

A FEASIBILITY STUDY OF MOBILE LEARNING IMPLEMENTATION IN IRANIAN UNIVERSITIES

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ABSTRACT

The present research aims to study the feasibility of educational system implementation based on mobile learning in Islamic Azad and Payam Noor universities in the north of Khuzestan Province with the emphasis upon the investigation of technical, legal and human resources provision fields. The research methodology was descriptive-survey. The statistical population includes all technical technicians, legal authorities and faculty members of Islamic Azad and Payam Noor universities in the north of Khuzestan Province. It consists of 10 universities in five northern cities out of which 3 universities were selected as the sample size using multistage cluster sampling method. The numbers of technical technicians, legal authorities and faculty members were 18, 12 and 182 respectively. The data collection instruments in this research include 2 questionnaires (regarding faculty members' preparedness and legal preparedness) and 1 evaluation checklist (in technical field). In order to analyze the data, inferential statistics (chi-square goodness of fit test and one-sample t-test) were used. The results showed that at the 95% confidence level, Islamic Azad and Payam Noor universities in the north of Khuzestan Province had enough facilities and were well-prepared to implement the educational system based on mobile learning in technical, legal and human resources provision terms.

Keywords: InformatICT, mlearning, feasibility, study.

Introduction

Nowadays, the use of information and communications technology have brought big changes in educational context. The use of online technologies in education, variety and increased specialization in sciences, increasing demand for education as well as accordance with rapid scientific developments have caused constant changes in educational contents and increased the need for lifetime learning and more comprehensive educational opportunities such as mobile learning.

Mobile learning has turned into a very recent and vital teaching method in universities, many educational centers especially universities having set this kind of education as their long-term plan and making huge investments in this kind of education. This new educational approach has begun since 2000 in developed countries, having being used for a variety of purposes like driver's education and holding PhD courses.

Mobile learning refers to a kind of learning which takes place through devices like mobile phones, tablets, laptops and even digital cameras and USB cables (Gharibi and Mohammadi, 2008). These learning devices can be with learners as they are portable. In other words, learning through these devices reduces the spatial limitation of learning by making learning spatially flexible. Dye argues (2003) that mobile learning refers to that kind of learning which can take place anywhere and anytime using electronic devices. (Dye, 2003 quoted by Alamdari, Ramezani, and Velayati, 2011). Alley also defines mobile learning as, "mobile learning through mobilewireless technology enables people to have access to learning materials anywhere and anytime" (Alamdari , Ramezani, and Velayati, 2011). As a result, through mobile learning, learners can learn something whenever they want and they can also reach valuable learning materials which can promote the quality of their learning.

This specific feature of learning distinguishes mobile learning from learning thorough web. Mobile learning can be described as a mixture of two existent education methods; distance learning and E-learning since there is a distance between professors and students in this learning as there is in distance learning and on the other hand, like E-learning, learning also occurs through computer technologies but with electronic devices and more advanced technologies.

Learners of mobile learning need some main components so that mobile learning occurs correctly. At first, they need to have a mobile device with enough memory and an appropriate monitor with communication capabilities. To do this, a PDA or a modem or a mobile phone with new capabilities can be used. Secondly, an operating system which manages the resources of the mobile device and is suitable for the processing power, limited memory and small screen size of these devices. Thirdly, software products, applications and hardware products including communication networks, which are of necessity to carry out mobile learning and supply required content for mobile learning (Ibrahim Beiki Chimeh, 2009).

Given the definitions of mobile learning and the widespread use of this electronic device in education, there are a host of reasons the main of which are as follows:

- Increased motivation of students to learn using mobile electronic devices
- Increased possibility of participation in educational courses through mobile electronic devices

- **Possibility of more interactions and communications between students and professors**
- **Possibility of more cooperation among students**
- **Reduced infrastructure and technical costs**
- **Use of lifelong learning and informal education**
- **Increased study time for students through high flexibility provided by this learning method temporally and spatially (Safarzadeh and Manuchehri, 2010).**

The review of literature shows that many educational institutes have not reached the above-mentioned advantages by implementing mobile learning. Azad University and Payam Noor University are among the biggest Iranian universities which have been established to offer distance learning in order to enhance scientific and cultural levels of the society, train a part of experts required for the society, offer higher education to those who cannot make use of traditional and common education due to distance or lack of access to educational centers and occupational, temporal and geographical limitations. In order to reach the mentioned goals and enhance their efficiency, these universities need to perform modern learning methods. Given the structure and nature of Payam Noor University the main activities of which take place through distance learning, mobile learning can be the best and most effective scientific and logical method requiring less investment and developing admissions capacity, increasing the need for lifelong learning and more comprehensive educational opportunities for the students and synchronizing them with the digital era. Given the flexibility given by mobile learning for both learners and teachers, many senior managers of educational institutes and universities are developing this learning method in their institutes and universities like American universities such as Ablein, Purdue, Michigan and Seton Hall University, Bangladesh Open University and Canada University most of which provide distance and electronic learning. In Iran, many activities have been done in regard with electronic learning in higher education. University of Science and Technology, Amirkabir University of Technology, Shiraz University and Isfahan University of Technology have been active in this matter. But concerning mobile learning implementation, this educational issue has been dealt with to a smaller extension other Iranian universities. In regard with mobile learning implementation, the literature review shows that Iranian universities face some challenges and difficulties like challenges related to technology and technical, educational, specialized, economic and legal infrastructures.

Many education experts believe that using any kind of modern educational system shall be studied carefully since without coherent and accurate planning one cannot reach the objectives and brings with it many financial problems, resulting in failure. Therefore, every project should be evaluated from different aspects such as financial, human resources, technical, legal etc. and a feasibility study should be carried out.

The feasibility study will aim to uncover strengths and weaknesses, opportunities and threats, the resources required to carry out, and ultimately the prospects for success of the proposed project (Georgakellos and Marcis 2009). In Iran, the feasibility of universities' preparedness to implement mobile learning has been studied to a limited extent.

For instance, Vahidi (2012) conducted a research regarding establishment of mobile learning in Isfahan University of Technology and evaluated 15 indices the results of which showed that the university's preparedness in regard with technical and human resources factors (professors) was at an acceptable level but regarding legal and financial indices, it was not at a desired level. In addition, Yaghubi and Jebileh (2010) investigated "the role of mobile technologies in offering villagers electronic administrative services". The results indicated that generally experts and executives of agriculture had a positive attitude toward using mobile devices in offering electronic services and mobile learning. However, in other countries, the preparedness of scientific centers has been widely evaluated in this regard. Lim, Fazill and Mansor carried out a research to determine professors and students' preparedness as well as technical preparedness in Malaysia University in regard with the use of SMS. It was found that the university was well-prepared technically and regarding human resources (Ally and Tsinakos, 2014). Many scholars have also sought to find inherent and key factors in implementing mobile learning? For example, Kukulska-Hulme and Traxler (2005) performed a research under the title "evaluation and quality assurance and development in implementing technology in education and learning in higher education". They found that in order to perform mobile learning successfully, the existence of technical and infrastructural factors along with motivation and skills of trainers and researcher are of high importance.

Traxler and Bridges (2004) conducted a research under the title "inherent and key factors in performing mobile learning". The results suggest that in order to carry out mobile learning in educational institutes, financial preparedness, and access to

Information and content (technical factors), security and privacy protection (legal issues) play key roles. Bates and Poole (2003) in a research under the title "provision of a proposed model for determining effective and key factors in performing mobile learning in higher education" found that technical and infrastructural factors (content compatibility, ease of access to content, speed of transferring data and etc.), legal issues (reliability to protect data) financial issues and organizational factors are the key aspects of a comprehensive evaluation of conducting mobile learning in higher education .

RESEARCH OBJECTIVES

- Examination of conditions of Islamic Azad and Payam Noor Universities' technical infrastructures in the north of Khuzestan Province in order to perform mobile learning.

- Examination of legal status and laws of Islamic Azad and Payam Noor Universities in the north of Khuzestan Province in order to perform mobile learning.
- Examination of people's preparedness (faculty members) in Islamic Azad and Payam Noor Universities in the north of Khuzestan Province in order to perform mobile learning.

Research Questions

- Is performing mobile learning in Islamic Azad and Payam Noor Universities in the north of Khuzestan Province technically possible?
- At what level are legal status and laws of Islamic Azad and Payam Noor Universities in the north of Khuzestan Province in order to perform mobile learning?
- How is people's preparedness (faculty members) in Islamic Azad and Payam Noor Universities in the north of Khuzestan Province in order to perform mobile learning?

Research Methodology

In terms of objective, this is an applied research given that it is concerned with the development of applied knowledge and studies the feasibility of performing mobile learning. In regard with the collection of required data, this is a descriptive-survey research.

Statistical Population and Sampling Method

In this research, the statistical population includes legal authorities and faculty members of Islamic Azad and Payam Noor universities in the north of Khuzestan Province in 10 universities of 5 northern cities of the province. Given the large size of the statistical population, the sample was selected using multistage cluster sampling method. In this sampling method, sampling unit is not the individual but includes a group or cluster of people. Using cluster method, Islamic Azad University of Dezful, Islamic Azad University of Andimeshk and Payam Noor University of Shoosh were randomly (by lottery) selected.

Then, out of 342 faculty members, 182 were determined as the necessary sample using Morgan table and they were distributed among the 3 universities by relative stratified random method. There were 18 experts and technicians of ICT in the three universities and 12 legal authorities and given the small size, they were altogether selected as the sample.

Data Collection Instruments

As the most common instrument to collect data in survey research is questionnaire (Salimi, 1997), a researcher-made questionnaire has been used to collect the data in regard with faculty members' preparedness and legal issues in these universities.

The questionnaire concerning faculty members' preparedness level (knowledge, skill and attitude) in the universities consists of two parts in order to perform mobile learning; the first part is related to explanations given about conducting mobile learning in the universities and their personal information such as gender, age, education level, job and employment of the faculty members.

The second part evaluates faculty members' preparedness in three fields of knowledge, skill and attitude in order to perform the project of mobile learning in the universities, which includes 26 questions. The scoring scale of this questionnaire is the 5-point Likert scale. The legal questionnaire includes 13 questions about regulations and legal items of universities in order to carry out virtual learning from the viewpoint of the universities' managers and legal authorities, falling into a Yes/No scale. In regard with the technical part of the research, a checklist was used to evaluate ICT in the status quo of the selected universities. The evaluation checklist of the status quo has been measured in terms of a Yes/No scale.

RESEARCH INSTRUMENTS VALIDITY AND RELIABILITY

Validity

In order to determine the questionnaire validity, the advisor's suggestions were drawn upon to correct and remove some questions and finally the faculty members' preparedness questionnaire containing 26 questions in regard with knowledge, attitude and skill in order to perform mobile learning in Islamic Azad and Payam Noor universities in the north of Khuzestan Province was confirmed.

The Spearman correlation coefficient (internal consistency) between the questions was found to be $r=0.808$. To find the validity of the technical questionnaire containing 20 two-choice questions, a retest was done.

In order to determine the validity of the legal questionnaire containing 13 two-choice questions, another retest was conducted the Spearman correlation value of which was $r=0.875$ at the error rate of 0.01 which was found significant.

Reliability

In the present research, Cronbach's alpha method was used to determine the reliability of the questionnaire. The values for faculty members' preparedness were 0.917, 0.799 and 0.913 in regard with knowledge, attitude and skill respectively.

RESEARCH FINDINGS

Q1: Is performing mobile learning in Islamic Azad and Payam Noor Universities in the north of Khuzestan Province technically possible?

In regard with the technical conditions of mobile learning in the universities of northern Khuzestan, 20 questions were taken into account.

In the checklist, hardware, software and support factors were evaluated, high speed internet and 512 kbps and 2G bandwidth and higher in the university, central data system in the ICT system of university, access to telecommunications infrastructure systems such as fiber optic and satellite receivers, an appropriate information system for the storage, transmission and exchange of information like internet, intranet and extranet in university, appropriate software and hardware facilities to create and send information in university, strong support to connect equipment and mobile devices to the Internet in university, the technical experts' familiarity with ICT and technologies related with mobile and other electronic devices, doing administrative tasks through the Internet and by electronic devices such as mobile, tablet, personal digital assistant in university site with the mean of 0.94 suggesting the high readiness of the universities in these aspects in order to perform mobile learning.

Moreover, Morgan Table: 1 of chi-square goodness of fit test shows that the value of chi-square test is double by 8.00 the degrees of freedom is 1 at the significance level of 0.005 and its error level is below 0.01.

So, the difference between the observed frequency and the expected frequency is acceptable, the test being significant and since the chi-square test is influenced by the highest frequency (high with 15 people), it can be concluded with 95% confidence that in technical technicians' view, the technical and infrastructural preparedness of the universities in the north of Khuzestan in order to perform mobile learning is at a high level.

Table: 1
The results of chi-square goodness of fit test related to technical resources

Significance Level	Degrees of Freedom	Chi-square Test	Remainder	Expected Frequency	Observed Frequency	
0.005	1	8.00**	-6.0	9.0	3	Low
			-6.0	9.0	15	High
					18	Total

** Significance level at 0.01

Q2: At what level are legal status and laws of Islamic Azad and Payam Noor Universities in the north of Khuzestan Province in order to perform mobile learning?

In regard with legal status and laws of the universities in the north of Khuzestan Province in order to perform mobile learning, 13 questions were proposed.

The possibility of codifying rules and regulations of the project (performing mobile learning), rules to protect copyrights of electronic works in university laws, students' information security and paying salary to the executive employees and instructors of virtual courses, filing a lawsuit in regard with electronic lawsuit with an average of 1 had the highest average among legal issues.

In addition, as the table(2) of chi-square goodness of fit test shows that the value of chi-square test is double by 8.33 and the degrees of freedom with the significance level of 0.004 is below the error level of 0.01, the difference between the observed frequency and expected frequency is acceptable, the test being significant. Since the chi-square test is influenced by the highest frequency (high with 11 people), it can be concluded with 95% confidence that in legal authorities' view, the legal status and rules of the universities in the north of Khuzestan in order to perform mobile learning is at a good level.

Table: 2
The results of chi-square goodness of fit test related to legal status

Significance Level	Degrees of Freedom	Chi-square Test	Remainder	Expected Frequency	Observed Frequency	
0.004	1	8.33**	-5.0	6.0	1	Low
			-5.0	6.0	11	High
					12	Total

** Significance level at 0.01

Q3: How is people's preparedness (faculty members) in Islamic Azad and Payam Noor Universities in the north of Khuzestan Province in order to perform mobile learning?

In order to analyze this question, 3 secondary questions in regard with knowledge, attitude and skill of faculty members have been proposed.

- At what level is the preparedness of the people (faculty members) working in the universities in the north of Khuzestan in order to perform mobile learning in terms of knowledge?

In regard with the people's (faculty members) preparedness in terms of knowledge in the universities of northern Khuzestan in order to perform mobile learning, 11 questions were put forth.

They included familiarity with searching methods in the Internet, typing and content modification software (Word, Excel, and Office etc.), slideshow presentation software (PowerPoint) with an average of 4.33 which was the highest average.

As the table above shows and with the emphasis upon the obtained value of t (8.32) the error level of which is 0.01 that is significant, it can be said that there is a significant difference between the real average (3.47) and the theoretical average of the spectrum (3). Since, the real average is above the theoretical average of the spectrum, it can be concluded with 95% confidence that in faculty members' view of the universities in the north of Khuzestan, their preparedness in order to perform mobile learning is at a high level regarding knowledge.

Table: 3
One-sample t-test concerning faculty members' knowledge level

Test Result	Error Level	Significance Level	t	Degrees of Freedom	Standard Deviation	Real Average	Theoretical Average	Variable
H_0 rejection	0.05	0.001	8.32**	181	0.77	3.47	3	Knowledge Level

**Significance level at 0.01

- **At what level is the preparedness of the people (faculty members) working in the universities in the north of Khuzestan in order to perform mobile learning in terms of attitude?**

In regard with the people's (faculty members) preparedness in terms of attitude in the universities of northern Khuzestan in order to perform mobile learning, 6 questions were considered. They included interest in performing mobile learning, using ICT in education, establishing communication with the students through mobile phone or other mobile devices with an average of 4.02 which was the highest average.

As the table above shows and with the emphasis upon the obtained value of t (10.99) the error level of which is 0.01 that is significant, it can be said that there is a significant difference between the real average (3.55) and the theoretical average of the spectrum (3). Since, the real average is above the theoretical average of the spectrum, it can be concluded with 95% confidence that in faculty members' view of the universities in the north of Khuzestan, their preparedness in order to perform mobile learning is at a high level regarding attitude.

Table: 4
One-sample t-test concerning faculty members' attitude level

Test Result	Error Level	Significance Level	t	Degrees of Freedom	Standard Deviation	Real Average	Theoretical Average	Variable
H_0 rejection	0.05	0.001	10.99**	181	0.68	3.55	3	Attitude Level

**Significance level at 0.01

- **At what level is the preparedness of the people (faculty members) working in the universities in the north of Khuzestan in order to perform mobile learning in terms of skill?**

In regard with the people's (faculty members) preparedness in terms of skill in the universities of northern Khuzestan in order to perform mobile learning, 9 questions were asked. They included creating an email account, producing electronic content, sending SMS messages through mobile phone, using mobile devices in mobile learning with an average of 4.18 which had the highest average.

As the table above also shows and with the emphasis upon the obtained value of t (11.46) the error level of which is 0.01 that is significant, it can be said that there is a significant difference between the real average (3.68) and the theoretical average of the spectrum (3). Since, the real average is above the theoretical average of the spectrum, it can be concluded with 95% confidence that in faculty members' view of the universities in the north of Khuzestan, their preparedness in order to perform mobile learning is at a high level regarding skill.

Table: 5
One-sample t-test concerning faculty members' skill level

Test Result	Error Level	Significance Level	t	Degrees of Freedom	Standard Deviation	Real Average	Theoretical Average	Variable
H_0 rejection	0.05	0.001	1.46 **	181	0.80	3.68	3	Skill Level

**Significance level at 0.01

DISCUSSION AND CONCLUSION

The final analysis of the research questions reveals that performing mobile learning in the universities in the north of Khuzestan Province is possible. Technical preparedness of the universities in order to conduct mobile learning with a frequency of 83.3 (and with 15 people; the highest frequency) is at a high level.

All things considered, the findings show that from the technical technicians' viewpoint, the universities are technically highly-prepared to perform mobile learning in terms technical and communication infrastructures. The examination of technical factors from the technical technicians' viewpoint, it was found that: high speed internet and 512 kbps and 2G bandwidths and higher with 94%, appropriate software facilities and information system for the storage and transmission of information, communication networks to send services to users' mobile phones, preparedness to do administrative tasks using mobile devices and technical technicians' familiarity with mobile devices technologies with 88.9 and the mean of 88% are the most effective factors in regard with the universities' technical and communication preparation.

Since operating any new virtual educational system requires technical infrastructures and the centers' equipment, the research findings show that scientific centers and universities in the north of Khuzestan Province are in a acceptable situation in regard with technological and telecommunications infrastructures, software issues, communication networks and bandwidth.

Kamalian and Fazel (2009) argue that of the important issues regarding electronic learning, technical and communication facilities and infrastructures shall be taken into account. This kind of learning requires this.

Therefore, the first factor to be studied in this research for the feasibility of performing mobile learning is the access to the latest software, hardware and communication technologies.

Salahi, Keshavarzi, Heidari, Salehi, and Amiryanzadeh (2013) believe that software and hardware facilities or generally infrastructures play a key role in developing virtual and electronic learning in the authorities and instructors' view. In explaining this finding, one can say that without appropriate equipment and ease of access to it, performing E-learning becomes really difficult. Hence, the development of E-learning including mobile learning requires technical and telecommunications infrastructures and firstly before doing anything, it seems necessary to build technological infrastructure. And bandwidth plays a key role in mobile learning regarding the success of these courses, the results showing that technical and telecommunications infrastructures of the current research universities are at an acceptable level which is the result of performing electronic learning (which is the appropriate prerequisite of mobile learning) in the universities.

Legal preparedness of the universities in order to carry out this project with a frequency of 91.7% (and the highest frequency; 11 people) is at a high level. Generally the findings show that in legal authorities' view, laws and regulations of the universities in order to perform mobile learning are in a favorable condition. The investigation of rules and their items in legal authorities' view, it was found that the possibility of codifying regulations of the project (performing mobile learning) and the presence and absence of virtual courses' students and instructors with 100% and the average of 1 have the highest preparedness. Most of the responses of the subjects suggest that the possibility of codifying rules and regulations along with rules to protect copyrights of electronic works in university laws, paying salary to the executive employees, the presence, absence and security of content information and students is at a desired level, which is the result of conducting E-learning in the universities as well as doing administrative and educational tasks of the students through university's site and in this regard the universities are prepared. Darab and Montazer (2010) argue that laws of the universities should be put forth so that the designers of E-content (instructors and developers of content) can be assured of the support for their activities and the staff also believe that their efforts to act successfully is not ignored.

The faculty members' preparedness was evaluated in regard with knowledge, attitude and skill:

The results obtained from the research questionnaires indicate that frequency distribution and the rate of the instructors' preparedness (faculty members) in the universities in the north of Khuzestan Province about performing mobile learning is 48.4% with the highest frequency of 88 people, 54.9% with the highest frequency; 100 people and 59.9% with the highest frequency (109 people) with respect to knowledge level, attitude level and skill level respectively.

In general, given the above results, faculty members enjoy a high preparedness in regard with the three mentioned dimensions (knowledge, attitude and skill) in order to perform mobile learning. As regards the analysis of two aspects; knowledge, and skill, searching methods in the Internet with 4.23 and creating an email account with 4.18 have the highest average. And regarding attitude, interest in performing mobile learning with 4.02 has the highest average among the questions of the inventory.

Generally, carrying out a virtual learning system requires preparedness in different aspects. One of the strategic and key sources of virtual learning system is human resources which must possess special and favorable knowledge, skill and attitude. Kamalian and Fazel (2009) say that one of the key factors in the success of E-learning is acquaintance and skills of using ICT since the development of activities based on the Internet and channel of communication necessitates an acceptable level of computer knowledge. One of the very important criteria in performing mobile learning is the familiarity of the instructors and human resources with ICT. One of the key skills of the professors in their preparedness and skill in using the Internet and mobile devices in learning.

The research findings show that preparedness and skill in using the Internet is found among the professors. The professors' appropriate skill in using the Internet results from the fact that the use of computer and the Internet in some administrative and educational tasks such as the provision of up-to-date and appropriate educational content from different websites, having a weblog and sending emails in order to communicate and use computer and the Internet have become a part of carrying out projects and their research.

However, they are not familiar with mobile devices learning, educational software in mobile devices and proposing questions and getting answers through these devices, which may be due to the fact that this learning method is still new and costly in regard with communications through these devices, and no seminar is held in reference to mobile learning. In explaining this finding, one can say that academic literacy and skill of the instructors are regarded as one of the major effective factors in learning. Since learning through technology is in some ways different from face-to-face instruction (Kilby, 2001, quoted from RahimiDoost and Razavi, 2012), in order to offer E-learning, the instructors drawing upon this method must be familiar with and become skilled at technology-based instruction, its features, its difference with face-face-to instruction and other required knowledge and skills in this regard.

Thus, it is a must for the instructors to participate in preparation courses for E-learning (RahimiDoost and Razavi, 2012). Holding seminars, workshops and training courses, brochure design, training manual preparation and notification seem to play a constructive role in creating knowledge and skill in regard with using mobile devices in education for faculty members.

In respect to the questionnaire of the faculty members' attitude, good attitude and great interest in performing mobile learning can be the result of the instructors' awareness of the traditional learning and teaching methods limitations since they have found that dependence on sole pre-determined content cannot satisfy students' curiosity and information of variety fields in the current era. Students also should be equipped with creative techniques so that they can satisfy their inquisitive minds.

This research has examined feasibility study factors in technical, legal and human resources areas. It is suggested that the future research deal with the other dimensions including educational policy, e-content, security, assessment and monitoring, higher education authorities and students' culture and attitude toward mobile learning.

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