



Pre-Service Physical Education Teachers' Acceptance of Mobile Learning Tools and Attitude Levels for Mobile Learning

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Abstract

The development and advancement of technology, new opportunities, and effective environments are being created in education, and the role of technology in education, delivered to students through computers, smartphones, or mobile devices, mainly through the Internet, is gaining momentum. With the opportunities provided by technology, students can offer differentiated learning activities according to their learning needs, preferences, and styles. In contrast, students can personalize their technological tools with the application and content they want and participate in this process in line with their learning preferences. The purpose of this study was to examine the acceptance of mobile learning tools and mobile learning attitudes of physical education teacher candidates in Turkey. A random stratified sampling method was used. According to the findings of the research; Physical education teacher candidates' attitude levels towards mobile learning are seen to be relatively higher than their acceptance levels of mobile devices. It has been observed that motivation and satisfaction variables, which are sub-factors of Attitude Towards Mobile Learning, have a high level of correlation with each other. On the other hand, it can be said that the willingness to use mobile devices mostly affects the acceptance of mobile learning tools. In general, students perceive mobile learning positively in educational environments. In this context, with the support of educational institutions, it is possible to include mobile devices in learning-teaching processes because of their advantages such as motivating, interesting and easy-to-use physical education teacher candidates, as well as supporting learning and being independent of time and space.

Keywords: Physical education, Pre-service teachers, Mobile learning, Technology.

Beden Eğitimi Öğretmen Adaylarının Mobil Öğrenme Araçlarını Kabul ve Mobil Öğrenmeye Yönelik Tutum Seviyelerinin İncelenmesi

Özet

Teknolojinin gelişimi ve ilerlemesi ile birlikte eğitimde yeni fırsatlar, verimli ve etkili ortamlar oluşmakta, özellikle İnternet aracılığıyla öğrencilere bilgisayarları, akıllı telefonları veya mobil cihazları aracılığıyla sunulan teknolojinin eğitimdeki rolü giderek hız kazanmaktadır. Teknolojinin sunduğu fırsatlar ile, öğrencilerin öğrenme ihtiyaç, tercih ve biçimlerine göre farklılaştırılmış öğrenme etkinlikleri sunabilmekte, öğrenciler ise teknolojik araçlarını istedikleri yönde uygulama ve içerikle kişiselleştirerek, öğrenme tercihleri doğrultusunda bu sürece katılabilmektedirler. Bu araştırma ile, Türkiye'deki eğitim gören beden eğitimi öğretmen adaylarının mobil öğrenme araçlarını kabul ve mobil öğrenme tutumları incelenmek istenildiğinden, seçkisiz tabakalı örnekleme yöntemi kullanılmıştır. Araştırmanın bulgularına göre; Beden eğitimi öğretmen adaylarının mobil öğrenmeye yönelik tutum seviyeleri, mobil araçları kabul seviyelerine oranla görece olarak daha yüksek görülmektedir. Mobil Öğrenmeye Yönelik Tutum'un alt faktörlerinden motivasyon ve memnuniyet değişkenlerinin birbirleri ile yüksek seviyede korelasyona sahip olduğu görülmüştür. Öte yandan, Mobil Öğrenme Araçlarını Kabul seviyelerini genel olarak en çok Mobil Araç Kullanımına İsteklilik değişkeninin etkilediği söylenebilir. Genel olarak öğrenciler eğitim ortamlarında mobil öğrenmeyi olumlu algılamaktadırlar. Bu bağlamda mobil araçlarının eğitim kurumlarının da desteğiyle beden eğitimi öğretmen adaylarını motive edici, ilgi çekici ve kullanım kolaylığı sunması, ayrıca öğrenmeyi desteklemesi, zaman ve mekân bağımsızlığı gibi avantajları nedeniyle öğrenme-öğretme süreçlerine dahil edilmesi mümkündür.

Anahtar Kelimeler: Beden eğitimi, Öğretmen adayları, Mobil öğrenme, Teknoloji.

INTRODUCTION

The students, described as "Digital Natives" by Prensky, tend to use Information and Communication Technologies (ICT) in all areas of their lives. In solving daily problems, the internet and social networks are used as primary sources. Common components are emphasized, such as obtaining the needed information by searching the internet, meeting some of its needs via the internet, using online environments to communicate, and similar features (1). Technology should be considered as a learning tool rather than being evaluated in terms of innovations. Being able to access information at any time or communicate whenever desired gives learners more control and flexibility (2). Students' own mobile devices and the application of innovative approaches allow them to conduct research in and out of school (3). They can work with their peers during classroom activities and continue to work outside the classroom after the lesson (4). Educational institutions are now using mobile technologies and adapting their curricula to this new system by offering better learning environments and teaching methods to their students (5).

With the inclusion of mobile technologies in teaching, there is an increasing interest in the use of technology among educators and students in the field of physical education and sports, as in other disciplines (6, 7). It is argued that mobile learning in physical education and sports environments has increased in the last few years, especially the recent distance education practices during Covid-19 pandemic and studies in this area will guide teachers (8). The purpose of this research was to examine the attitudes towards mobile technologies and the level of inclusion (acceptance) of mobile technologies in the lives of undergraduate students studying in physical education teaching departments in Turkey.

METHOD

A survey research design, which is one of the quantitative research methods that examine the abilities, skills, and attitudes of certain populations, was selected (9). Survey research provides the opportunity to measure the perceptions and attitudes of individuals in a short time and with a low budget. It was aimed to describe a certain situation as it exists in a certain time period (10).

Participants

Considering the high generalizability, the random stratified sampling method was used. This method aims to represent subgroups in the population in proportion to their weight. A total of 7 different geographical

regions in Turkey were considered as 7 different strata, a total of 780 (313 females, 467 males) physical education teacher candidates studying in the Physical Education and Sports Teaching departments of 21 universities voluntarily participated in the study.

Data Collection Tools & Data Analysis

Demographic information questions such as grades (1st-4th), age, gender and using wearable technology were included in the beginning of the survey. A 5-point Likert-type "Attitude Scale Towards Mobile Learning" consisting of 45 items and four factors, was used to measure prospective teachers' attitudes towards mobile learning (11). The scale consists of 1-satisfaction, 2-effect on learning, 3-motivation, and 4-usability sub-dimensions. The second instrument was a 5-point Likert-type "Mobile Learning Tools Acceptance Scale" consisting of 19 items and four factors as 1-perceived usefulness, 2-contribution to foreign language learning, 3-negative perception, and 4-willingness to use mobile tools (12). The permission from authors of the scales were taken before the study. The Cronbach's Alpha reliability coefficient for the whole scale was calculated as .95, the reliability of the four sub-dimensions of the Acceptance of Mobile Learning Tools Scale as 0.78, 0.75, 0.74 and 0.76, respectively, and the Cronbach's Alpha value for the whole scale was 0.83. Descriptive statistics were used for demographic variables, attitudes toward mobile learning, and acceptance levels for mobile devices. With the Shapiro-Wilk test, it was checked whether the data distribution was normal. Since there was no normal distribution, Mann-Whitney U and Kruskal-Wallis H tests and Sperman's RHO correlation coefficient analyzes were used.

Results

Physical education teacher candidates' attitude levels towards mobile learning ($\bar{x}=3.59$, $sd=0.56$) seem relatively higher than their acceptance levels of mobile devices ($\bar{x} = 3.34$, $sd= 0.58$). Attitude levels toward mobile learning affected learning with the highest score among the sub-dimensions (factors). The usability factor level was the lowest. Among the factors of Acceptance of Mobile Learning Tools, Perceived Usefulness was seen at the highest score, while Negative Perception was at the lowest level.

Looking for the relationship between physical education teacher candidates' attitudes towards mobile learning and their acceptance levels of mobile learning tools Sperman's RHO correlation coefficient and their significance were investigated. It was seen that Motivation and Satisfaction variables (.81), which are sub-factors of Attitude Towards Mobile Learning, have a high level of correlation with each other. It is also revealed that the sub-factors of Satisfaction (.94) and Motivation (.88) are important factors in determining the Attitude Level towards Mobile Learning. As a result, it can be said that the Willingness to Use Mobile Tool (.84) has the highest correlation. Physical education teacher candidates' attitudes towards mobile learning and acceptance levels of mobile learning tools; The effect of class and gender, the effect of university, the effect of using wearable technology, the effect of having a blog and a website, the effect of having a dual career were examined.

The Shapiro-Wilk test was used to determine whether the attitude scores of Satisfaction, Impact on Learning, Motivation, and Usefulness, which make up the 4 factors, have a normal distribution in the categories of the independent variable "Student Grade" and it was determined that both the attitude scores and their 4 sub-factor scores were found to be the highest in the "Grades of the Students" variable. It was determined that it did not fit the normal distribution in at least one category ($p<0.05$). After this stage, whether the Attitude Scores towards Mobile Learning and the 4 factors of Satisfaction, Impact on Learning, Motivation and Usefulness, which are the four factors, are affected by the "Grades of the Students" variable, and the "Normal Distribution" assumption, which is the assumption of the parametric tests, is not met. It was investigated by the Kruskal-Wallis H non-parametric test. When the values in the table are examined, the Attitude Scores towards Mobile Learning of students studying in different classes are significantly different ($p<0.05$). Similarly, the Satisfaction, Impact on Learning and Motivation Attitude Scores of the students studying in different classes are significantly different at the 5% significance level ($p<0.05$). However, the Usefulness Attitude Scores of the students studying in different classes are not significantly different ($p>0.197$).

Determining which grades show significant differences regarding the attitude scores of students studying in different classes can be made with the Mann-Whitney U non-parametric test, which is performed separately since the assumption of Normal Distribution is not provided.

Table 1. Mann Whitney U Test Grade Variable Findings					
	Grade	N	Mean	SE	p
Satisfaction	1	292	3.65	.738	0.001
	2	243	3.49	.719	
	3	135	3.60	.750	
	4	110	3.86	.774	
Impact on Learning	1	780	3.62	.747	0.001
	2	292	3.99	.711	
	3	243	3.87	.685	
	4	135	3.90	.637	
Motivation	1	110	4.16	.707	0.001
	2	780	3.96	.695	
	3	292	3.63	.777	
	4	243	3.48	.743	
Usefulness	1	135	3.68	.703	0.197
	2	110	3.83	.805	
	3	780	3.62	.765	
	4	292	2.84	.767	
Total	1	243	2.82	.689	<0.001
	2	135	2.89	.743	
	3	110	2.67	.872	
	4	780	2.82	.757	

It was observed that 2nd and 4th grade students and 3rd and 4th grade students showed significant differences ($p < 0.016$, $p < 0.001$, $p < 0.006$) in terms of Attitude Scores towards Mobile Learning, the Attitude Scores towards Mobile Learning of other classes; On the other hand, in terms of Satisfaction and Impact on Learning Attitude Scores, 1st and 3rd and 2nd and 3rd grade students did not differ at the 5% significance level ($p > 0.05$); In terms of Motivation Attitude Scores, it can be said that the students in the 1st and 3rd and 2nd and 3rd grades did not differ at the 5% significance level ($p > 0.05$) (Table 2).

Table 2. Attitude differences towards mobile learning according to grade variable

	Grade		Mean	SE	p
Satisfaction	1	2	.161	.064	0.028
		3	.050	.077	0.935
		4	-.203	.082	0.011
	2	3	-.110	.079	0.088
		4	-.364*	.085	<0.001
		3	4	-.253*	.095
Impact on Learning	1	2	.112	.059	0.045
		3	.083	.071	0.095
		4	-.173	.077	0.015
	2	3	-.029	.074	0.898
		4	-.286*	.079	<0.001
		3	4	-.256*	.088
Motivation	1	2	.152	.065	0.028
		3	-.044	.078	0.440
		4	-.201	.084	0.032
	2	3	-.196	.081	0.011
		4	-.353*	.087	<0.001
		3	4	-.157	.097
Usefulness	1	2	.029	.065	0.919
		3	-.044	.078	0.455
		4	.174	.084	0.096
	2	3	-.074	.081	0.477
		4	.144	.086	0.076
		3	4	.218	.097
Total	1	2	.127*	.047	0.016
		3	.029	.057	0.546
		4	-.137	.061	0.008
	2	3	-.098	.059	0.170
		4	-.264*	.063	<0.001
		3	4	-.166	.070

The Mann-Whitney U non-parametric test, which is used to compare the means of two independent groups, was used to determine whether the attitude scores of Satisfaction, Impact on Learning, Motivation and Usefulness, which constitute the 4 factors, were affected by the variable "Using Wearable Technology", was investigated because the assumption of "Normal Distribution", which is the assumption of parametric tests, was not met. When Table 3 is examined, It can be said that the Attitudes Towards Mobile Learning Scores of the Students Using and Not Using Wearable Technology are significantly different at the 5% significance level ($p < 0.021$). Similarly, it can be said that the Satisfaction Attitude Scores and Motivation Attitude Scores of the students using and not using Wearable Technology are significantly different at the 5% significance level ($p < 0.001$, $p < 0.033$). On the other hand, it can be said that the Impact on Learning and Usability Attitude Scores of the Students Using and Not Using Wearable Technology are not significantly different ($p > 0.05$).

Table 3. Mann-Whitney U Test Wearable Technology Variable Findings

Wearable Tech.	N	Mean	SE	p
F1	No	614	3.58	0.001
	Yes	166	3.77	
F2	No	614	3.96	0.388
	Yes	166	3.97	
F3	No	614	3.59	0.033
	Yes	166	3.72	
F4	No	614	2.82	0.528
	Yes	166	2.81	
Total	No	614	3.56	0.021
	Yes	166	3.66	

DISCUSSION

The purpose of this study was to investigate the physical education teacher candidates' attitudes towards mobile learning and their acceptance levels of mobile learning tools. According to the findings, the Attitude levels towards Mobile Learning and Acceptance of Mobile Learning Tools are generally preferred at a moderate level. Attitude levels towards mobile learning sub-items (factors) had the highest score on learning. The usability factor level was the lowest. Considering the reflection of mobile learning in the literature, in parallel with the findings of this study; a research with 214 university students stated that although the students gave positive feedback on motivation, they found the course materials created for mobile learning complex (13). Although the mobile phone is reported as the most educational tool by university students, it has been revealed that mobile phones are not used in the curriculum and for academic purposes, and most of them use general mobile phone applications (14). Students also want to experience by providing a safe environment, as long as education in accordance with the mobile learning model and overcoming existing difficulties.

Looking at the literature, the use of mobile learning in educational environments is generally perceived positively by students. It was reported that the most important advantages of mobile learning are to access the desired information directly, instead of spending time to extract the necessary information from the data pollution found on the internet, that mobile learning devices are seen as an integral part of the learning process, and that the mobile learning method is preferred in lessons because it supports inquiry-based experiences (15). In a study conducted with 80 university students, it was found that academic success expectations are an important factor in accepting and using mobile learning in higher education (16).

According to recent studies on the subject, the opportunities that mobile learning will offer were seen as the most important findings (17). University students have a high level of satisfaction and readiness for mobile learning, and mobile devices have become a necessity in their daily lives. The subject of willingness to use mobile devices is similar to this study. While there was no significant difference in a study on the effects of students' gender, age and class on their attitudes towards mobile learning, a significant difference was found in the attitude towards mobile learning of the department (18). In another study, which did not find a significant difference in the effect of age and gender variables on mobile learning, it is consistent with the study conducted with 30 graduate students studying at Konya Necmettin Erbakan University in the 2016-2017 academic year (19). On the other hand, in a study examining the effect of pre-service teachers' grades on their attitude to use technology, a statistically significant difference was found between the first and third grades in favor of the third grade. In the same study, a statistically significant difference was found between the first grade and the fourth grade in favor of the fourth grade. As a result of the research, pre-service teachers in 3rd and 4th grades stated that they were more positive about the use of technology (20).

The "Attitudes Towards Mobile Learning" of Tourism and Education Faculty students at Selçuk and Necmettin Erbakan Universities was investigated with a survey model (21). There was no significant

difference in students' attitudes towards mobile learning in terms of gender and faculty type variables, and students' attitudes towards mobile learning in terms of graduated high school type and faculty type variables. According to the studies examined, the use of wearable technologies for educational purposes is at the forefront of; fitness practices based on gamified physical activities (22), physical education-based games (23) based on learning by doing applications (24). The striking point in these studies was the use of wearable technologies in learning activities. Another important point is the acceptance of wearable technologies as assistive technologies. Considering the results of this study, the educational effect of wearable technologies is thought to increase in terms of the use of wearable technologies, which have become widespread in education.

In a study on the effect of having a personal website (blog) on learning, they concluded that students generally need peer assessment and that they find working with a group more effective. Only a small group of students think positively about the use of blogs in group work (25). According to another research result with different findings on the same subject, it was found that students who use blogs have higher success. However, it has been revealed that students who have a positive perception of technology use in education and training see the benefits of blogging (26).

CONCLUSION AND RECOMMENDATIONS

Changes in information and communication technologies provide students and academics with global opportunities in education, especially with the advantages of the online environment provided by internet access. In recent studies, it can be said that while the educational environments are enriched with technology, the resulting environment gains quality with cooperation and interaction between stakeholders (27). Growing with mobile phones, tablets and social media (Instagram, Facebook, Twitter, etc.) (28; 29), these students use such technologies better than previous generations and even think differently than others. According to Prensky, the most important focus of educational technology studies is; it should be to find the answer to the question of how to provide educational environments specific to the newborn generation and growing in this new century. Individuals who will teach children of this age should include information and communication technologies in the classroom along with the methods and techniques they will prefer (30). At the same time, individuals who will teach digital natives should develop competencies according to the needs of the students and be open to development, and lastly, they should have the habit of lifelong learning.

Students who can benefit from mobile education services without time and place restrictions continue their education without interruption. However, this situation also creates an educational environment away from the teacher and other students. In this case, students using mobile learning applications should determine their education according to their needs. In this case, while designing mobile learning, attention should be given to presenting content tailored to individual learning. In today's conjuncture, it should be questioned whether direct narration and presentation methods and strategies are suitable for the era. Students generally perceive mobile learning positively in educational environments. In this context, it is possible to include mobile devices in the learning-teaching processes because of their advantages such as motivating, interesting, and easy-to-use physical education teacher candidates, and being independent of time and place. It is recommended to consider these features in new studies on mobile learning.

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