Mobile learning in education

By:

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In the past ten years mobile learning has grown from a minor research interest to a set of significant projects in schools, workplaces, museums, cities and rural areas around the world. Mobile technologies offer new opportunities for distance learning and enable people to collaborate anywhere. Mobile learning through the use of wireless mobile technology allows anyone to access information and learning materials from anywhere and at anytime. As a result, learners have control of when they want to learn and from which location they want to learn. Also, all humans have the right to access learning materials and information to improve their quality of life regardless of where they live, their status, and their culture. Mobile learning, through the use of mobile technology, will allow citizens of the world to access learning materials and information from anywhere and at anytime. Learners will not have to wait for a certain time to learn or go to a certain place to learn. With mobile learning, learners will be empowered since they can learn whenever and wherever they want. Also, learners do not have to learn what is prescribed to them. They can use the wireless mobile technology for formal and informal learning where they can access additional and personalized learning materials from the Internet or from the host organization. Workers on the job can use the mobile technology to access training materials and information when they need it for just-in-time training. Just-in-time learning encourages high level learning since learners access and apply the information right away rather than learn the information and then apply the information at a later time. Educators and trainers are empowered since they can use the mobile technology to communicate with learners from anywhere and at anytime. At the same time, educators and

trainers can access learning resources from anytime and anywhere to plan and deliver their lessons. Ally (2009)

Nature of Mobile learning

Mobile learning is the ability to obtain or provide educational content on personal pocket devices such as PDAs, smartphones and mobile phones. Educational content refers to digital learning assets which includes any form of content or media made available on a personal device. Mobile learning using handheld computers is in its infancy in terms of both technologies and pedagogies. As a result there is still some dispute amongst industry advocates in how mobile learning should be defined: in terms of devices and technologies; in terms of the mobility of learners and the mobility of learning, and in terms of the learners' experience of learning with mobile devices.

Most researchers and educators probably view mobile learning as the immediate descendant of e-learning. Pinkwart, et al. (2003) for example, defines e-learning as 'learning supported by digital "electronic" tools and media', and by analogy, mobile learning as 'elearning that uses mobile devices and wireless transmission'. Quinn (2000) defined it earlier, as simply learning that takes place with the help of mobile devices, or the intersection of mobile computing (the application of small, portable, and wireless computing and communication devices) and e-learning (learning facilitated and supported through the use of information and communications technology).

While the iPod and MP3 players can be used for teaching and learning, a careful translation between discourses is required to avoid a culture of equivalence emerging between listening to a scholarly sonic session and popular music for

pleasure. Ensuring a context of teaching and learning is difficult as it must reconfigure the already existing leisure-based compulsions of the platform. M-Learning is not a novelty. It is a mainstream, pervasive learning delivery medium relied upon by thousands of post-secondary education institutions and millions of workforce and distance-educated students worldwide.

Towards More Effective Mobile Learning Environments

While learners may not actually share the same physical environment, they can use mobile devices to share aspects of their personal and cultural lives. To solve problems unique to their situations, learners can readily choose from a seemingly unlimited quantity of data. The Internet has ushered in an era in which information has become easy to access and easy to publish. Now, learners must acquire the skills and tools to navigate through this growing body of information. Mobile learning enables learners to interact using additional tools such as text messaging, mobile Internet access, and voice communications – all through wireless networks. Although this medium may be hindered by low bandwidth and limited input and output capabilities, there are some distinct advantages:

- Wireless, networked mobile devices can enable learners to access relevant information when and where it is needed. Mobile learners can travel to unique locations, physically with or virtually through their mobile devices.
- The ability to access a variety of materials from anywhere at any time can provide multiple cues for comprehension and retention.
- Learning within specific contexts can provide authentic cultural and environmental cues for understanding the uses of information which may enhance encoding and recall.

• Well-implemented mobile education can assist in the reduction of cognitive load for learners. While it is difficult to determine how to chunk information, differing patterns of presentation and amounts of information can potentially help learners to retain, retrieve, and transfer information when needed. Koole (2009)

Smartphones are primarily communication devices, and many PDA now offer several communication protocols such as GPRS and/or WiFi. This connectivity supports synchronous communication using voice, voice over IP (VOIP) or instant messaging as well as asynchronous communication via email, weblogs, web forums, wikis, and virtual learning environments. In recent years researchers have investigated the potential of mobile handheld devices to support collaborative learning, devising educational scenarios that make use of their collaborative, interactive, and mobile capabilities. Research has also been conducted in the wider learning sphere, with the use of handhelds as interactive museum guidebooks and as tools to support medical students on hospital placements. Roschelle (2003) identified two forms of collaborative participation: "the normal social participation in classroom discussion (for example) and the new informatic participation among connected devices" (p.262). He discovered that in the classroom setting, where the learners were in the same physical space, the normal face-to-face social interaction was supplemented by the wireless interaction between the connected devices. In this context, mobile devices added a new social dimension of participation that was not otherwise available. Clough et al. (2009)

Differentiating e-learning from mobile learning

E-learning can be real-time or self-paced, also known as "synchronous" or "asynchronous" learning. Additionally, e-learning is considered to be "tethered" (connected to something) and presented in a formal and structured manner.

In contrast, mobile learning is often self-paced, un-tethered and informal in its presentation.

e-learning	**m-learning**
lecture in classroom or internet labs	learning anywhere, anytime
e-mail-to-e-mail	instantaneous messaging
private location	no geographic boundaries
travel time to reach to internet site	no travel time with wireless internet connectivity

Research question:

1. What are the uses of mobile learning tools?
2. Why are mobile learning important in education?
3. What are the challenges that mobile learning tools face?

The importance of the study:

- It deals with one of the most important educational issues to take benefit from the modern technologies.
- The study contributes in shedding the light on how to use the mobile learning tools effectively and appropriately.
- The current study contradicts with the idea that says mobile learning depends on only mobiles and confirms that we can use other means.

Previous studies

In a study of Motiwalla (2007) states that wireless data communications in form of Short Message Service (SMS) and Wireless Access Protocols (WAP) browsers have gained global popularity, yet, not much has been done to extend the usage of these devices in electronic learning (e-learning). This project explores the extension of e-learning into wireless/ handheld (W/H) computing devices with the help of a mobile learning (m-learning) framework. This framework provides the

requirements to develop m-learning applications that can be used to complement classroom or distance learning. A prototype application was developed to link W/H devices to three course websites. The m-learning applications were pilot-tested for two semesters with a total of 63 students from undergraduate and graduate courses at our university. The students used the m-learning environment with a variety of W/H devices and reported their experiences through a survey and interviews at the end of the semester. The results from this exploratory study provide a better understanding on the role of mobile technology in higher education.

In the same concern, Gunasegaran (2010) in his study, which aims at examining learners' perception concerning the satisfaction level of Mobile learning. The learners are the students who have enrolled in the distance education academic program at the School of Distance Education, Universiti Sains Malaysia (USM) in the 2008/2009 academic year. To what extent did Mobile learning benefited the learners? Data were collected from a sample of 105 undergraduate students from Bachelor of Arts, Bachelor of Science, Bachelor of Social Science and Bachelor of Management through a specially designed questionnaire relating to the satisfaction of using the Mobile learning in their studies. This paper utilised the Rasch model to analyze the data. Results showed that the satisfaction of the respondents towards the Mobile learning was high. All the items in this survey are fit to this survey. From the result, it is indicated that most of the respondents were satisfied with Mobile learning. The items that showed the higher satisfaction are relates to the study material, important notes, reminder can reach them daily. Besides, they highly agreed that Mobile learning has helped them pace their studies in distance learning courses. However the survey also reviewed that the respondents are not satisfied with the cost of communication with the tutor and other students in Mobile learning courses.

Similarly, Grané (2010) aims at exploring initiatives related to the influence of mobile devices in educational contexts was proposed. In the first stage of this research, different experiences in the context of mobile learning, and more specifically one Learning environments will be approached and studied. In order to understand better the state of the art of mobile learning and also to achieve the research objectives, a methodological framework was designed to deepen into the contextual field. This article will describe the main objectives of the work, the methodological framework, and also the general context of the participants of this study. The main objective of the general research is to analyse the usage and perception of ICT in different contexts of a group of master degree and postgraduate programme students. After the immersion of these students in an online environment, using the iPad device (Apple Inc. Tablet Computer), the research team will explain the results of this learning process. The final communication intends to present results focused on early indicators applied before the learning action and some other experiences actually evidenced. For the next stages of the project, the research team is actually working on the triangulation of results obtained from three different data collection techniques.

M-learning as a Practical Training Solution in Mobile Workplaces

Klopfer, Squire, Holland, and Jenkins (2002) propose that mobile devices (handheld computers) "produce unique educational affordances," which are:

a) Portability

b) Social interactivity

c) Context sensitivity, the ability to "gather data unique to the current location, environment, and time, including both real and simulated data"

d) Connectivity, to data collection devices, other handhelds, and to networks

e) Individuality, a “unique scaffolding” that can be “customized to the individual’s path of investigation”

Many teachers are interested and able, however, to provide m-learning content, learning management, and support. The following examples illustrate how m-learning is being used and supported as cited in Peters (2009):

• Environmental Detectives is an example of an increasing suite of games designed for mobile devices. Students played the role of environmental engineers presented with a scenario in which the spread of a toxin was simulated on a location-aware Pocket PC equipped with a Global Positioning System (GPS). The Pocket PC allowed students to investigate a toxic spill by sampling chemicals in the groundwater and responding to different variables programmed by the teacher (Klopfer et al. 2002). The use of virtual characters within the program allowed students to gain an experience that is close to real life, provided context, significantly reduced abstraction, and resulted in a blurring between the game and real life. For instance, in an unanticipated event, one group stopped in the middle of the game and used Google to search for clues. Not only was the strategy of accessing other outside resources deemed acceptable within the rules, it was perhaps advisable given the time constraints and use of authentic chemicals and historical data. Students were able to locate information quickly and easily on Google, suggesting the role that a tool
such as Google can play in transforming an educational experience.

• In designing Melbourne Law School’s new building (built in 2002), a key feature was the provision of wireless networking that allowed students with mobile computing devices to access course material and conduct searches of legal databases during class, thus expanding the depth of the discussion and the learning experience for the student (Hartnell-Young and Jones 2004).

• The medical field has applied mobile technology to remote learning in rural health education. Hartnell-Young and Jones (2004) described the use of Tablet PCs that helped students to capture and store confidential patient information, and deliver just-in-time information on clinical problems. Students kept a reflective journal using their mobile device, which was later used as a reference for discussion with their instructors.

• Zurita and Nussbaum (2004) demonstrated the effectiveness of handheld devices in teaching first-grade children to construct words from syllables. In a month-long controlled experiment, children who were supported with technology had significantly higher word construction test score improvements than children who were using paper-based activities.

• These examples of good practice, and of m-learning in the field, are by no means isolated; however, the widespread adoption of m-learning is still some way off, and the application of m-learning requires a new paradigm. Indeed, as Aquino (n.d., p. 5) reflects, learning is "emotionally based and consistently and powerfully influenced by the learner's culture and experience," and traditional teaching methodologies that are "essentially passive, theoretical, text-based and linear" will fail to engage young learners and fail to deliver the skills needed for future social and work environments.

Mobile learning Challenges

- The need of setting up a wireless infrared structure including wireless networks and modern technical machines.
- Mobile phones or laptops have small screens which decrease the display of information.
- Some mobiles phones have small memory amount.

- Some mobile learning tools are still expensive.
- The difficulty of accessing data into the mobile learning tools because of the small keypad or keyboard.

Recommendations

- Mobile phones are very beneficial in the educational process which make education more flexible. Therefore, they should be integrated in the ICT system.
- Mobile learning tools are a new style in the learning process which help in the distance learning. As a result, there should be an infrared structure for the wireless technology to enable many people communicate adequately.
- Ministry of education should provide financial support in order to have the mobile learning tools and their structure.
- There should be workshops of how to use mobile learning tools and how to deal with them appropriately.
- Tele-communication company should expand the wireless services to enable the users use this technology easily.
- IT engineers should design programs that helps facilitate education depending on mobile learning technology and what scholars need.

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