Pre Servıce Teachers' Perceptıons Towards The Usage of Mobıle Learnıng in Hıgher Educatıon in Malaysıa

Mohammed Yousef Mai

Faculty of Education, Universiti Pendidikan Sultan Idris, 35900 Tanjong Malim, Perak Darul Ridzuan

dr.mohd.mai@gmail.com

Abstract

The information era in which we currently live is changing the culture of education. The use of ICT has resulted in new opportunities that mobile devices have transformed from a means of communication to tools for socialization, entertainment, work, and learning. The aim of this study is to determine the pre-service teachers' perceptions towards using mobile learning in higher education institutions. The research sample consists of (121) student-teachers from different faculties in Universiti Pendidikan Sultan Idris-Malaysia (University Education Sultan Idris in Malaysia). A valid and reliable "Mobile Learning Survey" (Pollara, 2011) which includes 24 items was used as a data collection tool. The results indicate that; pre-service teachers (student-teachers) have moderately positive perceptions toward using mobile learning in higher education, although their perceptions do not differ regarding gender and faculty. On the other hand, the findings show that students seem more ready to adopt the use of mobile devices for learning, so, they believe that a more formal use both inside and outside the classroom could be beneficial.

Keywords: Pre-service teachers, ICT, mobile learning.

Introduction

The distinguishing feature at the beginning of the 21st Century is the rapid rate of technological and social change. Technological advancements that allow faster communications and information processing are supporting new social patterns. As a result, communities are no longer only based on geographical proximity, and new 'tribes' are developing and disbanding according to interest, work patterns, and opportunity (Peters, 2007).

With the tremendous increase in accessibility of digital technologies in the last decade, there has been a drastic change in the way that young people play, socialize, and communicate. The way that young people use digital technologies in out-of-school settings and the intensity with which digital technologies are being used has challenged the educational community to rethink the nature of learning in informal settings, and how informal learning can inform formal learning. It is now recognized that learning occurs in different settings, and school is only one of them. Education today takes place in a much broader context than the confines of school walls or traditional curricula (Khaddage & Knezek, 2013). Therefore, the integration of Information and Communications Technology (ICT) in classrooms has been a challenge for the educational systems of all countries which aim to be ready to cope with the needs and the demands of the 21st century (Kyriakidou, Chrisostomou, & Banks, 1999). The term "Information and Communication Technologies" refer to transferring, storing, revealing and sharing technology or accessing information. Information and communication technologies include radio, television, video, DVD, phone (fixed and mobile), satellite systems, computer and network equipment and software as well as the equipment and services provided by these technologies (such as video-conference and electronic mail) (Yapici & Hevedanli, 2012).

In line with the Vision 2020, the Malaysian Ministry of Education (MOE) has introduced various initiatives to facilitate the adoption and diffusion of Information and Communication Technology (ICT) and to integrate ICT into the education system (Rashid, 2011). The Malaysian Ministry of Education sees ICT as a means, not an end in itself. As such, all efforts are concentrated on developing new media as tools in the service of richer curricula, enhanced pedagogies, more effective organizational structures in schools, stronger links between schools and society, and the empowerment of disenfranchised learners. The concept of ICT in education, as seen by the Ministry of Education, includes systems that enable information gathering, management, manipulation, access, and communication in various forms. The Ministry has formulated three main policies for ICT in education (Chan & Foong-Mae, 2002; Mohd Zaki M. et al., 2009):

ICT is for all students, meaning that ICT is used as an enabler to reduce the digital gap between the schools.

Emphasizes the role and function of ICT in education as a teaching and learning tool, as part of a subject as well as a subject by itself.

Emphasizes the use of ICT to increase productivity, efficiency and effectiveness of the management system such as the processing of official forms, timetable generation, management of information systems, lesson planning, financial management and the maintenance of inventories.

A recent rapid advancement in the capabilities of mobile devices along with a decrease in price has enabled the mobile phone to become ubiquitous. According to the International Telecommunication Union 2014, the number of mobile-cellular subscriptions worldwide is approaching the number of people on earth. Mobile cellular subscriptions will reach almost 7 billion by end 2014, corresponding to a penetration rate of 96%. More than half of these (3.6 billion subscriptions) will be in the Asia-Pacific region (Union, 2014). Due to the increased capabilities of most mobile phones, the number of users using their phones to access the Internet is also increasing dramatically. In fact, in many countries, especially developing countries that often lack wired infrastructures, much of the population only uses their mobile phone for Internet access (Pollara, 2011).

The communication and data transfer possibilities created by mobile technologies (mtechnologies) can significantly reduce dependence on fixed locations for work and study, and thus have the potential to revolutionise the way we teach and learn. It not only connects people with information-driven societies effectively, but it offers the opportunity for a spontaneous, personal, informal, and situated learning (Peters, 2007; Y. E. Shih & Mills, 2007)..

According to Pollara (2011) a Mobile device is "Any mobile technology with multiple functions and capabilities, especially the ability to access the Internet'. Pollara also defined a Smartphone as a mobile phone with computer capabilities. Smartphones can download material, access the Internet, take photos and videos, compose and send emails, and download applications that allow users to easily complete various tasks. In this research, a mobile device is "any device that is small, autonomous, and unobtrusive enough to accompany us in every moment of our everyday life, and that can be used for some form of learning such as, iPad, tablets, smart phone,…". On the other hand, mobile learning/mlearning/meducation refers to the use of mobile or wireless devices for the purpose of learning while on the move. Typical examples of the devices used for mobile learning include cell phones, smartphones, palmtops, and handheld computers; tablet PCs, laptops, and personal media players can also fall within this scope (Park, 2011).

Theoretical Background

Through the advancement of mobile technology and their increasing affordability, mobile devices have transformed from a means of communication to tools for socialization, entertainment, work, and learning. The availability of mobile and wireless devices is enabling different ways of communicating. Individuals now have easy and inexpensive access to mobile telephony, and the cost of mobile access to the Internet is steadily reducing. Mobile technologies have enabled a new way of communicating, typified by young people, for whom mobile communications are part of normal daily interaction, who are 'always on' and connected to geographically-dispersed friendship groups in 'tribal' communities of interest (Peters, 2007).

As mobile devices are becoming increasingly ubiquitous, many researchers and practitioners have incorporated the technology into their teaching and learning environments. A mobile learning is a harbinger of the future of learning and its applications range widely, from K–12 to higher education and corporate learning settings, from formal and informal learning to classroom learning, distance learning, and field study (Park, 2011). Mobile learning has grown visibility and significance in higher education (Traxler, 2007).

Mobile learning is a relatively new phenomenon with its theoretical basis still under development. Nevertheless, with the rapid growth of mobile devices throughout the world, the need has emerged from studies of affordances and barriers that might enhance or constrain the adoption of mobile learning in higher education (Khaddage & Knezek, 2013). Researchers have begun to analyze more specific characteristics of mobile learning, including how mobile learning can support learning opportunities, the types of learning and learning activities that can be supported, and the various contexts in which mobile learning can take place. According to Sharples (2006), key characteristics of mobile learning that emerged were as follows:

Enables knowledge building to take place in different contexts.

Provides the ability to gather data unique to the current location, environment, and time (real and situated).

Enables learners construct their own understanding (customized to the individual path of investigation).

Changes the pattern of learning or the work activity (supports interactivity).

Supports the use of mobile learning applications which are mediating tools and can be used in conjunction with other learning tools.

Goes beyond time and space in which learning becomes part of a greater whole.

Mobile learning, as a novel educational approach, encourages flexibility; students do not need to be a specific age, gender, or member of a specific group or geography, to participate in learning opportunities. Restrictions of time, space and place have been lifted. Mobile learning facilitates provision of educational opportunities. From a pedagogical perspective, mobile learning will serve a whole new highly mobile segment of society, a reality that could very well enhance the flexibility of the educational process (Aderinoye, Ojokheta, & Olojede, 2007). Peters (2007) say that characteristics of mobile learning must include:

Urgency of learning needs

Initiative of knowledge acquisition

Mobility of learning setting

Interactivity of the learning process

'Situatedness' of instructional activities

Integration of instructional content

It is proving to be a fertile ground for innovation, but it is important to realize that the success of mobile learning will depend on human factors in the use of the new mobile and wireless technologies (Kukulska-Hulme., 2007).

Another classification of mobile learning that might help us towards a definition is due to the suggestion that mobile technologies can relate to six types of learning, or "categories of activity": namely, behaviorist, constructivist, situated, collaborative, informal/lifelong, and support/coordination. The mobile learning may be manifest in the following ways (Guy, 2009; Pollara, 2011):

For behaviorist-type activity, it is the quick feedback or reinforcement element, facilitated by mobile devices.

For constructivist activity, mobile devices enable immersive experiences such as those provided by mobile investigations or games.

For situated activity, learners can take a mobile device out in an authentic context.

For collaborative learning, mobile devices provide a handy additional means of communication and a portable means of electronic information sharing.

For informal and lifelong learning, mobile devices accompany users in their everyday experiences and become a convenient source of information.

Support, or coordination of learning and resources, can be improved by the availability of mobile technologies at all times for monitoring attendance or progress, checking schedules and dates, reviewing and managing – activities that teachers and learners engage in at numerous times during the day.

The concept of mobile education or mobile learning is still emerging and still unclear. How it is eventually conceptualized will determine perceptions and expectations, and will determine its evolution and future. Some advocates of mobile learning attempt to define and conceptualize it in terms of devices and technologies; other advocates define and conceptualize it in terms of the mobility of learners and the mobility of learning, and in terms of the learners' experience of learning with mobile devices (Traxler, 2007).

Early approaches at defining mobile learning focused on technology, for example, saying it was "any educational provision where the sole or dominant technologies are handheld or palmtop devices" (Guy, 2009), or it can be considered as any learning and teaching activity that is possible through mobile tools or in settings where mobile equipment is available. It is obvious that those definitions of mobile education/m-learning define it purely in terms of its technologies and its hardware, namely that it is learning content delivered or supported solely or mainly utilizing mobile computing devices such as personal digital assistants (PDAs), smartphones or wireless laptop PCs. Similarly, (Caudill, 2007; Traxler, 2007).

These definitions, however, are constrained, techno-centric, and tied to current technological instantiations. We, therefore, should seek to explore other definitions that perhaps look at the underlying learner experience and ask how mobile learning

differs from other forms of education, especially other forms of e-Learning. Caudill (2007) cite multiple definitions of m-Learning, including:

The point at which mobile computing and e-Learning intersect to produce an anytime, anywhere learning experience.

Mobile learning is a form of education whose site of production, circulation, and consumption is the network.

M-learning is as a process of coming to know, by which learners in cooperation with their peers and teachers, construct transiently stable interpretations of their world.

Mobile Learning- (M-Learning) The process of using a mobile device to access and study learning materials and to communicate with fellow students, instructors or institutions. Mobile learning can be done anytime, anywhere (Pollara, 2011).

The common thread of all these above definitions is that they incorporate the use of mobile technology to facilitate the transfer and acquisition of knowledge in the learning process.

Researchers suggested that there are three ways in which learning can be considered mobile: (1) learning is mobile in terms of space; (2) in different areas of life; and (3) with respect to time. It is clear that mobile learning systems should be capable of delivering educational content to learners anytime and anywhere they need it (Aderinoye et al., 2007). In general, we can conclude that mobile learning is the use of any mobile or wireless device for learning indoor or outdoor. It is any service or facility that supplies a learner with electronic learning materials that aids their acquisition of knowledge, regardless of location and time.

Cox (2013) contended that over the last decades the balance between teacher and learner roles in engagement with IT has shifted from the teacher in the classroom more toward the learner inside and outside the classroom. Therefore, researchers are interested in collaborative learning, students' appreciation of their own learning process, consolidation of learning, and ways of helping learners to see a subject differently than they would have done without the use of mobile devices. Otherwise, there is awareness that the new technologies may have a role in reducing cultural and communication barriers, and that they are altering attitudes and patterns of study (Kukulska-Hulme., 2007). Different teachers will have different conceptions of teaching and different "styles of teaching" that they will attempt to bring to education. These conceptions of teaching/ styles of teaching may vary from ones primarily concerned with the delivery of content, to ones primarily concerned with supporting students learning. Mobile learning technologies clearly support the transmission and delivery of rich multi-media content (Traxler, 2007).

Early research provides encouraging results for the use of mobile devices to support teaching and learning (Kennedy, Judd, Churchward, Gray, & K.-L., 2008; Kukulska-Hulme, Traxler, & Pettit, 2007), revealing that students became more excited about the learning process and became more engaged active learners rather than passive learnerengaged, activelike to use mobile devices to learn, that students are motivated and engaged while using mobile devices (Al-Fahad, 2009), and that achievement levels increase when students use mobile technologies (K.-P. Shih, Chen, Chang, & Kao, 2010). The findings of the previous studies revealed many promising opportunities and technical challenges for both teachers and students. The positive impact of mlearning integration on student learning includes active engagement, increased time for projects, improved digital literacy, and digital citizenship (Chou, Block, & Jesness, 2012).

The reasons underpinning the use of mobile technology in education have been explored by Kukulska-Hulme (2005), who identified the three main motivations as being:

Improving Access:

To enable students to work in home environments as well as at university.

To take ICT classes to adults who find it hard to attend classes on campus, and to traditionally 'hard to reach' or disadvantaged groups

Changes in teaching and learning:

To enable students to communicate and share ideas effectively, especially in small group collaboration

To support differentiation of student learning needs and personalized learning

To further the use of ICT within the curriculum by direct involvement of students in the data collection process as part of learning 'in the field'

To enable new developments in formative and summative assessment

Mediterranean Journal of Social Sciences
MCSER Publishing, Rome-Italy

To increase motivation and address low interaction levels in large classes

Alignment with institutional or business aims:

To respond to rising student demand for access to ICT facilities

To improve retention and achievement, by improved monitoring of student attendance and by giving immediate and regular feedback to students regarding attendance and progress – teachers were able to do this by having ready access to information on their mobile devices.

Given that m-Learning is a discipline unto itself, there are certain advantages provided in a m-Learning environment that are not present in other kinds of e-Learning. The primary advantage of m-Learning is to provide truly anytime, anyplace learning. What this means for the learner is that they are no longer constrained by static resources. In addition to being able to access resources from anywhere with a mobile device, this ease of transport has other advantages. Perhaps most notably, mobile devices provide users with an interface to their content that is both personalized and secure (Caudill, 2007). According to Lim, Fadzil, and Mansor (2011), the general objectives of mobile learning are to:

Enhance the blend of the learning modes;

Increase the flexibility of learning offered to learners; and

Encourage and support ubiquitous learning (just in time, anytime, anywhere) via mobile technologies.

In a report of more than 25 handheld learning projects, Shuler (2009) found that the report highlights five opportunities to seize mobile learning's unique attributes to improve education. Those key opportunities for mobile learning include:

Encourage " anywhere, anytime " learning: Students can gather and process information outside the classroom to learn in a real-world context.

Reach underserved children: The low cost of a mobile device makes it accessible to low-income families and can help advance digital equity.

Improve 21st-century social interactions: Mobile technologies can promote and foster communication and collaboration; all important skills of the 21st century.

Fit with learning environments: Mobile devices can fit easily into many learning environments and eliminate the barriers associated with large devices.

Enable a personalized learning experience: Mobile devices allow differentiated instruction for diverse learners who can learn at their own pace.

Shuler (2009) remarked that mobile devices might be used to capitalize on the personalization capabilities of the devices that make learning more accessible. Mobile devices have bridged learning in school, afterschool, and home environments. Similarly, Y. E. Shih and Mills (2007) and Pollara (2011) agree that the potential uses of Mobile learing in the classroom can do more than foster communication and aid in the exchange of information. They identify several potential advantages of mobile learning.

Mobile learning helps learners improve their literacy and numeracy skills and to recognize their existing abilities

Mobile learning helps learners to increase their understanding of the material/curriculum content.

Mobile learning may act as a good assessment tool for the students to identify areas where they need assistance and support

Mobile learning can be used to encourage both independent and collaborative learning experiences

Mobile learning helps to combat resistance to the use of ICT and can help bridge the gap between mobile phone literacy and ICT literacy.

Mobile learning helps to remove some of the formality from the learning experience and engages reluctant learners to express themselves and their ideas in a manner that is most comfortable to them.

Mobile learning helps learners to remain more focused for longer periods

Mobile learning helps to raise self-esteem/self-confidence

Mobile learning helps to increase students' motivation.

Mobile devices are becoming increasingly less expensive than purchasing textbooks, desktop, or laptop computers.

A student may use his or her mobile device to podcast, study using virtual flashcards, access the internet, connect to social media, read a poem, respond to a question posed by the teacher, post a comment, blog, or use the device as a calculator.

Games for mobile phones have the potential to support both cognitive and socio-affective learning while aiding in the development of strategic thinking, planning, communication, application of numbers, negotiating skills, group decision making and data handling.

Those advantages are supporting the results of some studies that integrating Mlearning with sound curriculum can contribute to increased student engagement, collaboration, productivity, technology competency, innovation, and critical thinking (Chou et al., 2012). The study done by UNESCO (2012) has shown that mobile learning projects in South Africa have been used to improve teaching system especially teaching biology subjects. Furthermore the study conducted by Utulu and Alonge (2012) in Nigeria revealed that mobile phones were used by students for communicating with lecturer in charge of the course, collect data (recordings), sending emails to lecturers, access Online Public Access Catalogue and share knowledge. Also a study by Kajumbula (2009) in Makerere University-Uganda found that mobile phones were used by students for learning and teaching; for example, students can know whether their marks are missing, dates for tutorials, venues and meeting times with research supervisors.

Since the introduction of educational technologies into classroom settings, teacher education has faced the challenge of improving in-service teacher education and preparing pre-service teachers for successful integration of educational technologies into their teaching and learning practices (Sang, Valcke, Braak, & Tondeur, 2010). Teachers are supposed to acquire the skills and knowledge necessary for ICT use in the learning processes and to use them for such different purposes as professional development, both in their pre-service education period and in their professional life (Yapici & Hevedanli, 2012). Teacher learning should equip teachers for 'best practices' in ICT integration that contribute to improving existing teaching practice to achieve the goals of school reform (Ertmer & Ottenbreit-Leftwich, 2009).

Purpose of the Study

Teachers' perceptions towards ICT is a very important factor that educators ought to consider in implementing ICT in education (Kyriakidou et al., 1999) and it is a major predictor for future ICT use in the classroom (Teo, 2008). The purpose of this study is to understand how student-teachers are currently using mobile devices informally for educational purposes. It will also investigate their perceptions with regard to mobile learning and mobile device use in the classroom. The study will also explore how the formal use of mobile devices inside and outside the classroom could influence student learning, engagement and participation. Finally, the study will examine if student-teachers are ready to adopt the use of mobile devices in the classroom.

The major purpose of this study is to examine student-teachers' perceptions towards using mobile devices in teaching and learning. The following research questions will guide this study:

How do student-teachers currently use their personal mobile devices informally for educational purposes?

What are student-teachers beliefs, ideas or perceptions about the role of mobile in education?

Are there any differences student-teachers' perceptions across their gender?

Method

Research Design

This research is a descriptive in nature; its key purpose is a description of the state of affairs, as it exists at present. Surveys are concerned with describing, recording, analyzing and interpreting conditions that either exist or existed (Kothari, 2004). Therefore, qualitative data were obtained through a survey conducted with pre-service teachers, the gathered data were analyzed using both descriptive and inferential statistics.

Participants

The research sample consist of 121 undergraduate students who studying at eight different faculties in Universiti Pendidikan Sultan Idris-Malaysia (University Education Sultan Idris in Malaysia) in the academic year of 2013-2014 , they were invited to participate in the survey via email that included a link to the web-based survey. The male students (n = 24) form 20% of the sample while the female students (n = 97) form 80% of the sample. The mean age was 20.9 years.

Materials

In order to investigate the student-teachers ' perceptions towards mlearning, the researcher adapted this research instrument form "Mobile Learning Survey" developed by Pollara (2011) to survey students' usage, cababilities and perceptions about mlearning. The adapted questionnaire was a Likert-type scale containing 24 items that presented statements of perceptions and current educational use of mlearning was used as a data collection tool. The instrument consists of three sections; section one of a survey contained three demographic questions: age, gender, and college affiliation. Section two of the instrument contains eight common educational tasks that they currently use their mobile devices for. Tasks include: Tasks included: downloading an application to learn something new, accessing an Educational Management System (MyGuru) on a mobile device, texting a classmate about the content of a class, and reading an article on a mobile device. The items in this section are 3 Likert scale (usually, sometimes, never). The third section of the instruments contains 16 questions related to perception. This section divided into three sub-scale: Participation/Engagement (items 1-5), Perceived Usefulness (items 6-11) and Ease of Use (items 12-16). Every item in the third section is 5 Likert scale. Likert scale question comprised five points ranking following: ''strongly agree'' (5 points), ''agree'' (4 points), ''neutral'' (3 points), ''disagree'' (2 points), ''strongly disagree'' (1 point). Cronbach's alpha, the measure of reliability, was calculated for the scales and subscales for items measured on the five-point Likert scale. Pertaining to the Predicted Student Activity Levels with the Integration of Mobile Devices, "Participation and Engagement" had an alpha of 0.901. The subscales of "Student Acceptance, Perceived Usefulness" and "Ease of Use" had alphas of 0.706 and 0.823 respectively. The overall scale had an alpha of 0.864. All scales and subscales were greater than 0.7, which is considered "acceptable" for exploratory research.

Since the instrument has not been used in the Malaysian cultural background before, the researcher retest the reliability using a sample of (20) undergraduate students in UPSI. The results of Cronbach's Alpha internal consistency coefficient for the overall scale and the sub-categories indicate that the overall scale had an alpha of 0.927 and the three sub-scales had an alpha of 0.78, 0.844 and 0.847 respectively. This means that the instrument has a good reliability and can be used to measure the pre-service teachers' perceptions towards mlearning.

Data Collection Procedures

Quantitative data for this study was collected through an electronic survey. The students were sent an email that explained the purpose of the study and requested participation. All emails contained a link to the survey, which directed users to the site where the survey was being hosted, the electronic survey was constructed so that it could not be submitted unless all questions have been answered.

Results

The main aim of this study is to measure how student-teachers are currently using mobile devices informally for educational purposes. Also, it investigates their perceptions with regard to mobile learning and mobile device use in the classroom. Finally, it examines whether their usage and perceptions differentiated in terms of gender.

Findings of descriptive Analyses

The second section of the survey asked students to report their use of mobile devices for various educational tasks. Students were able to respond to as many of the questions that they believed applied to their prior use of a mobile device. Table (1) includes the means and standard deviations about student-teachers use of mobile devices on the educational tasks.

The results in table 1 show that student-teachers using their mobile devices to perform all of the functions listed in this section of the survey (the percent of the mean for all the items exceed 50%). The results also show that the student-teachers use of mobile devices is 70.4% (M = 2.112, SD = 0.223). The top performed tasks (engaged in social networking, taken pictures or video, and read an article or assignment) gained a mean percent of 80% or more. The lowest tasks with a mean percent of 60% or less are (look up something that you did not know, texted a classmate about the content, and used your mobile device as a study tool). These results indicate that student-teachers benefit from using their mobile devices to perform the educational task and they avoid any use does not serve the educational mission, such as communicating with others, or even taken pictures or video with mobile device even for an assignment.

In the next section of the survey, students were asked about their perceptions with regard to mobile learning and mobile device use in the classroom. Survey items were designed to elicit a response based on a 5-point Likert scale, whereas 1=Strongly Disagree, 2=Disagree, 3=Neutral, 4=Agree, and 5=Strongly Agree. Means and standard deviations were calculated for all items, means above 2.5 indicate a positive response (P), 1.5-2.4 neutral (N) while means below 1.5 indicate a negative response (N) to the question. Table 2 presents the results of the overall scale and the sub-scales of Student-teachers Perception of mlearning.

The results in table 2 show that student-teachers have positive perceptions about Mlearning (M = 2.595, SD = 0.416). They positively believe about the " Ease of Use of Mobile Learning" (M = 2.724, SD = 0.554) and then the possibility of "Use of Mobile Learning" in the classroom (M = 2.643, SD = 0.532). Unfortunately, they have a neutral perception about the role of mlearning to engage them to participate in the classroom activities (M = 2.407, SD = 0.664).

In general, these results indicate that student-teachers believe about the importance of using mobile in education and they assert the usefulness of applying it in the teaching and learning process.

For the first sub-scale of the survey "Student Perception of Participation and Engagement"; students were asked how using their mobile devices could impact their participation and engagement inside and outside the classroom. Means and standard deviations were calculated for all items specifically related to participation and engagement (table 3).

The results in table 3 show that student-teachers believe that students would be more likely to "participate in class" and to "engage in class discussions" if they could use their mobile device in the classroom. This indicates that they have positive perceptions about the role of Mlearning in engaging the students in the learning process. Otherwise, they neutrally believe that the use of mlearning would let them "spend more time on classwork", " be more likely to participate in class activities outside of class time" and " be more likely to ask for help". Students responded neutrally to three items and positively to two items indicating that student participation and engagement would increase if students could use their mobile devices.

Next, students were asked to respond to six questions about their perceived use of mobile devices for educational purposes using the same 5-point Likert scale described above. The means and standard deviations were calculated for each question and the results are reported in the table 4.

Students responded positively to five statements and neutrally for just one item "I would like to be able to participate in discussion forums". The positive statements that respondents most commonly agreed upon support the agreement by using mlearning (see mobile learning incorporated into my classes , view course materials, access Educational Management Systems (e.g. MyGuru) and take quizzes). The positive responses to these items indicate that student-teachers support the usage of mobile devices in their classes and their perceptions of mlearning would increase if students could use their mobile devices.

Finally, students were asked to respond to statements about how much effort it would take and how easy it would be to learn on their mobile device. Table 5 reports the means and standard deviations for each question.

Three of the statements about ease of use elicited a positive response from students indicating that students believe that they could easily perform educational tasks on their mobile devices and that using their mobile devices would make it easier to complete classwork and assignments and enable them to learn an study in places they couldn't normally. This positive perception is supported by the neutral perception about the other two items " It would not require a lot of effort to learn how to use a mobile" and " It would be easier to complete classwork and assignments if I could use my mobile device".

Findings of inferential Analysis

Are there any differences in student-teachers' perceptions across their gender? Considering the different perceptions between male and female teachers, the researcher used t-test for independent samples, the results included in table 6.

The results in table (6) show that female student-teachers' perceptions toward mlearning (M = 2.611, SD = 0.413) higher than males' perceptions (M = 2.529, SD = 0.432), but this difference was not significant, t(119) = 0.865, p = 0.389. The same results were for two sub-scales (Student Perception of Participation and Engagement, and Student Perceived Use of Mobile Learning).

Regarding the student-teachers' perceptions towards the " Ease of Use of Mobile Learning"; the results show that female student-teachers' perceptions toward mlearning (M = 2.784, SD = 0.486) higher than males' perceptions (M = 2.483, SD = 0.734), this difference was significant, t(119) = 2.425, p = 0.017.

Discussion

The purpose of this study was to understand how student-teachers are currently using mobile devices informally for educational purposes and to investigate their perceptions about mobile learning and mobile device use in the classroom. The study also explored how the formal use of mobile devices inside and outside the classroom could impact student-teachers learning, engagement, and participation.

The survey results indicate that students are currently using their mobile devices to perform a variety of educational tasks. In the classroom, students most often performing supplementary activities, organizational tasks, and using their devices to access course materials and information via the Internet. Students are performing similar activities outside the classroom, but are also using devices as study tools and downloading applications to learn concepts related to their courses.

Many students reported downloading applications that contained reference materials (i.e. formulas, definitions, figures, texts) for a particular subject. Most prevalent, however, was the use of the device for accessing information and course materials via the web. Although most students were able to access the Internet through their devices, students agreed that course materials and learning management systems should be more accessible and easily viewable in a mobile format from devices.

How would the formal use of mobile devices impacts student learning, engagement and participation in the classroom? Survey results indicate that student participation would increase if they could be able to use mobile devices in the classroom. The results also reveal that students would be more engaged both inside and outside the classroom if they could use devices to post responses. Students also indicated that the use of mobile devices would allow them to spend more time on classwork.

Based on the results of this study, the researcher offers the following suggestions to support the effective use of mobile technology in learning:

Increased faculty training regarding the capabilities of mobile technology and the potential use in the classroom.

Resource page on the university website with recommendations for mobile applications that may be applicable to students.

Encourging the computer science department or an outside resource to develop course-specific mobile applications that could be used for general education courses.

Future research may want to investigate the attitudes and perceptions of large sample and to examine differences based on region, field of study and age. Additional research could also be done to include in-service teachers and compare their perceptions with pre-service teachers. In addition, researchers may want to investigate if a difference exists with respect to faculty affiliation.

Experimental research would also be beneficial to analyze how the use of specific mobile applications could be used in a classroom or could be used to promote formal and informal learning.

References

Aderinoye, R. A., Ojokheta, K. O., & Olojede, A. A. (2007). Integrating Mobile Learning into Nomadic Education Programmes in Nigeria: Issues and perspectives. International Review of Research in Open and Distance Learning, 8(2).

Al-Fahad, Fahad N. (2009). Students' Attitudes And Perceptions Towards The Effectiveness Of Mobile Learning In King Saud University, Saudi Arabia. The Turkish Online Journal of Educational Technology – TOJET 8(2), 111-119.

Caudill, Jason G. (2007). The Growth of m-Learning and the Growth of Mobile Computing: Parallel developments. International Review of Research in Open and Distance Learning, 8(2).

Chan, By, & Foong-Mae. (2002). ICT in Malaysian Schools: Policy and Strategies. Retrieved 2/6/2014, from http://gauge.u-gakugei.ac.jp/

Chou, Chientzu Candace, Block, Lanise, & Jesness, Renee. (2012). A case study of mobile learning pilot project in K-12 schools. Journal of Educational Technology Development and Exchange, 5(2), 11-26.

Cox, M.J. (2013). Formal to informal learning with IT: research challenges and issues for e-learning. Journal of Computer Assisted Learning, , 29, 85–105. doi: 10.1111/j.1365-2729.2012.00483.x

Ertmer, Peggy A., & Ottenbreit-Leftwich, Anne T. (2009). Teacher Technology Change: How Knowledge, Confidence, Beliefs, and Culture Intersect. 21.05.2014, from http://www.edci.purdue.edu/ertmer/docs/aera09_ertmer_leftwich.pdf

Guy, Retta. (2009). The Evolution of Mobile Teaching and Learning. California: Informing Science Press.

Kajumbula, Richard. (2009). Challenges In Implementing A Mobile Short Messaging Service (SMS) Program To Support Distance Education Students At Makerere University, Uganda. Paper presented at the the International Council for Distance Education Conference Maastricht, The Netherlands. www.ou.nl/Docs/Campagnes/ICDE2009/Papers/Final_Paper_316.doc

Kennedy, G. E., Judd, T. S., Churchward, A., Gray, K. , & K.-L., Krause. (2008). First year students' experiences with technology: Are they really digital natives? . Australasian Journal of Educational Technology, 24(1), 108-122.

Khaddage, Ferial, & Knezek, Gerald. (2013). Introducing a Mobile Learning Attitude Scale for Higher Education. Paper presented at the X World Conference on Computers in Education, Toruń, Poland.

Kothari, C. R. (2004). Research Methodology: Methods and Techniques: New Age International Publishers.

Kukulska-Hulme, Agnes. (2005). Current uses of wireless and mobile learning - Landscape study on the use of mobile and wireless technologies for teaching and learning in the Post-16 sector. Retrieved 22/06/2014 http://www.jisc.ac.uk/uploaded_documents/Current%20Uses%20FINAL%202005.doc

Kukulska-Hulme, Agnes, Traxler, John, & Pettit, John. (2007). Designed and user-generated activity in the mobile age. Journal of Learning Design, 2(1), 52-65.

Kukulska-Hulme., Agnes. (2007). Mobile Usability in Educational Contexts: What have we learnt? International Review of Research in Open and Distance Learning 8(2), 1-16.

Kyriakidou, Maria, Chrisostomou, Charalambos, & Banks, Frank. (1999). Primary Teachers' Attitude to the Use of ICT: a comparative study between Cyprus and the UK. Paper presented at the the European Conference on Educational Research, Lahti, Finland

Lim, Tina, Fadzil, Mansor, & Mansor, Norziati. (2011). Mobile Learning via SMS at Open University Malaysia: Equitable, Effective, and Sustainable. . International Review of Research in Open and Distance Learning, 12(2), 122-137.

Mohd Zaki M., Faizal M.A., Erman H., Nazrulazhar B., A., Nor Azman M., & Y., Asrul Nadi. (2009). ICT Development In Malaysia. Paper presented at the Seminar on Information Technology 2009 (SemiT 2009)

Park, Yeonjeong. (2011). A Pedagogical Framework for Mobile Learning: Categorizing Educational Applications of Mobile Technologies into Four Types. International Review of Research in Open and Distance Learning, 12(2), 78-102.

Peters, Kristine. (2007). m-Learning: Positioning educators for a mobile, connected future. International Review of Research in Open and Distance Learning, 8(2).

Pollara, Pamela. (2011). Mobile Learning In Higher Education: A Glimpse And A Comparison Of Student And Faculty Readiness, Attitudes And Perceptions. (PhD), Graduate Faculty of the Louisiana State University and Agricultural and Mechanical College.

Rashid, Adnan Abd. (2011). The Utilization of Information and Communication Technology among Islamic Secondary School Teachers in Malaysia. Sosiohumanika, 4(2), 145-158.

Sang, Guoyuan, Valcke, Martin, Braak, Johan van, & Tondeur, Jo. (2010). Student teachers' thinking processes and ICT integration: Predictors of prospective teaching behaviors with educational technology. Computer and Education, 54, 103-112.

Sharples, Mike. (2006). Big Issues in Mobile Learning. Report of a workshop by the Kaleidoscope Network of Excellence (M. L. Initiative, Trans.). NOTTINGHAM: UNIVERSITY OF NOTTINGHAM.

Shih, Kuei-Ping, Chen, Hung-Chang, Chang, Chih-Yung, & Kao, Tai-Chien. (2010). The Development and Implementation of Scaffolding-Based Self-Regulated Learning System for e/m-Learning. Educational Technology & Society, 13(1), 80–93.

Shih, Yuhsun Edward, & Mills, Dennis. (2007). Setting the New Standard with Mobile Computing in Online Learning. International Review of Research in Open and Distance Learning, 8(2).

Shuler, Carly. (2009). Pockets of Potential: Using Mobile Technologies to Promote Children's Learning. New York: The Joan Ganz Cooney Center at Sesame Workshop.

Teo, Timothy. (2008). Pre-service teachers' attitudes towards computer use: A Singapore survey. Australasian Journal of Educational Technology, 24(4), 413-424.

Traxler, John. (2007). Defining, Discussing, and Evaluating Mobile Learning: The moving finger writes and having writ… International Review of Research in Open and Distance Learning, 8(2).

UNESCO. (2012). Mobile learning for teachers in Africa and the Middle East: Exploring the potentials of mobile technologies to support teachers and improve practices. France: the United Nations Educational, Scientific and Cultural Organization.

Union, International Telecommunication. (2014). The world in 2014, ICT Facts and Figures. Switzerland, Geneva: ICT Data and Statistics Division.

Utulu, Samuel C., & Alonge, Ayodele. (2012). Use of mobile phones for project based learning by undergraduate students of Nigerian private universities. International Journal of Education and Development using Information and Communication Technology (IJEDICT), 8(1), 4-15.

Yapici, İ.Umit, & Hevedanli, Murat. (2012). Pre-Service Biology Teachers' Attitudes towards ICT Using In Biology Teaching. Procedia - Social and Behavioral Sciences 64 633 – 638. doi: 10.1016/j.sbspro.2012.11.074

Tables

Table 1. The mean and Std. Dev. about Student-teachers Use of Mobile Devices (N=121)

Items	Mean	S.D	Mean %
use a mobile device to look up something that you didn't know or didn't understand during class?	2.455	0.632	81.8%
engaged in social networking on your mobile device?	1.636	0.592	54.5%
wrote notes on your mobile device to remind yourself of an assignment?	2.273	0.658	75.8%
texted a classmate about the content of the class?	2.455	0.592	81.8%
taken pictures or video with your mobile device that you used for an assignment?	1.769	0.692	59.0%
accessed an Educational Management System (e.g. Myguru) on your mobile device?	2.174	0.615	72.5%
read an article or assignment on your mobile device?	1.719	0.698	57.3%
used your mobile device as a study tool?	2.413	0.679	80.4%
Student Use of Mobile Devices	2.112	0.223	70.4%

Table 2. The mean and Std. Dev. about Student-teachers Perception of mlearning (N=121)

Items	Mean	S.D	Response
Student Perception of Participation and Engagement	2.407	0.664	N
Student Perceived Use of Mobile Learning	2.643	0.532	P
Student Ease of Use of Mobile Learning	2.724	0.554	P
Student Perception of mlearning	2.595	0.416	P

Table 3. The mean and Std. Dev. about Student-teachers Perception of Participation and Engagement (N=121)

Items	Mean	S.D	Response
I would be more likely to participate in class if I could use my mobile device.	2.570	1.419	P

ISSN 2039-2117 (online)
ISSN 2039-9340 (print)

Mediterranean Journal of Social Sciences
MCSER Publishing, Rome-Italy

Vol 5 No 19
August 2014

I would spend more time on classwork if I could access materials anytime, anywhere on my mobile device.	1.950	1.210	N
I would be more likely to participate in class activities outside of class time if I could do so through my mobile device.	2.248	1.185	N
I would be more likely to engage in class discussions inside class if I could post my thoughts from my mobile device.	3.050	1.482	P
I would be more likely to ask for help if could communicate through my mobile device.	2.215	1.273	N

Table 4. The mean and Std. Dev. about Student-teachers Perceived Use of Mobile Learning (N=121)

Items	Mean	S.D	Response
I would like to see mobile learning incorporated into my classes.	2.479	1.478	P
I would like to be able to easily view course materials (syllabus. notes. assignments) on my mobile device.	3.091	1.183	P
I would like to be able to download mobile applications that could help me study.	2.686	0.866	P
I would like to be able to access Educational Management Systems (e.g. MyGuru) in a mobile format on my mobile device.	2.736	1.006	P
I would like to be able to take quizzes on my mobile device.	2.579	1.063	P
I would like to be able to participate in discussion forums from my mobile device.	2.289	1.091	N

Table 5. The mean and Std. Dev. about Student-teachers Ease of Use of Mobile Learning (N=121)

Items	Mean	S.D	Response
It would not require a lot of effort to learn how to use a mobile application designed for my class.	2.314	0.913	N
Learning on my personal mobile device would be easy because I am already familiar with all of its functions.	3.190	1.059	P
It is easy to engage in discussions (comment) using a mobile application or website in a mobile format.	3.157	1.118	P
Mobile learning opportunities would allow me to learn and study in places I couldn't normally learn or study in.	2.545	1.118	P
It would be easier to complete classwork and assignments if I could use my mobile device.	2.413	1.046	N

Table 6. Results of independent sample T-Test between Males and Females

	Mean		Std.Dev		t-value	df	p
	Male	Female	Male	Female			
Student Perception of Participation and Engagement	2.483	2.388	0.643	0.671	0.630	119	0.530
Student Perceived Use of Mobile Learning	2.604	2.653	0.585	0.520	-0.401	119	0.689
Student Ease of Use of Mobile Learning	2.483	2.784	0.734	0.486	-2.425	119	0.017
Student Perception of mlearning	2.529	2.611	0.432	0.413	-0.865	119	0.389