with desktop computers and fixed telephone lines could not offer complete freedom in terms of space and time independence. They brought in a variety of quests, such as practically providing wireless access wherever they need a large desktop computer and cables to help people open up to the world.

1.2. Mobile devices for Education

Mobile devices offer a variety of opportunities to strengthen face-to-face education, to enrich learning processes, and also to remove restrictions and barriers to learning and teaching (Kukulska-Hulme and Trxler, 2005). It is possible to file reports, participate in meetings, edit the designs, in other words, to complete tasks related to work remotely, as long as there is an internet connection (Adıgüzel et al, 2014). On the other hand, large masses can be easily reached at affordable prices in cases where access to education is difficult due to disasters and geographical conditions (Dhanalakshmi et al, 2014). Mobile devices such as mobile phones, notebooks, calculators, tablet computers and laptops of different sizes and structures can be used for mobile applications (Sanalan, 2011).

The studies related to mobile learning were mostly carried out with K-12 classes. Chou et al (2012) examined the use of tablet computers in K-12 classes. In this study, the factors that make it easier and more difficult for teachers and students to learn and what process contributes to the professional development of teachers were investigated. In the study, it was concluded that students can start projects or tasks without coming to class and therefore without wasting time and learners also have more information about digital citizenship. In the meantime, the students stated that they thought they

iksadjournal.com | **Journal Of Institute Of Economic Development And Social Researches** | **iksadjournal@gmail.com**

221

were fun when they were looking for information or using the applications, and they were shifting to areas outside their duties.

Wagoner et al (2011) conducted a research project in which they examined the use of tablets (ipad) in the educational process. 447 tablets (ipad) were distributed within the scope of this project. 37 volunteer faculty members used the tablets in their training programs. The results of the study are grouped under the titles of digital division, sustainable classroom, information literacy, media production, extracurricular learning and individual productivity.

Gikas and Grant (2013) state that mobile technologies provide opportunities for situational learning by emphasizing that they allow learners to interact on-site and contextually with their course content and classmates. In addition to this, mobile phones can contribute to the recording of videos or voices of the teachers regarding the content of the lessons for the classes where the students learn and to have the opportunity to watch / listen to these recordings outside the classroom and to find the opportunity to watch / listen again when necessary (Ormiston, 2012). Such practices are also important in providing formal and informal learning opportunities. Especially outside the classroom, students can collaborate with their peers and interact with the environment using social media tools that have the potential for collaborative learning. (Gikas and Grant, 2013). Therefore, the rapid expansion of mobile phones provides an opportunity to develop new interactive classroom systems to improve students' learning experience (Scornavacca et al, 2009).

Ndafenongo (2011) found in their research that mobile phones can be useful tools to support teaching and learning in classrooms in schools, often without resources. In this context, using video clips via mobile phones contributes to increasing the participation and concentration of students, accelerating content development, encouraging peer collaboration and interaction, and improving student autonomy. Mobile tools that offer a flexible learning environment increase learners' ability to reach, use and share information, and solve problems, as well as affect learning motivation positively (Chen et al, 2008). It is clear that mobile technologies will be used more frequently in learning environments because it provides users "anytime and anywhere" learning opportunities (Stockwell, 2008). In terms of the possibilities offered by mobile technologies, a wide range of hardware features can be evaluated. More than just a means of communication, it is seen that they have many variable hardware features such as conducting research, making conference calls, recording and sharing audio and video.

2. MATERIALS AND METHOD

2.1 Problem Statement and Purpose

The aim of this study on the impact of educational mobile devices on students' achievement is to determine the views of the teachers in various high schools in Erzincan. We aimed to find out satisfying answers to our problem statement. To fulfil the purpose of the study we asked the teachers three open ended questions. "What kind of mobile tools do your students use in classroom environment?", "What are the advantageous of mobile tools?" and "In what extent do the mobile tools affect academic achievement of the students?"

2.2 Methods and Research Design

We used a qualitative research method to determine and evaluate the views of the teachers about the impact of educational mobile devices on students' achievement. This kind of methodological approach was chosen as it enables researchers to interpret and make judgement about immeasurable data (O'Tool and Beckett, 2010, p.28). We preferred and used easy accessible sample technique in the research, as it increases the speed of collecting data and enables researchers to access the sample easily (Yıldırım and Şimşek, 2006). We conducted this research with the views of the teachers at various high schools in Erzincan. For this reason we relied on case study design for the purpose of our enquiry.

2.3 Participants

We included ten volunteer teachers in our study, who teach Mathematics, English Language, Turkish Language, Biology and Social Sciences in various High Schools in Erzincan, Turkey. As shown in Table 2, six of the teachers are female, and four are male. The youngest one is male and has two years of experience, the eldest one is female and has twenty-five year of experience.

We obtained the data from ten teachers who admitted to be involved in the interview for the research. The participants were asked whether they were contented to answer to the questions, and then we applied the tool. The names of the students are coded with letters and numbers.

Table 2: Statistical data as to Gender, Age, Branch and year of experience

GENDER		AGE		BRANCH		EXPERIENCE (year)	
Male	4	25-30 years	3	Turkish Language	2	1-5 years	3
Female	6	31-35 years	4	English Language	2	6-10 years	4
		36-40 years	2	Biology	1	11-15 years	2
		Over 41 year	1	Mathematics	3	16-20 years	1
				Social Sciences	2		

2.4 Research Instrument

In the study, we used the tool with semi structured interview form to gather data from the teachers who teach Mathematics, Turkish Language, English Language, Biology and Social Sciences in various High Schools. We asked three open ended questions to the participants. The questions were designed in accordance with the main characteristics of Mobile Learning Environments and academic achievement. The questions of the interview were formed by the final judgement of three experts in the field.

2.5 Data Analysis

We obtained the data through one by one and face to face interview with the participants; the replies to the interview questions were abstracted and made into pure data. The data were then transferred and digitalized into computer in order to form digital data.

3. FINDINGS

In order to get satisfying replies to our questions "What kinds of mobile tool do your students use in classroom environment?", "What are the advantageous of mobile tools?" and "In what extent do the mobile tools affect academic achievement of the students?", we abstracted and filtered the statements of the participant teachers in a way the statements could keep their deep and main meanings. The first teacher's views on mobile tools are as follows:

(A. Female teacher of Turkish language, with two years of experience) "… my students use smart phones and tablets in my courses. The tablets have been given to the students by the Ministry of Education under an educational research project….. I noticed that they can learn vocabulary through mobile tools…"

The students see using mobile devices as an innovative and fun application while learning vocabulary. This also aroused the curiosity of the participants and helped them to become more attractive by motivating them positively in the vocabulary learning process.

(B. Male teacher of Biology, with four years of experience) "….. the students can reach necessary information whenever they need, they never become bored when they study with tablets…. I observe that mobile devices enhance the interest of the students in learning and motivate them better than other way of studying…"

From the statements of the teacher, we can argue that with the increase in the use of computers and mobile devices, interest in mobile learning is increasing. What makes mobile-learning (M-learning) advantageous over e-learning is that mobile devices are widespread and sometimes provided by school management. M-learning is a distance learning model where learning is carried out by mobile

tools. However, m-learning is a form of learning that enables access to content and communication with other learners, regardless of location. M-learning environments have shown that training is possible without being in a fixed place with mobile devices. M-learning is similar to e-learning in terms of being independent of time and space, providing equal opportunities in education and being student-centered.

Getting instant information in classroom environment allows students to solve the problems they face during the course rather than wasting searching for most of them. Educational technologies help teachers identify exactly where their students are having difficulties and plan lessons directly for it. Instead of wasting time with the subjects they have already learned, most of them can learn what they need and when they need it through technology

The implementation of technology into the classroom allows students to be exposed to and access to different learning methods. Some students may be successful in the classroom where the teacher teaches, while others may learn from the educational software and learn on their own. Providing students with different learning options may allow them to discover and try different methods and eventually find the most efficient learning strategy for them.

(C. Male teacher of Mathematics, with eight years of experience) "… In my courses, I allow my students to use tablets and calculators. For almost all mathematics questions, they benefit from tablets to find mathematical formulas and to solve the problems, thus they can gather necessary knowledge from mobile technology and their course books together…."

The advantages of mobile devices used in classroom activities for learners are listed as portability, accessibility and connectivity. In particular, the mobility of mobile devices provides students with an important advantage in their ease of use integrated with the textbook. In addition, in the display of mobile learning material, the features of mobile devices such as connecting to the internet and accessing and viewing multimedia resources also contributed to the realization of mobile learning in the classroom. In this context, mobile devices used in the research are thought to help learners to access information in the fastest and most effective way.

(D. Female teacher of Social sciences, with two years of experience) "… particularly the tablets are very useful for the students to imagine the shapes in three dimensions and to learn the ways of solving geometry problems …."

It is in the best interest of the students to combine education with technology by using interactive materials by seeing, watching and touching. In addition, the fact that the students have all their books with tablets that can be carried easily instead of school bags, will also enable them to get rid of a big burden ergonomically.

It is a fact that tablet computers accelerate students especially in areas such as test solving and evaluation. Students who receive their assessment immediately after answering the question, who can record their experiments and see the success graph in the virtual environment, go to the way of completing their deficiencies by seeing the right / wrong ratio and have a more qualified evaluation experience can be more successful thanks to tablet computers. In addition, it can be foreseen that students who keep up with technology and who are educated in accordance with the age of information technology will lay the foundation of a generation with a clear horizon.

Occasional extracurricular activities are among the important elements of education in order to attract the attention of the students and enable them to study in a more motivated way. It is possible to benefit from the tablets they use in almost every field. Coloring books, games and other applications make it easier for students to enjoy themselves safely.

From the statements of the teachers with whom we interviewed, we have found out that the benefits of mobile devices for learning include diversity of research in education, equality of access to information, individualized learning, instant feedback, possibility of evaluation. learning anytime and anywhere, efficient use of time in the classroom, on-site and meaningful learning, establishing a

link between formal and informal learning, minimizing educational interruptions, provides support and convenience to students with learning difficulties, changing the role of teachers as guiding and learning coach, helping students to question, produce ideas and develop ideas, supporting student-centered learning, increasing the interaction between teacher and students, reducing cultural and communicative barriers between students and school management by using communication channels.

4. CONCLUSION

Different learning experiences can be offered for the users in the educational environments enriched with the developing new technologies. Enriched learning experiences will also facilitate the realization of meaningful and lasting learning. Undoubtedly, for generations developing with new technologies, it would be a great mistake to think that learning experiences can only take place in the classroom. In particular, students are able to access information resources easily through mobile devices that are increasingly accessible to more people.

Technological developments and student needs gradually shape the learning environments and form the basis for the development of new applications different from traditional methods. Investments in mobile devices in education have been increasing in recent years, especially because they are portable (Doğan and Seferoğlu, 2015).

It has been found that the difference between the students who have and without the digital mobile devices given to the students has disappeared and the digital gap in the classroom has decreased with the distributed devices, and the students prepared individual photo magazines, made short films suitable for the content of the course, made photo montages with pictures, made presentations with pictures and videos in the classroom, and developed content such as digital stories.

It was determined that students had the ability to use calendars, take notes, check e-mail, manage learning resources, and communicate with the instructor and other students, and that students improved their access to information and critical thinking skills. In addition, it was determined that the use of paper and traditional course materials decreased, and that the students could conduct research more easily.

REFERENCES

Adıgüzel, O., Batur, Z., & Ekşili, N. (2014). Kuşakların değişen yüzü ve Y kuşağı ile ortaya çıkan yeni çalışma tarzı: Mobil yakalılar. Süleyman Demirel Üniversitesi Sosyal Bilimler Enstitüsü Dergisi, 1(19), 165-182..

Bulun, M., Gülnar, B. & Güran, S. (2004). Eğitimde Mobil Teknolojiler. The Turkish Online Journal of Educational Technology – TOJET April 2004 volume 3 Issue 2 Article 23

Chen, G. D., Chang, C. K., & Wang, C. Y. (2008). Ubiquitous learning website: Scaffold learners by mobile devices with information-aware techniques [Electronic Version]. Computers & Education, 50, 77-90.

Chou, C. C., Block, L., & Jesness, R. (2012). A case study of mobile learning pilot project in K-12 schools, Journal of Educational Technology Development and Exchange, 5(2). 11-26.

Dhanalakshmi, S., Suganya,S., & Kokilavani, K. (2014). Mobile learning using cloud computing. *International Journal of Computer and Engineering,* 2(11), 102-108.

Doğan, D & Seferoğlu, S. S. (2015). Mobil Cihazlar ve Eğitimde Dijital Dönüşüm. Eğitim Teknolojileri Okumaları, 2015

Gikas, J. & Grant, M. M. (2013) Mobile computing devices inhigher education: Student perspectives on learning with cellphones, smartphones & social media. Internet and Higher Education, 19, 18–26. http://dx.doi.org/10.1016/j.iheduc.2013.06.002

Kukulska-Hulme, A., & Traxler, J. (Eds.) (2005). *Mobile learning: A handbook for educators and trainers*. London: Routledge.

Menzi, N., Önal, N. & Çalışkan, E. (2012). Mobil Teknolojilerin Eğitim Amaçlı Kullanımına Yönelik Akademisyen Görüşlerinin Teknoloji Kabul Modeli Çerçevesinde İncelenmesi, Ege Eğitim Dergisi 2012 (13) 1: 40–551

Ndafenongo, G. (2011). An investigation into how cell phones can be used in the teaching of Mathematics using Vitalmaths video clips: a case study of 2 schools in Grahamstown, South Africa. Thesis, degree of Master of Education, Rhodes University (Faculty of Education), Grahamstown, South Africa

Ormiston, M. (2012). How to use cell phones as learning tools. http://www.teachhub.com/howuse-cell-phones-learning-tools.

O'Tool, J. & Beckett, D., 2010. Educational Research: Creative Thinking and Doing. Victoria: Oxford University Press.

Sanalan, V. A. (2011). M-öğrenme uygulamalarına geçiş. B. B. Demirci, G. T. Yamamoto ve U. Demiray (Ed.) içinde, Türkiye'de e-öğrenme: Gelişmeler ve uygulamalar II (Bölüm 24, ss. 379-388). Anadolu Üniversitesi, Eskişehir.

Scornavacca, E, Huff, S., & Marshall, S. (2009). Mobile phones in the classroom: If you can't beat them, join them. Communication of the ACM, 52(4), 142-146.

Stockwell, G. (2008). Investigating learner preparedness for and usage patterns of mobile learning ReCALL. European Association for Computer Assisted Language Learning, 20(3), 253-270. doi:10.1017/S0958344008000232 Printed in the United Kingdom

Wagoner, T., Hoover, S., & Ernst, D. (2011). CEHD iPad initiative: Year one report. [Çevrim-içi http://www.cehd.umn.edu/Mobile/ PDF/CEHDiPadReport.pdf, Erişim tarihi: 03.06.2019.]

Yıldırım, A. & Şimşek, H., 2006. Qualitative Research Methods in Social Sciences. Ankara: Seçkin Press.