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PRE-SERVICE TEACHER'S ATTITUDE ON MOBILE LEARNING

Abstract:

In this study, it was aimed to examine the m-learning attitudes of teachers in terms of different variables. Today, advances in technology have changed the ways information is obtained, generated and spread. Technological developments, particularly those which affect spreading of information, became the main factor in determining the content of education, its organization and execution from spatial scales to individualization (Toplu and Gökçearslan, 2012). As the processes related to information change in the information society, educational institutions will have to change themselves. Man's social learning effort has gained a new dimension with the development of individual needs and new technologies. One of these new dimensions is mobile learning. M-learning is defined as a learning model that lets the students' access learning materials at any place, any time through the use of mobile technology and the Internet (LanandSie, 2010). The study group of the study consists of 111 preservice teachers receiving education at Gazi University Faculty of Education in the school year of 2014-2015. M-Learning Attitude Scale. M-learning attitude scale was developed by Çelik (2013) in an attempt to determine the attitudes of preservice teachers towards m-learning. Examining the scores obtained by preservice teachers from the attitude scale; it could be asserted that preservice teachers have high levels of attitudes. No difference was observed in the attitudes of preservice teachers towards mobile learning in terms of demographic features like gender and states of having a computer and a smart phone.

Keywords:

M-Learning, Mobile Learning, Mobie Devices, Preservice Teachers Attitude, Teacher Education

Introduction

Today, advances in technology have changed the ways information is obtained, generated and spread. Technological developments, particularly those which affect spreading of information, became the main factor in determining the content of education, its organization and execution from spatial scales to individualization (Toplu and Gökçearslan, 2012). As the processes related to information change in the information society, educational institutions will have to change themselves. Man's social learning effort has gained a new dimension with the development of individual needs and new technologies. One of these new dimensions is mobile learning. M-learning is defined as a learning model that lets the students' access learning materials at any place, any time through the use of mobile technology and the Internet (LanandSie, 2010). In mobile learning, mobile devices such as laptops, tablet computers, mobile computers, portable mediaplayers, portable MP3 players and smart phones are used (Güzelyazıcı, Dönmez, Kurtuluş and Hacıosmanoğlu, 2014).

Together with the development in web technolohies within the last 15 years, more people have started to access to internet in the world (Gülbahar, Jacobs and König, 2015). According to the data of 2014, while 42,3% of people in the world access to internet, this rate is as high as 70,5% in Europe (Internet World Stats, 2014). Especially the development of the wireless connection, 3G, 4G technologies has removed the spatial limitations in the internet access. This condition has become an important factor in the increase of the rate of using mobile devices. The increase of using mobile devices in Europe between 2010 and 2015 is 93% (Portio Research, 2012, p.16). While the number of mobile subscribers in the entire world was 4.5 billion in 2009, this number increased to 6 billion at the beginning of 2012 and is expected to be 8 billion by the end of 2016 (Portio Research, 2012, p.7).

As mobile technologies have affected a large mass of people in the world, it has been inevitable to use it as an advantage in education. With the use of these devices, education crossed over the boundaries of schools and different opportunities for learning experiences emerged. In order to integrate the developing technologies in Turkey into education, an investment has been made under the name of Fatih. FATIH project has been developed for the ministry of national education, as part of the information society strategy of the State Planning Organization (2006-2010). With this project, 42.000 schools and 570.000 classes will be equipped with the latest information technologies and will be transformed into computerized classes (Smart Class-interconnected tablet PCs, LCD interactive whiteboards-Internet). This project aims to change the notion of lifelong learning of individuals and help them develop themselves through e-learning and improve e-content (MEB, 2012). One of the devices that has been presented as part of the project is tablet computers. The potential of these devices for mobile learning has to be evaluated from the perspective of the pre-service teachers. Perceptions of the pre-service teachers regarding the new models and technology, provides information about the way these Technologies will be used.

A number of researchers have conducted and are still conducting studies on the integration of mobile technologies into education, efficient use of them in education and the advantages of using them in education. Some of these studies are as follows: The effect of age and gender in educational use of mobile telephones (Snell, & Snell-Siddle, 2013), meta-analysis of mobile learning studies (Wu, et al., 2012), research trends regarding mobile learning (Hwang, & Tsai, 2011), the effect of formative evaluation and mobile learning on success and attitudes (Hwang & Chang, 2011), pedagogical frame aimed at different types of mobile learning (Park, 2011), student-centered mobile learning and uninterrupted learning (Wong, 2012), mobile learning applications in language education (Godwin-Jones, 2011), readiness for mobile learning (Cheon, Lee, Crooks, & Song, 2012), design-based mobile learning (Land & Zimmerman, 2015).

Considering studies especially regarding preservice teachers, the current studies involve the role of mobile technologies in the curriculum of teacher education (Foulger, et al., 2013), use of podcasts in mobile learning (Kennedy, Thomas, Aronin, Newton, & Lloyd, 2014), use of tablet computers in education (Kearney & Maher, 2013) and the use of smart phones in mobile learning (Seifert, 2015). It is observed that studies do not sufficiently support the attitudes of preservice teachers towards mobile learning.

Aim of the study

In this study, it was aimed to examine the m-learning attitudes of teachers in terms of different variables. In line with this general aim, answers were sought for the following subgoals.
1. What are the m-learning attitude levels of preservice teachers?
2. Do the scores obtained by preservice teachers from the m-learning attitude scale show a significant difference according to;
   a.   Gender,
   b.   Branches,
   c.   State of having a smart phone,
   d.   State of having a computer?

Methodology

Study pattern

This study used the relational screening model, which is among quantitative research methods. Relational screening model is a research model aiming to determine the presence and/or extent of a covariance between two and more variables (Karasar, 2003).

Study Group

The study group of the study consists of 111 preservice teachers receiving education at Gazi University Faculty of Education in the school year of 2014-2015. Table 1 shows the distribution of preservice teachers on the basis of their branches.

Table 1. Distribution of the Study Group on the basis of their Branches

Department	n	%
Preschool Teaching	25	22.5
Mentally Handicapped Teaching	23	20.7
German Teaching	23	20.7
Geometry Teaching	16	14.4
Geography Teaching	15	13.5
Social Sciences Teaching	9	8.1
Gender	**n**	**%**
Female	87	73.4
Male	27	26.6
Total	**111**	**100.0**

As is seen in Table 1, 22.5% of preservice teachers who participated in the study consist of Preschool Teaching, 20.7% Mentally Handicapped Teaching, 20.7% 18% German Teaching, 14.4% Geometry Teaching, 13.5% Geography Teaching and 8.1% Social Sciences Teaching.

Data Collection and Data Analysis

"M-Learning Attitude Scale" and "Demographic Features Form" were used in collecting the study data.

M-Learning Attitude Scale. M-learning attitude scale was developed by Çelik (2013) in an attempt to determine the attitudes of preservice teachers towards m-learning. As a result of the factor analysis that were performed to test the construct validity of the scale, it was determined that 21 scale items were collected in 4 factors and the scale explained 51.116 of the total variance. According to the item analysis result based on lower-upper group averages, the scale was observed to be highly sufficient in discerning those with positive and negative attitudes. As a result of the reliability analysis, the internal consistency coefficient of the entire scale was determined as 0.881. The relation of total factor scores were determined to be positively lower and moderate, whereas the relation of all factors with the entire scale was very high. As a consequence, the scale was structured in five point likert scale under four lower factors as "Advantages of m-learning", "Limitations in m-learning", "Practicability in m-learning" and "Freedom in m-learning".

Demographic Features Form was structured by experts in totally six questions (four multiple-choice and two open-ended) in an attempt to determine the gender, brances, classes of preservice teachers, as well as their states of having a computer and a smart phone.

Being applied in the meantime, the data collection tools were filled by preservice teachers online based on voluntariness. After coding the data, both the oblateness and skewness coefficients and Shapiro Wilks values were examined in order to determine whether they were convenient for parametric tests or not. As a result of the tests that were performed for demographic features, the total and lower factor scores of m-learning attitude scale and the normalcy assumption, it was determined that oblateness and skewness coefficients were between -1 and +1 for each variable and the Shapiro-Wilks values were greater than .05 in the reliability level of 95%. From this point of view, it could be asserted that the data show a normal distribution. Based on all these values, the study used the Independent Samples t-test and One-Way Anova, which are among the parametric tests.

FINDINGS

This title involves the findings acquired as a result of the data analysis.

1. M-Learning Attitudes of Preservice Teachers

As a result of applying the m-learning attitude scale to preservice teachers in the study, the scores obtained from the scale were categorized in five groups. While the lowest score obtained from the scale was 32, the highest score was 102. Table 2 shows the attitude levels and the score ranges of this levels.

Table 2: M-Learning Attitude Scale Score Ranges

Scale	Too Low	Low	Medium	High	Too High
M-Learning Attitude Scale	21-38	38-55	55-72	72-89	89-105

When the scores of preservice teachers from the m-learning attitude scale examined, it is observed that preservice teachers have high attitude (X=73.43) towards to m-learning. But this score is almost at the minumum score of high score range. For this reason preservice teachers attitude can be increased. Table 3. Shows informations about the scores of preservice teachers from the m-learning attitude scale and the level of this score.

Table 3:Preservice Teachers Score From The M-Learning Attitude Scale

Scale	Mean	Std. Dev.	Score Range
M-Learning Attitude Scale	73.43	11.03	High

2. The results of significant difference analysis between the demographic features of the total scores of m-learning attitude scale

Table 4 shows the results of the Independent Samples t-test of the scores obtained by preservice teachers from the m-learning attitude scale according to gender.

Table 4: Results of the Independent Samples t-test of the Scores Obtained from the M-Learning Attitude Scale according to Gender

Gender	N	Average	S.s	Sd.	t	p
Male	87	71.6404	15.04028	111	-1.390	.167
Female	24	76.2083	10.92655			

Examining Table 4, no significant difference was determined between the total scores obtained by preservice teachers from the m-learning attitude scale according to gender ($t_{(111)}$=-.390, p>.05). From this point of view, it could be asserted that the gender of preservice teachers does not cause a difference in their m-learning attitudes.

Table 5 shows the results of the Independent Samples t-test of the scores obtained by preservice teachers from the m-learning attitude scale according to the state of having a computer.

Table 5: Results of the Independent Samples t-test of the Scores Obtained from the M-Learning Attitude Scale according to the State of Having a Computer

State of Having a Computer	N	Average	S.s	Sd.	T	p
Yes	27	72.2222	13.98167	111	.161	.873
No	84	72.7326	14.53549			

According to the Independent Samples t-test (Table 5) that was performed in an attempt to determine whether there was a difference between the states of preservice teachers to have a computer and the total scores obtained from the mobile learning attitude scale or not, no significant difference was observed ($t_{(111)}$=.161, p>.05). In brief, the states of students to have a computer does not cause a difference in their m-learning attitudes.

Table 6 shows the results of the Independent Samples t-test of the scores obtained by preservice teachers from the m-learning attitude scale according to the state of having a smart phone.

Table 6: - Results of the Independent Samples t-test of the Scores Obtained from the M-Learning Attitude Scale according to the State of Having a Smart Phone

State of Having a Smart Phone	N	Average	S.s	Sd.	t	p
Yes	75	72.17	14.49	111	-864	.389
No	36	75.71	13.35			

According to the Independent Samples t-test (Table 6) that was performed in an attempt to determine whether there was a difference between the states of preservice teachers to have a smart phone and the total scores obtained from the mobile learning attitude scale or not, no significant difference was observed ($t_{(111)}$=-864, p>.05). In other words, the states of students to have a smart phone does not cause a difference in their m-learning attitudes.

Table 7 shows the results of the One-Way Anova Test of the scores obtained by preservice teachers from the m-learning attitude scale according to their branches.

Table 7: Results of the One-Way Anova Test of the Scores Obtained from the M-Learning Attitude Scale according to Branches

Resource of Variance	Sum of Squares	df	Mean Square	F	Sig.	Significant difference
Between Groups	3547.114	5	709.423	4.411	.001	VHT - PST
Within Groups	16887.120	105	160.830			VHT – GT
Total	**20434.234**	**110**				

(PST: Preschool Teaching, VHT: Visually Handicapped Teaching, GT: German Teaching.)

According to the results of the analysis in Table 7, there is a significant difference between the m-learning attitudes of preservice teachers according to branches (f=4.411, p<.05). In other words, the m-learning attitudes of preservice teachers show a significant difference according to their departments. As a result of the Tukey test that was performed to determine the difference between the departments, it was determined that preservice teachers receiving education in the department of Visually Handicapped Teaching had higher mobile learning attitudes (X= 83.82), compared to students receiving education in the departments of Preschool Teaching (X=65.33) and German Teaching (X= 71.26).

Conclusion and Suggestions

Examining the scores obtained by preservice teachers from the attitude scale; it could be asserted that preservice teachers have high levels of attitudes. Providing to participate preservice teachers in lessons supported by mobile technologies or conducted via mobile Technologies, this level can be increased.

No difference was observed in the attitudes of preservice teachers towards mobile learning in terms of demographic features like gender and states of having a computer and a smart phone. Especially the absence of a significant difference according to the states of having a computer and a smart phone is remarkable. This condition could signify that preservice teachers use their computers and smart phones for activities like communication and access to social media rather than course activities.

Examining the result of the scores obtained by preservice teachers from the m-learning attitude scale according to their departments; there is a difference between the scores obtained by preservice teachers receiving education in the department of Visually Handicapped Teaching and the scores of teachers receiving education in the departments of Preschool Teaching and German Teaching. This result could be related with the increased awareness of preservice teachers due to the increased use of technology as an element easing the life of handicapped individuals. From a different point of view, it could be related with the lower frequency of using the mobile learning in the lessons of preschool teaching and German teaching.

In order to successfully integrate the mobile devices, which has been increasingly used in the world, into education, it is primarily required to increase the attitudes of teachers towards using the mobile devices in education. The best way of enabling this is to make preservice teachers get acquainted with mobile learning more closely. Areas like Computer Education and Instructional Technologies could cooperate with other departments and enable the use of mobile technologies in the education of preservice teachers.

In training programs for teachers, the increase of the mobile learning experiences of preservice teachers and the observation of the results of these experiences will light the way for researchers to integrate the m-learning into lessons. Providing mobile devices (tablet computers) for students and teachers within the scope of the Fatih Project being conducted in our country is not sufficient for the integration of mobile technologies into education alone. In order to succeed in this integration, the preservice teachers and teachers are required to have the ability of using these technologies, accept the mobile technologies and develop attitudes towards these technologies.

References

Cheon, J., Lee, S., Crooks, S. M., &Song, J. (2012). An investigation of mobile learningreadiness in highereducationbased on thetheory of plannedbehavior. *Computers&Education*, *59*(3), 1054-1064.

Çelik, A. (2013). M-Öğrenme Tutum Ölçeği: Geçerlik ve Güvenirlik Analizleri. *Journal of Research in EducationandTeaching, 2*(4), 172-185.

Foulger, T. S.,Waker, M. L., Burke, D., Hansen, R., Kim Williams, M., &Slykhuis, D. A. (2013). Innovators in teachereducation: Diffusing mobile technologies in teacherpreparationcurriculum. *Journal of Digital Learning in TeacherEducation*, *30*(1), 21-29.

Godwin-Jones, R. (2011). Emergingtechnologies: Mobile appsforlanguagelearning. *Language Learning &Technology*, *15*(2), 2-11.

Gülbahar, Y.,Jacobs, C., &König, A. (2015). Mobile Learning in HigherEducation: CurrentStatusandFuture. M. Ally, & B. H. Khan içinde, *International Handbook of E-Learning Volume 2: Implementationand Case Studies.*Routledge.

Güzelyazıcı, Ö., Dönmez, B., Kurtuluş, G., & Hacıosmanoğlu, Ö. (2014). Yeni yüzyıl üniversitesinde mobil öğrenme. EJOVOC: Electronic *Journal of VocationalColleges, 4*(2).

Hwang, G. J.,&Chang, H. F. (2011). A formativeassessment-based mobile learningapproachtoimprovingthelearningattitudesandachievements of students. *Computers&Education*, *56*(4), 1023-1031.

Hwang, G. J.,&Tsai, C. C. (2011). Researchtrends in mobile andubiquitouslearning: A review of publications in selectedjournalsfrom 2001 to 2010. *British Journal of EducationalTechnology*, *42*(4), E65-E70.

Internet World Stats (2014). UsageandPopulationStatistics: Internet Users in Europe. Retrievedfromhttp://www.internetworldstats.com/stats4.htm at thedate of 01.05.2015.

Karasar, N. (2003). Bilimsel Araştırma Yöntemi, Kavramlar-İlkeler-Yöntemler, 77, Nobel Yayın Dağıtım, Ankara.

Kearney, M.,&Maher, D. (2013). Mobile learning in mathsteachereducation: Using iPadstosupportpre-service teachers' professionaldevelopment.*AustralianEducational Computing*, *27*(3), 76-84.

Kennedy, M. J., Thomas, C. N., Aronin, S., Newton, J. R., & Lloyd, J. W. (2014). Improvingteachercandidateknowledgeusingcontentacquisitionpodcasts. *Computers&Education*, *70*, 116-127.

Kurt, A. A., Kuzu, A., Dursun, Ö.Ö., Güllüpınar, F. & Gültekin, M. (2013). Evaluation of the pilot applicationprocess of FATIH project: Teachers' views. *Journal of Instructional Technologies &TeacherEducation, 1*(2), 1-23.

Lan Y. &Sie Y. (2010) Using RSS tosupport mobile learningbased on mediarichnesstheory. *Computers&Education, 55*, 723–732.

Land, S. M.,&Zimmerman, H. T. (2015). Socio-technicaldimensions of an outdoor mobile learningenvironment: a three-phasedesign-basedresearchinvestigation. *EducationalTechnologyResearchand Development*, *63*(2), 229-255.

Ministry of NationalEducation (MEB). (2012). Fatih Project. Retrieved on 8 December 2014 from http://fatihprojesi.meb.gov.tr

Park, Y. (2011). A pedagogicalframeworkfor mobile learning: Categorizingeducationalapplications of mobile technologiesintofourtypes. *The International Review of Research in Open and Distributed Learning*, *12*(2), 78-102.

PortioResearch (2012). *PortioResearch Mobile Factbook 2012.* Retrievedfromhttp://www.portioresearch.com/media/1797/Mobile%20Factbook%202012.pdf at thedate of 01.04.2015.

Punch, K. F. (2005). Sosyal araştırmalara giriş-Nicel ve nitel yaklaşımlar (çev. D. Bayrak, H. B. Arslan, Z. Akyüz). Ankara: Siyasal Kitabevi.

Seifert, T. (2015). Pedagogical Applications of Smartphone Integration in Teaching: Lecturers, Pre-Service TeachersandPupils' Perspectives.*InternationalJournal of Mobile andBlended Learning (IJMBL)*, *7*(2), 1-16.

Snell, S.,&Snell-Siddle, C. (2013). Mobile learning: Theeffects of genderandage on perceptions of theuse of mobile devices. In*The Second International Conference on InformaticsEngineering& Information Science (ICIEIS2013)*(pp. 274-281). TheSociety of Digital Information and Wireless Communication.

Toplu, M.,&Gökçearslan, Ş. (2012). E-öğrenmenin Gelişimi ve İnternetin Eğitim Sürecine Yansımaları: Gazi Üniversitesi Örneği. Türk Kütüphaneciliği,26(3), 501-535.

Wong, L. H. (2012). A learner-centricview of mobile seamlesslearning. *British Journal of EducationalTechnology*, *43*(1), E19-E23.

Wu, W. H.,Wu, Y. C. J., Chen, C. Y., Kao, H. Y., Lin, C. H., &Huang, S. H. (2012). Review of trendsfrom mobile learningstudies: A meta-analysis. *Computers&Education*, *59*(2), 817-827.