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Pedagogical framework of m-learning

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Abstract

There is a growing amount of research concerned with applying mobile technology to learning. Cost, adaptability and scalability are among motivations most often cited for using mobile technologies in learning, it must be remembered that the use of technology must be driven by pedagogical considerations rather than financial, logistical or technical reasons. The aim of this study is to describe the pedagogical framework of mobile learning according to new trends in developing technology. At a glance result of this study is that there are four key aspects for pedagogical framework for mobile learning; integration of tools, pedagogical approaches, assessment techniques and teacher training.

Keywords: mobile learning, pedagogy, m-learning pedagogy, m-learning

1. Introduction

Many researchers are arguing that the growth of pervasive, ubiquitous, computing will have a large impact on learning (Patten et al., 2006). Suitable devices for mobile learning include digital media players, smart phones, and personal digital assistants or PDAs. Ktoridou and Eteokleous (2005) defined m-learning as e-learning using mobile devices and handheld IT devices, such as PDAs (Personal Digital Assistants), mobile phones, laptops and tablet PCs. One of the key benefits of these devices is that they allow learners to vary their study location and to study "on the move" (Evans, 2008). Sandberg, Maris & Geus (2011) indicated that using mobile device in a learning context allows a learner to learn anywhere, anytime. Uzunboylu and Ozdamli (2011) indicated that m-learning with handheld devices eradicated geographical borders, enabling co-perative learning environments which have individual and group interaction. Moreover, internet accessibility allows instant communication with other users, while GPS-functionality makes it possible to access content that is relevant to a learning goal attached to the specific location of the learner. Currently, there is a growing amount of research concerned with applying mobile technology to learning. According to Patten et al. (2006) although cost, adaptability and scalability are among motivations most often cited for using mobile technologies in learning, it must be remembered that the use of technology must be driven by pedagogical considerations rather than financial, logistical or technical reasons.

The aim of this study is to describe the pedagogical framework of mobile learning according to new trends in developing technology.

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2.   Requirement of new pedagogy

In recent years, the use of mobile technologies has increased in a number of fields such as banking, economy, tourism, entertainment, library research, and etc. (Lakhal et al. 2007; Hew, 2009; Dewitt & Siraj, 2010). These developments also led to the use of mobile technologies for educational purposes. Education is now going through its own transformation. According to researchers a classification of mobile learning activities where they categorised examples of learning via PDAs and mobile phones that involved children and the general public as well as university and college students, into six areas, four of which relate to the underpinning learning theory (Naismith et al, 2004; Mileva et al, 2008). These are behaviourist, constructivist, situated and collaborative. Two further categories relate more to context and application; informal and lifelong learning, and learning and teaching support. According to Mileva et al. (2008) the constructivist is most helpful in terms of describing learning with mobile technologies.

According to Perkins (1991) constructivist approach summarized as knowledge is actively constructed by learners as they are trying to make sense of their experiences, learners form, elaborate and test candidate mental structures until a satisfactory one emerges. Learners should demonstrate their learning with mobile technologies for example students would make research information on mobile technologies, and reconstruct that information and integrate them into a multimedia environment.

While the tools for teaching and learning have changed dramatically during the last years, learning and teaching methods have not. Traditional teaching methods have been applied to m-learning (Mileva et al., 2008). Some researchers argue a new approach is needed for both teaching and learning. The argument put forward is the modernizing of teaching facilities and current technology. Also Dias et al. (2008) indicated that existing pedagogical frameworks may no longer be sufficient when learning is delivered using mobile devices.

3.   M-learning pedagogical framework

Pedagogical aspects related to mobile learning is to find ways on how mobile tools can be integrate into learning and teaching activities. There are four key aspects for pedagogical framework for mobile learning; integration of tools, pedagogical approaches, assessment techniques and teacher training. Figure 1 shows key aspects of an effective m-learning pedagogical framework.

Figure 1 Pedagogical Framework of Mobile Learning
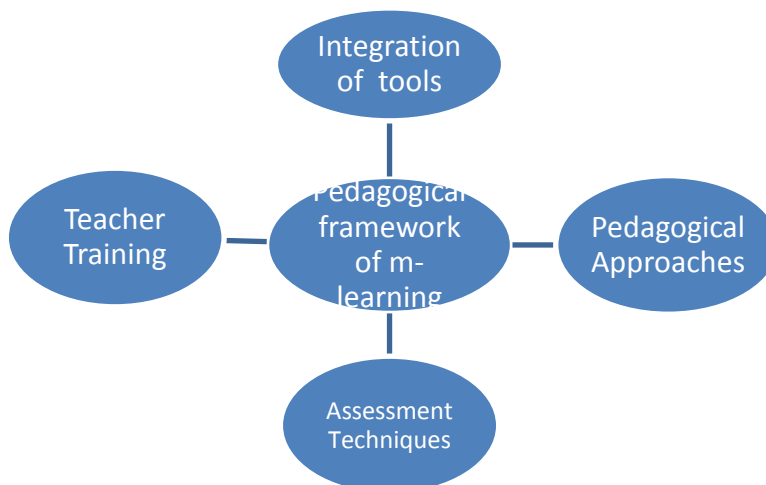
A.   Integration of tools

Ktoridou and Eteokleous (2005) identify mainly two approaches to mobile devices integration: 1) as a supportive tool; and 2) as an instructional tool. If mobile tools as a support, mobile tools support communication between

learners, teachers, provides file sharing, disscussion, information search, and other features. Also mobile tools can use as an instructional tool. For example students execute their learning tasks on mobile devices. Instroctors can give students e-books, content, and other learning materials. Appropriate tool selection is important in mobile learning. Devices must be appropriate for course content. Additionally, mobile learning devices can be used to evaluate students learning.

B.   Pedagogical Approaches

Pedagogical approaches, as   constructivsm, blended learning, collaborative learning and active learning are presented in the following:

-    *Constructivism:* Constructivist learning constructs knowledge by interpreting new knowledge based on their prior knowledge (Kuiper & Volman, 2008). According to the constructivist theory, learning should be student-centered (Matthewi, Felvegi & Callaway, 2009). And students should be in social interactions with their peers taking part in constructing information actively for the fulfillment of the learning. The role of the instructor is to guide students in the assimilation and construction of the information (Farabaugh, 2007; Wheeler et al., 2008).

-    *Blended Learning:* Blended learning, which combines classroom instruction with e/m-learning, can maximize the benefits of both face-to-face and online methods (Bonk & Graham, 2006; Ocak, 2010). Blended learning model combines different advantages of face to face education and e-learning to ensure an effective learning environment for students (Kose, 2010). Dziuban, Hartman, and Moskal (2004) described the blended learning characteristics: (1) a shift from teacher-centered to student-centered instruction in which students become active and interactive learners; (2) increased student-instructor, student-student, student-content and student-outside resources interactions; and (3) integrated formative and summative assessment mechanisms for students and instructors. These characteristics make blended learning very effective.

-    *Collaborative Learning:* The collaborative learning method has been used in education for many years (Santangelo, 2009). According to Vygotsky's (1978) socio cultural cognitive theory an individual effectively learns more than he learns on his own by means of collaborative learning method associating with his proximal development zone. Collaborative learning defined as the well management of individuals engaged in a common assignment using technologies such as mobile tools, the Internet etc. And also, this type learning environments are usually the environments that provide information and opinion sharing between the group members and experts via the technology supported collaborative learning tools (Lipponen et al., 2003; Peck et al., 2010; Rastegarpour, 2011). These tools enable pre-service teachers in the study to complete projects working together although they are not physically in the same environment.

-    *Active Learning:* Research on teaching and learning center described as active learning is a process whereby students engage in higher-order thinking tasks such as analysis, synthesis, and evaluation. Mobile learning devices can have to enrich the learning process for learners. They are versatile and active learning tools.

C.   Assessment techniques

In mobile learning instructors can use all assesstment techniques for evaluate learner products/projects. Assessment techniques, computer based, self assesstment and peer assessment and tutor assesstment are presented in the following;

-    *Computer based assessment:* Computer networks enable students to conduct assessment activities anytime anywhere, and teachers can flexibly log in online to check assessment progress. Also, mobile assessment can eliminate the time and the cost that teachers and students would otherwise invest in printing out student work (Chen, 2010).

-    *Self assessment and peer assessment:* Andrade and Du (2007) examined *self-assessment* is a process of formative assessment during which students reflect on and evaluate the quality of their work and their learning,

judge the degree to which they reflect explicitly stated goals or criteria, identify strengths and weaknesses in their work, and revise accordingly. Peer assessment can help in assessing the performance of individual students as well as of groups, and can help in formative evaluation as well as summative evaluation. Students can assess their group members or other groups'members (McLuckie & Topping, 2004). Keegan et al. (2009) indicated that aassignments which are useful on small screens are short questions with automatic feedback, quizzes, multiple choice assignments and other assignments requiring little amounts of textual input from the user, such as a vocabulary test. It is possible to design multimedia assignments, for instance in Flash, such as drag and drop and other types of assignments if the device has support for them. Multiple choice questions with 4 possible answers fit easily on the screens of mobile devices.

- *Tutor assessment:* Race (2001) indicated that tutor assessment is not sufficiently valid and that students are better placed to assess their own or each other's work. Also teachers can use tutor assessment with peer assessment. Also, instructors should monitor the marks that each learner allocates to themselves.

D. Teacher training

Supports teachers' work and endorse them during content production as well as delivery strategies decision. Techniques and methods to build a learning community encourage the participants to explore the systems as well as the materials (Mileva et al, 2007).

4. Conclusion and Future Work

We can say that there are many possibilities in mobile learning are for learners. Pedagogical framework of mobile learning, integration of tools, pedagogical approaches, assessment techniques and teacher training are observed and discussed. Mobile learning approach should be successful in the future. Most of mobile learning studies have small scale for ex. Only in one course. Further studies can investigate the mobile learning with larger scale experimentally for successfull integration.

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