Brief Report

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Evaluation of Factors Affecting Students' Acceptance of Mobile Learning Use

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ABSTRACT

BACKGROUND AND OBJECTIVE: Recently, the use of mobile technology has significantly increased in a number of fields. With regard to the increasing development of information and communication technologies and the pervasive use of mobile devices for educational purposes, we aimed to evaluate the factors affecting the acceptance of mobile learning use.

METHODS: This cross-sectional study was conducted on the medical students of Babol University of Medical Sciences during 2013-2014. Data related to the acceptance of mobile learning including age, gender, type of device, as well as the time and place of device use, were collected using a questionnaire; afterwards, the obtained data were evaluated.

FINDINGS: Mobile learning was not significantly correlated with age, gender, or time of device use among the students of Babol University of Medical Sciences. However, mobile learning was significantly correlated with the type of device and the place of use.

CONCLUSION: The results showed that the type of device and the place of use had significant impacts on the acceptance of mobile learning.

KEY WORDS: Effective Factors, Acceptance, Mobile Learning.

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Introduction

Over the past few years, the use of mobile devices has rapidly increased in a number of fields including banking, economy, tourism, entertainment, and library research (1). The rapid development and implementation of new technologies, along with social changes, are responsible for some inevitable changes in education (2). Teaching and learning activities employed in many educational systems are outdated and unsuitable (3).

As researchers have indicated, learning should be accompanied by extracurricular activities (4). Mobile learning includes all forms of online educational structures that are available via electronic devices (5). Moreover, this method of learning does not interfere with the learners' daily activities (6). Here, the question arises as to what extent learners are familiar with learning electronic devices and the basics of mobile learning (7). One of the ways of introducing people to new issues of leaning is mobile learning. In fact, via this mode of learning, we can educate individuals in line with changes in the era of information and technology (8). The first research on mobile learning was conducted circa 2000. Moreover, various studies were carried out during 2002 and 2006, indicating the development and increasing application of this type of learning in different educational environments (9). In this regard, Kukulska et al. indicated the high level of acceptance and usefulness of mobile learning from the students' point of view (10).

Georgieva et al. showed that mobile learning is a technical portable facility, associated with educational advantages (11). A study by Naderi et al. in Iran also showed that learning via mobile phones in medical sciences has positive effects on the academic progress and self-regulation of students (12). In addition, as Zamani et al. indicated, organizing training courses, educational planning, and providing information and financial assistance were the most important strategies for improving mobile learning at Isfahan University of Medical Sciences (9).

Taheri et al. also showed that interest in mobile learning systems, developing skills for using this system, the associated social prestige, students' background knowledge about this system, its security and safety, future tendencies toward the application of such systems, and interactions between the students and academic members on this subject are effective factors for using mobile learning systems. However, in the mentioned study, training students on how to apply mobile learning, the support provided by educational centers, the technical infrastructure for using this system, and the availability of information in mobile learning had no significant impacts on this system. In addition, interest in mobile learning and availability of the educational content had the most and least (mean=24.22) significant effects on mobile learning, respectively (13).

With regard to the acceptance of mobile learning, Taheri et al. concluded that age, field of study, and educational level affected the acceptance of mobile learning, whereas gender had no significant impacts (14). Progress in the development of portable devices improves the use of mobile phones and applications, which allow learners to have access to a wide range of learning resources (15, 16).

Today, given the rapid developments in the field of medical sciences, issues such as unlimited access to learning resources, learning while working, and access to unofficial or constant learning have become more urgent than ever, highlighting the need for mobile learning (9).

Since mobile learning has dramatic effects on the educational progress and self-regulation of students, this study was conducted at Babol University of Medical Sciences in order to evaluate factors affecting the acceptance of mobile learning. These factors need to be considered when designing the educational content of mobile learning.

Methods

This cross-sectional study was conducted on 449 medical students at Babol University of Medical Sciences. The sample size was calculated at 210 participants, using Krejcie & Morgan's table. We applied documentary and field methods for data collection. In the field method, we employed a researcher-made questionnaire, graded by a Likert-scale for collecting the data. This questionnaire evaluated the factors contributing to the acceptance of mobile learning and dependent variables such as age, gender, type of device, and time, duration, and place of device use. In order to determine the validity of the questionnaire, face and content validity were evaluated. For this purpose, we profited from the experts' opinion. For evaluating the reliability of the questionnaire, Cronbach's alpha was calculated and a total of 30 questionnaires were distributed among the samples. The reliability of the questionnaire was measured at 0.84,

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indicating the reliability of this data collection tool. For data analysis, one-way analysis of variance (ANOVA) was applied. $p<0.05$ was considered statistically significant.

Result

In total, 101 male (48.1%) and 109 female (51.9%) students were included in this study. Also, 180 students (85.7%) were under 20 years of age, while 30 subjects (14.3%) were within the age range of 25-30 years; no participants were older than 30 years of age in the study. The findings showed that the highest amount of time students spent on mobile learning was from morning till evening in 97 students (46.2%) and from evening till morning in 110 subjects (52.4%).

In total, 26 (12.4%) and 64 (30.5%) students used mobile learning at home and university, respectively. Additionally, it was revealed that 68 subjects (32.4%) used mobile learning while working and 6 participants (2.9%) during transportation; also, 45 students (21.4%) mentioned other locations.

Comparison between different age groups indicated that students under 20 years of age (56.73%) showed more acceptance of mobile learning, compared to subjects within the age range of 20-30 years (56.33%) (Table 1). Also, in terms of gender, men (56.82%) had more acceptance of mobile learning than women (56.59%). Regarding the type of the device, it was found that those using mobile phones and pocket PC (56.95%) had more acceptance of mobile learning, compared to those who only used mobile devices (56.29%) or pocket PC (58.67%).

Moreover, students who used the device from morning till evening (56.83%) showed more acceptance toward using mobile learning, compared to those who used their devices from evening till morning (56.45%). Additionally, those who used their devices during transportation (62%) showed more acceptance toward using mobile learning in comparison with those who used their devices at home (54.12%), university (54.92%), at work (40.56%), or other locations (60.49%). The value of f-test was equal to 0.032 and the significance level was 0.51 in both age groups. These findings showed no significant association between mobile learning use, age, or gender. There was a significant association between the type of the used device and mobile learning ($p\leq0.002$). However, there was no significant association between the time of device use and mobile learning in students of Babol University of Medical Sciences. Also, there was a significant correlation between the place of device use and mobile learning among the students of Babol University of Medical Sciences ($p=0.002$).

Table 1. Mean comparison and evaluation of factors affecting the acceptance of mobile learning, according to ANOVA test results

Effective Factors	Groups	SD±Mean	F-test	Pvalue
Age	Under 20 years	56.7±15.2	0.032	0.51
	Older than 20 years	56.3±7.3		
Gender	Male	56.8±5.6	0.096	0.75
	Female	56.6±5.04		
Target device	Mobile	56.3±5.5	3.193	0.02
	Pocket PC	58.7±2.5		
	Mobile and pocket PC	60±4.4		
	Others	55±5.5		
Time of use	From morning till evening	56.5±5.5	0.377	0.76
	From evening till morning	56.8±5.5		
Place of use	Home	54.1±5.7	4.952	0.002
	University	54.9±5.7		
	At work	56.4±4.5		
	During transportation	62±3.7		
	Other locations	60.5±4.1		

Discussion

According to the results of this study, despite all the differences, the majority of students were willing to use portable devices for learning, which is consistent with the findings reported by Naderi et al. (12), Zamani et al. (9), and Taheri et al. (13). Based on the results of the current study and mean comparison, we found that the acceptance of mobile learning was higher in men and people under the age of 20 years, compared to other participants.

Moreover, the acceptance of mobile learning was correlated with the use of device from morning till evening and use of both mobile and pocket PC. However, the observed differences were so close that in further tests, some variables such as age, gender, and time of device use had no effects on mobile learning,

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whereas the place of use and type of the device had significant impacts on mobile learning. In other words, those who used mobile and pocket PC simultaneously had more interest in learning with portable devices, which is due to their familiarity with these devices. In a study by Taheri et al. (13) on students in other majors, gender and type of the device had no influence on the acceptance of mobile learning; these findings were also confirmed by the current results. However, age had no significant impact on mobile learning in our study, while considerable effects were reported in the previously mentioned study; this discrepancy might be due to the similarity of participants in terms of age. Therefore, it is suggested that in future studies, different age groups be included in order to obtain more conclusive results. The insignificant effects of different variables on the acceptance of mobile learning indicate the willingness of all evaluated subjects toward the use of mobile learning. Therefore, educational scholars and authorities need to focus on designing proper educational content for mobile devices.

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