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The Paradox of Acceptance and Rejection: the Perception of Healthcare Professional Students about Mobile Learning Acceptance in Iran University of Medical Sciences

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Date of publication: June 28th, 2018

Edition period: June 2018 – October 2018

To cite this article: Koohestani, H. R., Soltani Arabshahi, S. K., & Ahmadi, F. (2018). The paradox of acceptance and rejection: the perception of healthcare professional students about mobile learning acceptance in Iran University of Medical Sciences. *Qualitative Research in Education*, 7(2), 144-169. doi:10.17583/qre.2018.3341

To link this article: <http://dx.doi.org/10.17583/qre.2018.3341>

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The Paradox of Acceptance and Rejection: the Perception of Healthcare Professional Students about Mobile Learning Acceptance in Iran University of Medical Sciences

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(Received: 28 February 2018; Accepted: 23 June 2018; Published: 28 June 2018)

Abstract

Objective: A qualitative study was conducted to explore the perception of healthcare professional students about mobile learning acceptance. **Method:** The study was performed using a conventional content analysis method. The subjects were the students of medical sciences in Iran University of Medical Science. Sampling was based on a purposeful sampling method. Twenty-three students took part in semi-structured interviews until data saturation was reached. **Results:** The main theme was “the paradox of acceptance and rejection” with three categories; (1) perceived attraction (sub-categories: learning with the excitement of entertainment, the attraction of multimedia learning environment and enthusiasm for electronic learning); (2) perceived ease (sub-categories: easy access to information anytime and anywhere and easy and effortless use); and (3) perceived conflict (sub-categories: teachers’ contradictory behavioral patterns, contradiction about value of online information, friends’ contradictory behavioral patterns, and digital gap between generations in family). **Conclusion:** The three categories found in the study placed the students in a dilemma of using or not using mobile learning. They had doubts about accepting mobile technology as a legitimate educational tool. Taking these factors into account and managing them can pave the way for mobile learning in the students.

Keywords: mobile learning acceptance, technology enhanced learning, healthcare professional, students, qualitative research

La Paradoja de la Aceptación y el Rechazo: La Percepción de los Estudiantes Profesionales de la Salud sobre la Aceptación del Aprendizaje Móvil en la Universidad de Ciencias Médicas de Irán

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(Recibido: 28 de febrero de 2018; Aceptado: 23 de junio de 2018; Publicado: 28 de junio de 2018)

Resumen

Se realizó un estudio cualitativo para explorar la percepción de los estudiantes profesionales de la salud sobre la aceptación del aprendizaje móvil. El estudio se realizó utilizando un método de análisis de contenido convencional. Los sujetos fueron estudiantes de medicina en la Universidad de Ciencias Médicas de Irán. El muestreo se basó en un método de muestreo útil. Veintitrés estudiantes participaron en entrevistas semiestructuradas hasta que se alcanzó la saturación de datos. El tema principal fue "la paradoja de la aceptación y el rechazo" con tres categorías: (1) atracción percibida (subcategorías: aprendizaje con la emoción del entretenimiento, la atracción del entorno de aprendizaje multimedia y el entusiasmo por el aprendizaje electrónico); (2) facilidad percibida (subcategorías: acceso fácil a la información en cualquier momento y en cualquier lugar y uso fácil y sin esfuerzo); y (3) conflicto percibido (subcategorías: patrones de comportamiento contradictorios de los docentes, contradicción sobre el valor de la información en línea, patrones de comportamiento contradictorios de los amigos y brecha digital entre generaciones en la familia). Las tres categorías encontradas en el estudio colocaron a los estudiantes en un dilema de usar o no el aprendizaje móvil. Tenían dudas sobre la aceptación de la tecnología móvil como una herramienta educativa legítima. Tener en cuenta estos factores y gestionarlos puede allanar el camino para el aprendizaje móvil en los estudiantes.

Palabras clave: aceptación de aprendizaje móvil, aprendizaje mejorado de tecnología, profesional de la salud, estudiantes, investigación cualitativa

A new paradigm in learning is initiated by mobile learning, which relies on mobile devices and wireless networks and provides accessible and collaborative learning at all levels including schools, colleges and universities (Motiwalla, 2007). Mobile learning is convenient, effective, flexible, interesting, and interactive. It can be helpful for students to learn beyond time and space limitations (Patil et al., 2016). The conventional mobile technology is a promising instructional approach given its user friendly features and widespread use. Mobile learning can be implemented as a strategy of learner-centered education. Using mobile learning method, teachers and students can adapt more easily with the new technology as a teaching-learning-method (Vafa & Chico, 2013). Mobile devices can extend the advantages of e-learning systems through providing access to course materials and information and communicational technology (ICT) for university students. In addition, the learners can enjoy a more collaborative environment (Nassuora, 2012). Using mobile devices, the learning process can be continued outside educational setting through providing portable and independent learning environments. The technology gives the students the ability to communicate with the teachers and classmates as well (Khadage, Lanham, & Zhou, 2009).

Mobile technology can be integrated into medical education (Mohapatra, Mohapatra, Chittoria, Friji, & Kumar, 2015). It is mostly helpful for medical students for whom medical learning is a never-ending endeavor (Van Schaik, Plant, & O'Sullivan, 2013). Smartphones are widely used in medical education for different purposes such as a way to access information and references, a guide in rounding, a tool to facilitate and improve learning throughout clinical practicum, and a way to improve problem-based learning (Gaglani & Topol, 2014; Johansson, Petersson, & Nilsson, 2013; Johansson, Petersson, Saveman, & Nilsson, 2012; Masika et al., 2015). Mobile phone is now considered as a reliable tool to find answers to clinical questions.

One systematic review concluded that implementing a mobile learning strategy in medical education can positively affect learning in all three domains (cognitive, affective, and psychomotor). According to this study, medical teachers can use mobile learning strategy to meet educational objectives in all three domains of learning (Koohestani, Soltani Arabshahi, Fata, & Ahmadi, 2018)

Many believe that mobile learning may even revolutionize medical education and practices, supporting novice to expert transitions (Dimond, Bullock, Lovatt, & Stacey, 2016). As with other information systems, user acceptance is a key indicator of success of the system. Thus, acceptance is key issue to be concerned with for success of advanced systems (Al-Adwan, Al-Adwan, & Smedley, 2013).

Liu, Wang, Yen, Sun and Yang (2018) found that the smartphone-based wallpaper learning module was effective in helping medical students and residents learn and memorize morphologic characteristics of fungi and in comparison to conventional lecture-based learning, this new mobile module was more readily accessible and convenient for learners to engage in learning (Liu et al., 2018). Xiao et al. (2017) indicated that nursing students had a positive attitude and perception about mobile learning (Xiao et al., 2017).

Another study showed that allowing device use in the classroom, such as iPads and interactive mobile applications, can be a useful learning tool in nursing students (Gallegos & Nakashima, 2018). Nerminathan, Harrison, Phelps, Alexander and Scott (2017) also reported that 88% of doctors used their mobile devices frequently in the clinical setting for learning and accessing information related to patient care, as well as for personal communication unrelated to work. (Nerminathan et al., 2017). Moreover, Patil et al (2016) reported that medical students had positive attitudes about mobile learning and perceived its importance. However, when given the opportunity, they did not show considerable mobile learning use.

Acceptance of a learning technology influences students' intention to utilize the technology (Marco & Venot, 2017). It is a necessity for the developers and universities officials to comprehend the way students perceive mobile learning environment. It is essential, thus, to examine issues that describe students' acceptance of using mobile learning.

The experiences of students using their mobile devices in educational setting are both complex and dynamic, but learning in the clinical setting adds another layer of complexity for students on when and how to use their mobile devices in front of patients and their teachers. So, the wide variety of contexts in which m-learning can take place further complicates this issue in healthcare professional education. Technology acceptance model (TAM) has been used extensively in educational environments to determine acceptance of instructional technology by educators and students. One

systematic review showed that among the researches that use information technology theories to assess the factors affecting the acceptance of mobile health, The TAM was used more than other models (Garavand, Samadbeik, Kafashi, & Abhari, 2017). For instance, a study showed that TAM explains 46,7 % of behavioral intention to use mobile technologies or apps for learning purpose in medical students (Briz-Ponce & Garcia-Penalvo, 2015).

Any research starts with a specific question, which determines the path and stages of the study. Thereby, the type of question dictates the type of research method. The question asked in this work is that “what is the perception of healthcare professional students about accepting mobile learning?” Based on the question, the methodology needs to picture the nature of the phenomena in a natural context along with the structure and factors effective in the formation of phenomena. In fact, the authors here tried to achieve the reality in its natural form as experienced by the students. In other words, rather than measuring the experiences, the authors tried to perceive it. In light of this, a qualitative study is the best method to picture the nature of the phenomenon in its natural context. There is a limited number of qualitative studies on the lived experiences of medical students about acceptance of mobile learning. This qualitative study is an attempt to explore lived experiences of healthcare professional students with regard to the acceptance of mobile learning.

Method

Study Design

A qualitative study was carried out based on content analysis. A qualitative content analysis mostly concentrates on theme and context and puts emphasis on the similarities and differences of codes and classes (Graneheim & Lundman, 2004) . The study was carried out in Iran University of Medical Sciences between December 2016 and July 2017. Purposive sampling was used to identify and choose information rich cases. Moreover, the selected participants were invited to identify other information-rich students who might participate in the study (snowball technique). As a qualitative research, there were no definite rules to determine the number of participants. Therefore, sampling was continued until data saturation so that the authors were sure no new information could

be found (Corbin & Strauss, 2008). Data saturation was achieved with 23 interviews. The interviews were arranged with the students beforehand to ensure convenience of participation. To glean rich and diverse information, the widest group of participants in terms of gender, discipline, and semester was selected. Inclusion criteria was a minimum of six months experience of study in the university and reluctance to participant was the exclusion criteria.

Data Collection

Semi-structured interviews were conducted to collect data. The first author carried out semi-structured, in-depth, face-to-face interviews and each interview would start with questions designed to create a friendly atmosphere. The interviews would be followed with open questions –i.e. general questions like “state you experience about utilizing mobile learning?” Since in qualitative research, researcher is the instrument of research, guided questions were developed prior to the study and the interviews were conducted using these questions (Appendix A). New questions were designed based on the content of the previous interviews and asked in the coming interviews. In addition and to gain deeper insight into the concept under study, follow up questions would be used based on the information provided by the participants. The interviews lasted between 35 and 45 minutes.

Data Analysis

Data analysis was performed using the thematic approach described as ‘qualitative content analysis’ by Graneheim and Lundman. Qualitative content analysis method can condense a large amount of data to a limited number of themes, categories, subcategories and codes. Also, this method makes it possible to include interpretations of a latent content. (Graneheim & Lundman, 2004). Initially, the interviews were transcribed verbatim and reread many times to obtain a sense of the whole. In the second step, the important text parts were divided into meaning units. Then, these meaning units were condensed and labeled. In this step, sub-categories emerged. In the next step, according to the similarities and differences, the categories as

the main feature of content analysis were extracted. As the final step, the theme was developed as the expression of the latent meaning of a text.

Trustworthiness

Rigor of the study was ensured by following the criteria set out by Guba (1981). To ensure credibility, the author tried to create a cooperative environment during the interviews and facilitated interactions with the participants. Furthermore, through field notes, memos, member checking and reviewing codes and themes by external reviewers (external check), the credibility of the data was confirmed. Dependability was ensured by a thorough description of the research processes for the purpose of being easily audited by others. Transferability was enhanced by the authors by providing description of context, the type of sampling method and the number and characteristics of participants to enable the readers to easily judge the transferability of the study. The healthcare professional students with different demographic characteristics and experiences (maximum variation) were included in the study for enhancing transferability of the findings

Ethics

This study was approved by the Ethics Committee of Iran Medical Sciences University (number: IR.IUMS.REC 1395.9321486002). The participants expressed their consent to participate in the study orally and in written. They were informed that they can leave study at whatever stage. They were also ensured that their information will remain confidential. Moreover, the participants could communicate with the researcher via email and telephone regarding any questions or information.

Findings

There were 13 female participants (56.52%) and the average age of participants was 22.79 ± 0.61 . In terms of the field of study, six were medicine students, six were nursing students, five were midwifery students, three were operative room technology (Bachelor of Science) students, and three were anesthesia (Bachelor of Science) students (Appendix B).

Data analysis revealed 353 primary codes and based on overlapping and mixing, 123 primary codes were obtained. Afterward, the codes were compared and extracted based on similarities and differences; nine sub-categories, three categories, and one theme were extracted (Table 1).

Table 1
Main theme, categories and sub-categories of findings

Main theme	Categories	Sub-categories
The paradox of acceptance and rejection	Perceived attraction	Learning with excitement of entertainment
		Attraction of multimedia learning environment
	Perceived ease	Enthusiasm for e-learning
		Mobility and easy access to information anytime and anywhere
	Perceived conflict	Easy and effortless use
		Teachers' contradictory behavioral patterns
		Contradiction about value of online information
		Friends' contradictory behavioral patterns
		Digital gap between generations in family

Results

Following sections elaborate on the categories extracted from the interviews.

Perceived Attraction

Learning with the excitement of entertainment, attractiveness of multimedia learning environment, and enthusiasm for electronic learning (e-learning) were three major contributors to students' perceived attraction for mobile learning. The results showed that perceived attraction as an intrinsic motivation factor played a very important role in mobile learning acceptance. Mobile learning was appealing for the students given the features like multimedia learning environment (video, audio, interactive), possibility to use film, photo, and animation learning contents to facilitate learning, joyful learning experience, and fruitful leisure time.

Learning with the excitement of entertainment

Many mobile functions and capabilities such as social media and educational mobile-based games bring together entertainment and learning. That is, the users learn new contents while using a social media or playing a game and spending quality leisure time. Some participants reported that they used social media and games to relieve their boredom and stress. This key feature "learning with the excitement of entertainment" was one of the key factors in attracting students toward mobile learning mostly during their leisure time. Mobile technology has the capacity to turn learning into a joyful experience. Some of the participants mentioned that their smartphone was their best hobby when they were alone.

One of the participants stated:

In many cases, I use my smartphone for both entertainment and learning. There are plenty of scientific and educational apps on my phone such as CPR game, heart surgery game, first aids game or diseases dictionary app. I usually spend my leisure time using these apps both for learning and entertainment (Participant No. 11).

Mobile phone is one of the tools I use to spend my leisure time and mostly I try to use it for educational and scientific purposes. I have a game installed on my phone, which is a simulator of heart surgery. Therefore, while playing a game, I have the chance to learn something. (Participant No. 23).

The majority of the students perceived mobile social media as a good thing and they used social media intensively for both learning and entertainment.

I like social media for fun and educational purposes. Mobile social networks are attractive tools for communicating, learning and fun (Participant No. 8).

Attraction of multimedia learning environment

Multimedia learning apps can be highly motivating and easily attract students. Employing graphical capacities of mobile technology and its multimedia features in particular (e.g. animation, video, audio, and text) create an interesting learning environment. The students noted that multimedia learning environment was one of the main factors effective in their interest in mobile learning.

In my phone, I have educational contents like podcasts, films, and video clips and since such contents are multimedia, they make the learning exciting and enjoyable (Participant No.22).

I have an electrocardiograph interpretation application on my mobile phone. In addition to text, the app uses music and animation. Learning with it is very exciting. (Participant No.13).

Enthusiasm for e-learning

Enthusiasm for e-learning was an important motivational factor in students' adoption of mobile learning. Most of the students were technophile (the person attracted to technology) due to personal interest and they had positive attitudes toward e-learning and using technology. In general, this factor motivated them to use mobile learning.

One of the students mentioned:

I am an IT man and highly interested in technology and digital world. I tend to use new technologies like mobile in my daily tasks including learning (Participant No. 9).

Virtual world is really interesting, you can stay home and chat with our classmate and discuss different things. It is really joyful. (Participant No. 20).

Perceived Ease

One of the main reasons for popularity of mobile learning was its ease of use. Mobile technology removes space and time limitations and it is easy to use. The rise of mobile applications that collect information for readers has enabled ease of access to summarized information and data from multiple sources. These features are pictured in the category “Perceived ease.”

Mobility and easy access to information anytime and anywhere

Easy access to information anytime and anywhere, especially in classroom or clinical settings, was one of the most important drivers for acceptance of mobile learning. Ability to use e-books and app-based books as a replacement for paper books in clinical setting in particular was a motivation for accepting mobile learning. Students stated they used mobile for reading learning content and finding out information about health topics in times of need.

We used to carry several paper books like pharmaceutical dictionary, Oxford medical dictionary, handbooks and the like. Now instead of using the paper book in clinical setting I use my smartphone. It is much easier to have all these books in my smartphone, which is much easier to carry around anywhere, much easier to search information and much easier to read (Participant No. 10).

Right now I have a plenty of scientific contents such as text and audio files on my mobile phone and it is not hard at all carrying such a volume of information. (Participant No. 12).

Easy and effortless use

Convenience of using mobile to access the Internet or data stored on storage systems and also ease of using applications were other factors that influenced acceptance of mobile learning.

Mobile requires minimum effort to use. It is easy to work with your smartphone to surf the Internet and check emails. (Participant No.4).

I am quite Ok with mobile applications as most of them are user-friendly. It is easy to use them even though they provide a wide range of capabilities. (Participant No. 14).

Perceived Conflict

Teachers' contradictory behavioral patterns, contradictions about value of online information, friends' contradictory behavioral patterns, and digital gap between generations in family were the causes of conflicts reported by the participants.

Teachers' contradictory behavioral patterns

Most of the students believed some teachers were resistant to change and they did not support the use of mobile in the classroom or clinical setting. Different approaches to mobile learning adopted by the teachers, so that some were interested in the idea and some had rules against using mobile in classroom or clinical setting, was one of the main causes of the conflict in students to accept mobile learning. While some of the teachers supported mobile learning, some others banned using mobile in classrooms or clinical setting.

You cannot find a consistent reaction to mobile learning among our teachers. Some completely support the idea and some resent it. (Participant No. 13)

Our teachers have different approaches to mobile phone and technology in general. It appears that the younger teachers have more positive attitudes about IT; while the Physical Examination

teacher, who is an old and experienced person, totally rejects technology and you may rightfully consider him an anti-technology person. (Participant No. 6).

Contradiction about value of online information

Like every technology, m-learning has its pros and cons, and students were faced with challenges in terms of acceptance. With its multiple functions and attractions, the mobile technology has opened new worlds of learning to the participants. While they were excited about its multiple benefits, they knew some of its disadvantages. The large volume of unreliable information found online, doubts about scientific bases of some information found in the virtual space, and high rate of fake news and rumors were some of the issues that degraded the value of information found online in the eyes of the students.

You cannot trust anything you find online. For instance, once I spent a great deal of time studying an essay on Multiple sclerosis online and the next morning I was shocked that the professor did not confirm the material and I had wasted my time to learn something unreliable. (Participant No. 3).

To be honest, there is a great deal of fake news and rumors online and scientific contents are not an exception. Therefore, sometimes you cannot totally rely on what you find. Once an essay on the side-effects of a drug went viral, and later we found that it was not right. (Participant No. 6)

Friends' contradictory behavioral patterns

Friends and classmates were an important factor in using mobile learning. However, different and inconsistent attitudes of friends toward mobile learning was another cause of conflict.

In fact, my attitudes toward mobile devices have been largely affected by my classmates since I have entered college. Of course, they had different attitudes, however, their ideas influence how I use mobile devices. (Participant No. 16).

Some of my friends do not use mobile phone for learning and some other totally rely on it. For example, one of my friends googles any question asked in the class.... (Participant No. 18).

Digital gap between generations in family

Taking into account that parts of mobile learning takes place outside the academic environment including at home, parents' reactions are important in this regard. Different opinions were expressed in this regard. Some participants said their parents had a positive attitude toward mobile learning and they viewed mobile technology as tools to support learning. But, most students generally described their parents as technologically backward in relation to the use of mobile technology. Overall, the findings showed that the different attitudes and beliefs toward technology and mobile learning between the parents and students was another cause of conflict in students.

My parents are not aware of learning potentials of mobile devices, which is understandable, as they have not experienced such a way of learning. (Participant No. 17).

My parents do not care what my purpose of using mobile phone is; their fixed and usual reaction is nagging. (Participant No. 11).

The Paradox of Acceptance and Rejection

The main theme of this study was “the paradox of acceptance and rejection” (Figure 1). No one category or its sub-categories, because of their interdependent nature, are able to adequately represent the perception of students about of mobile learning acceptance because of their interdependent nature. It is the complex interaction of all the categories and sub-categories that give rise to its essential meanings of mobile learning acceptance in students. Along with perceived attraction and perceived ease, the students encountered many challenges and conflicts in the path of accepting mobile learning. The three categories found in the study placed the students in a dilemma of using or not using mobile learning. Many of

them had doubts about accepting mobile learning as a legitimate way of learning.

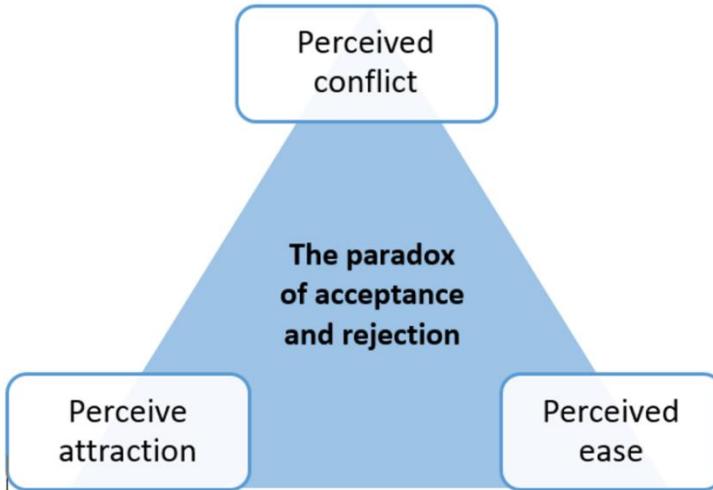


Figure 1- Main theme and categories of findings

Discussion

This study was designed to provide data about the perception of healthcare professional students about acceptance of mobile learning. In general, paradoxical perception in the students about mobile learning in the form of perceived attraction, perceived ease, and perceived conflict created doubts about accepting mobile learning as a serious learning method. The paradoxical perception placed the students in a dilemma of accepting or rejecting mobile learning. Many of the participants did not have a clear understanding of the laws with regard to using mobile devices in classrooms and hospitals.

There are many quantitative studies on the factors effective in students' acceptance of mobile learning. Some of these works have relied on the TAM as the study design and to elaborate on the behavioral intention to adopt mobile learning (Chong, Chong, Ooi, & Lin, 2011; Iqbal & Qureshi, 2012; Zarpou, Saprikis, Markos, & Vlachopoulou, 2012). The theory of TAM holds that two key factors namely perceived use an ease of use affect

the user's decision about how and when to use a specific technology (Davis, 1989). The survey items of TAM are designed to measure the user's perception about usefulness and ease of use and to find out whether or not the technology will be adopted.

Iqball and Qureshi (2012) examined student's perception of mobile learning adoption and found that perceived usefulness, ease of use, and facilitating conditions had a significant effect on students' willingness to adopt mobile learning. Chong et al. (2011) studied the factors in adapting mobile learning in Malaysian universities. They reported that perceived ease, usefulness, quality of service, and cultural aspects were effective in the attitudes toward mobile learning.

However, the present study showed that in addition to perceived ease, other factors such as perceived attraction and perceived conflict had a critical role in acceptance of mobile learning; the concepts not clearly noted in TAM. Although TAM is an important model, it largely remains imperfect as it does not take into consideration the intrinsic motivation factors and extrinsic motivation factors in the adoption of mobile learning. The findings also highlighted the fact that a quantitative study cannot reveal and predict all aspects and elements effective in acceptance of mobile learning in healthcare professional students.

To some extents, mobile learning is new phenomenon and the theoretical basis are not completely developed (Khaddage & Knezek, 2013). The results indicated that healthcare professional students had the basis and positive intention for mobile learning; still, notable factors and barriers influenced their use of mobile learning. In order for technology to have a positive effect on learning, students should be motivated to utilize the technology in addition to learning the content provided with that technology (Zheng, 2008).

The Intrinsic motivation factors play as a very important the role on learning satisfaction and achievement (Vansteenkiste, Simons, Lens, Sheldon, & Deci, 2004). Result showed students had high intrinsic motivation for acceptance of mobile learning and intrinsic motivation factors such as perceived attraction, enjoying learning and interest in e-learning motivated them to use mobile for educational purposes. Most of the students were interested in e-learning, and this factor played an important role in accepting mobile learning.

This finding is consistent with previous study that indicated among all significant factors, hedonic motivation is the most significant factor in determining undergraduate student's intention to use m-learning (Yang, 2013). Of course, this study has been conducted quantitatively and using extended unified theory of acceptance and use of technology (UTAUT).

In consistent with another cross-sectional study using UTAUT as its theoretical basis (Cilliers, Viljoen, & Chinyamurindi, 2018), result also indicted that social influence has an important factor on student's intention to use m-learning. This result suggests that influences from teacher, friends and other important social connections are an important determinant for undergraduate students' intention to accept m-learning.

To make a mobile learning initiative practical in a university setting, the students and officials need to acknowledge the necessity for using mobile for educational purposes. Moreover, the students and officials should be ready to accept and recognize the potential benefits of the mobile learning. Creating a supportive and positive environment for using mobile learning was one of the most important factors to lead students to toward mobile learning. The teacher is an element of the educational system that has the important role in creating a positive psychosocial atmosphere in the classroom (Koohestani & Baghcheghi, 2016). Teachers' technological skills and their attitude towards technology could significantly increase the rate of technological implementation in schools (Ertmer & Ottenbreit-Leftwich, 2010).

The students reported a sense of dissonance when using the technology in educational environment. One of the most important reasons for this is the different attitudes of the teachers about mobile learning. Some of the teachers banned using mobile devices in class and insisted that mobile learning should not intervene with normal class activities. However, the students argued that using mobile devices inside and outside classroom was beneficial. One explanation for these different attitudes among the students and teachers might be the fact that the teachers believe that mobile technology is a source of distraction in classroom. It is notable that some studies have supported this idea (Beland & Murphy, 2016; Dahlstrom, Walker, & Dziuban, 2013; McCoy, 2016).

Some of the participants mentioned that they felt more positive attitude in younger teacher about using mobile devices. According to some studies,

this is partly because of the fact that the older generation needs to upgrade their own technology skills (Sclafani, Tirrell, & Franko, 2013).

The majority of the participants stated that the parents mostly believed that they use mobile technology mainly for socialization and not for education. These different perception along with poor knowledge about the potentials of mobile technology and the applications that can be used for educational purposes have led to a negative perception about and bans on using mobile devices. These approaches neglect the potentials of mobile devices for educational purposes.

Since the Internet is not a hundred percent safe place, along with acknowledging the benefits of smartphones, most students had a nuanced views toward significance of mobile devices. Not all the students had a complete trust in the information or the people they encounter with on the Internet. The necessity of media literacy to sort fake and reliable news and information found online is undeniable and authorities need to take measures to improve media literacy of students. It is a necessary tool to use and participate in online space properly and effectively. Media literacy is a key issue in communication field and it enables the users to make effective analysis of the authenticity of contents found online (Kamali pour, Azad, Ashkani, & Esmail zadeh, 2017). Media literacy is a reliable approach to attenuate the negative effects of media use (Fingar & Jolls, 2014). The results suggested that improving media literary of the students toward reducing the perceived conflict may improve mobile learning acceptance in the students.

Effective implementation of mobile technology for informal learning purposes in healthcare professional students entails identifying the benefits of using the technology. Acceptability of new technologies for the users is a key issue for the institutes that are going to invest in technology. Reluctance to use new technologies in the users results in project failure and loss of resources (Nassuora, 2012; Patil et al., 2016). Implementation of mobile learning in higher education setting entails considerable endeavor to solve the challenges in the way. The present study focused on filling some of the gaps in the literature and developing a basis for future works on mobile learning.

To make sure that the students were familiar with mobile technology, the study population was limited to the undergraduate students. These students are mostly at the same age group and they can be considered as

“digital native” generation. On the other hand, adding graduate students could have created unique perspectives.

The results of this research can be used as baseline data for researchers, teachers and policymakers in the field of education. Future studies with different stakeholders, schools and countries is needed to investigate the role of additional constructs in mobile learning acceptance.

Conclusion

The use of mobile technologies is part of everyday life for a healthcare professional student, and we as educators must adapt or revise our teaching to allow the students to use their mobile devices in a proper and sensitive way. The results of present study showed that various factors influence the acceptance of mobile learning in healthcare professional students. The three categories found in the study –i.e. perceived attraction, perceived ease, and perceived conflict” placed the students in a dilemma of using or not using mobile learning. Along with perceived attraction and perceived ease, the students encountered conflicts and challenges in the path of accepting mobile learning. They had doubts about accepting mobile technology as a legitimate educational tool. Taking these factors into account and managing them can pave the way for mobile learning in the students.

Acknowledgement

This study is a part of the PhD medical education thesis and was supported by Iran University of Medical Sciences. The authors would like to thank all of the students who took part in this study.

Notes

¹Additional follow-up questions were asked in response to different participant answers, to obtain more in-depth data.

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Appendix A

Sample Questions from Semi-Structured Interview¹

- Can you tell me an example when you tried to use your mobile phone to help you learn something related to your field of study?
- Can you tell me about a situation where you used mobile applications for learning purposes?
- Can you tell me about a recent situation where you used social networking service on your smartphone or mobile device to communicate with your teachers or classmates?
- What factors would be important to your deciding to use your smartphone or mobile device for learning?
- What are the challenges that you faced when using mobile phones as a learning tools?
- Are there factors that makes you reluctant or unwilling to use your mobile phone for academic learning?
- How do you feel about using your smartphone or other mobile device for communicating with your teacher or classmates?
- Is there anything else you want to tell me about using mobile learning?

Appendix B

Table 2

Demographic characteristics of participants in the study

Participant	Age (years)	Gender	Discipline	Semester of the course
P1	21	Male	Nursing	6
P2	19	Male	Nursing	2
P3	22	Male	Medicine	8
P4	20	Male	Medicine	6
P5	19	Male	Operative room technology	3
P6	23	Famale	Nursing	7
P7	37	Famale	Nursing	5
P8	20	Famale	Midwifery	8
P9	22	Famale	Anesthesia	8
P10	24	Famale	Medicine	13
P11	24	Famale	Midwifery	6
P12	20	Famale	Midwifery	2
P13	19	Famale	Medicine	12
P14	25	Famale	Anesthesia	5
P15	23	Male	Anesthesia	3
P16	21	Famale	Nursing	4
P17	20	Famale	Nursing	5
P18	19	Famale	Midwifery	5
P19	20	Famale	Midwifery	4
P20	20	Male	Medicine	6
P21	21	Famale	Medicine	3
P22	19	Male	Operative room technology	3
P23	23	Famale	Operative room technology	5