Benjamin Kwofie, Anders Henten

Pushing the boundaries of mobile-learning in higher education institutions : synchronous mobile learning mode

2013

MUZEUM HISTORII POLSKI

BENJAMIN KWOFIE, ANDERS HENTEN
Aalborg University

PUSHING THE BOUNDARIES OF MOBILE-LEARNING IN HIGHER EDUCATION INSTITUTIONS: SYNCHRONOUS MOBILE LEARNING MODE

Introduction

Current definitions, understandings and research directions of mobile learning (m-learning) have limited how higher education institutions conceptualize and utilize m-learning opportunities to outside of the typical classroom. The embedded notion of m-learning as 'e-learning using mobile devices and wireless transmission' (Hoppe et al, 2003 cited in Peng et al, 2009) have caused it to be viewed as a tool for supporting traditional learning and extending e-learning in higher education institutions. Conceptualizing m-learning as a medium for participating in real-time traditional university learning activity has however received little attention from researchers. On the one hand, this concept stretches the existing 'mould' of application of m-learning and ubiquitous computing in the traditional environment of higher education institutions, a rather uncomfortable notion. While on the other hand, it offers a true conceptualization of the application of technology in education as its main consideration is in how existing mobile technologies and devices can be used to facilitate 'already existing pedagogically sound' teaching and learning activities. In other words, m-learning should not only be conceptualized as a distant learning model (Mutlu et al, 2000 cited in Korucu & Alkan, 2011), or support learning model for a traditional university programme (Wang, 2004 cited in Korucu & Alkan, 2011; Motiwalla, 2007), but also as a synchronous learning model of traditional university classroom programmes. This opens a whole new door for exploration about the use of technology in education in a flexible and convenient way.

Most research on mobile learning has been concerned with flexibility and convenience in learning. As such their timing varies from that of the traditional on-

campus learning. It does not allow the mobile student to blend in easily with traditional students, making them feel like a different category of students. True mobile learning should not only allow students to access learning anytime anywhere (learning resources), but also in real time (classroom). Where large classes are a disincentive, this medium will allow students to participate through video and audio mediums. A device that allows students to alternate between the teacher and the information on the board (via video) can be used – in real-time. The student however should have the opportunity to ask questions in real time and get responses.

It is important to note here that mobility is being considered in terms of the students' ability to join in traditional learning experiences in real-time. This needs to be distinguished from blended learning and distance learning. In blended mobile learning mode, the technology is used to support students' learning outside of the classroom. It is used to provide information, reminders, assessment, links to course website, etc (Motiwalla, 2007). In the distance mobile learning mode, the technology is used to provide the total learning experience outside of traditional class session experience. The students have access to learning resources anytime anywhere with real-time sessions with instructors and students. However, it is also outside of the typical classroom session.

In the rest of this paper, a discussion of the issues of mobility, mobile devices, the learner and the learning activity is presented. A framework that includes real-time participation by learners is suggested in a synchronous mobile learning model.

1. Defining Mobile Learning

Keegan (2005) cited in Idrus & Ismail (2010) defined m-learning as the provision of education and training on PDAs, palmtops, handhelds, smart phones and mobile phones. Whereas Trifonova & Ronchetti (2003), cited in Idrus & Ismail (2010) agreed to a definition of m-learning as e-learning that uses mobile computational devices such as PDAs and digital cell phones, Quinn (2000) and Pinkwart et al, (2003) also cited in Idrus & Ismail (2010) defined m-learning as 'e-learning that uses mobile devices'. This definition encapsulates other mobile devices like laptops which are wireless enabled and as such can access learning activities from anywhere.

Idrus & Ismali's (2010) description of the role of higher educational institutions suggested the potential use of 'sms' in sending weekly tips, reminders and alerts to students, multiple choice quizzes with immediate feedback, browsing and searching of short texts, following links to selected websites, glossary and reference information, and provision of concepts or definitions for revision. They further suggested that content could be developed that complied with technical standards that made it portable across portable computer systems and devices. They con-

tended that lecturers could for instance generate pre-lecture listening materials containing news, review of journal articles, activities of the week, feedback and comments on assignments and activities, explanation of difficult terms, background information about the subjects, questions students need to think about before class, etc. A critical consideration of their argument would reveal a support oriented approach to applying mobile learning concepts in traditional higher education learning activities and not as a medium for real-time delivery of the educational experience. For the purposes of this paper, mobile learning is defined as the use of mobile devices and technologies like laptops, Smartphones, and PDAs to access learning activities in real-time mode.

2. Mobility, Mobile Devices and Mobile Technologies

Mobility in mobile learning centres around three constructs, the learner, the device and the learning activity. A critical scrutiny of these three constructs would reveal that it is only the learner that is truly mobile. The learner can move on his/her own volition given certain circumstances and as such can be described as truly mobile. The mobile device on the other hand is mobile as a result of the mobile learner's ability to move it along with him/her wherever he/she goes. Its mobility therefore can be said to be as a result of its physical characteristics that allows a learner to move along with it with ease and comfort. Current mobile technologies like the wireless networks have now enabled mobile devices to access other computing devices away from source. This has in a way created an opportunity for ubiquitous computing to be used in educational settings, and indeed a whole array of situations.

3. Learner and Learning Activities

The learner as presented above is naturally mobile. Several conditions may warrant the mobility of a learner in a higher education institution context. For instance work may require him to be mobile, the need to travel, unforeseen contingencies like traffic delays, inadequate resources or facilities on the part of the institution, or a personal decision can cause a learner to be mobile. Such situations prevent the learner from participating in traditional real-time class activities. Most learning activities of higher education institutions are situated on the campuses at specific locations and times with the learner required to attend. These learning activities however can be made available to mobile learners using mobile technologies and devices. The mobile technology and device allow the learning activity to be ubiquitous even though the learning activity is situated on the campuses of the

higher education institution. However, current applications of m-learning do not facilitate real-time participation in traditional classroom activities even though they are used to support access to learning resources anytime anyplace.

Most learners of higher education institutions want to participate in real-time activities that are ongoing on the campuses. This is especially true in Africa and particularly in Ghana where many students graduating from high schools want to be offered specific courses in particular universities but the inadequate facilities restrict the number of students who can be admitted. The mobile learners in a typical mobile learning programme in a higher education institution are provided a certain degree of freedom and flexibility not allowed to the traditional student, and maybe rightly so. However most students dislike seeing themselves as 'other' categories of students from traditional ones. Extensions of current mobile learning application would enable the university provide more options for current and potential students.

4. The synchronous mobile learning framework

Motiwalla (2007) developed a mobile learning framework and tested it on students from three courses during two different semesters. He focused on using typical wireless handheld devices rather than on other mobile devices such as laptops. His research showed that students found wireless handheld mobile learning useful, supportive, convenient and mobile. They however disliked the small screen size, tedious typing process on phone keypads, slow connection speeds, response times, lack of pictures and visual stimulation. One respondent actually suggested they would be useful for pull media more than interactive.

Two issues need clarification here: the definition of mobile devices to include laptops that are equally mobile and the need for interactivity. Although some researchers define mobile learning to include the use of laptops, others do not agree to this inclusion of a mobile computer. It is a known fact how the screen size, typing platform, etc of such mobile devices like Smartphone's, PDAs, etc are perceived as uncomfortable by learners and can pose a barrier to the effective use of mobile learning. The inclusion of laptops will however allow some of these perceived challenges to be removed, paving the way for more dynamic mobile learning. On the issue of interactivity, real-time videos and audio tools could be used. This should allow learners to log in real-time, ask questions, view teacher and white board displays, with a possible option to switch from viewing the white board and instructor to viewing the students in the class especially when one is asking a question or providing answers or comments. This has the potential of providing a truly stimulating classroom experience just short of being physically present. Also, with learning resources that are textual in nature, reading software could be integrated to read the content out loud to prevent learners from straining their eyes.

The suggested new framework in addition to providing access course information and materials on a course website, SMS, alerts, discusiion boards, whiteboards, assignment submission accessbile to mobile devices, its main contribution is the provision of real-time participation to mobile students through video and audio tools. This will allow mobile students to ask questions in real time, contribute to class discussions in real-time view white board demonstrations, see colleagues and generally feel a part of the class even though he/she is not physically present. Technically implementing this framework will not pose much of a challeneg as mobile technologies are well developed to facilitate this mode of mobile learning.

5. Implications for Higher Education Institutions and Learners

Since mobile technology is advanced enough to facilitate this mode of communication, cost to the institution implementing it will be worth considering. Although it is not estimated to be overly expensive, issues like cost of bandwidth for such real-time activities are of critical importance. For pilot projects it might be less costly but rolling up a campus-wide project will definitely call for assessment of cost implications.

It might also call for a reconsideration of classroom requirements. The current notion of the traditional classroom is limited to the lecture hall in designated places by the school. With synchronous mobile learning, the classroom could be any place. the reuirements for students' participation in class has to be redefined for allowing mobile learners' participation.

Then there is also the issue of external factors such as wireless network and Internet reliability as well as mobile device reliability. These are not under the control of the institution and its teachers and as such may result in interruptions of quality services which have their own issues. For instance, a student during a class may have interruptions in the network, causing him/her not to hear properly or even get cut-off. This will definitely cause loss in real-time of valuable information, understanding and participation in the lecture, although afterwards, the same piece of information could be accessed via the learning resources made available by the institution.

For the learner, it calls for discipline. Just as in traditional campus settings learners discipline themselves to attend lectures and participate in formal activities, the same level of discipline is required of mobile learners in synchronous mobile learning. Where this is ignored, the institution has to apply same disciplinary actions to the learners.

Conclusions

Advancements in mobile technologies should cause higher education institutions to consider new ways of providing their services in real time. Considering the nature and demands of the current brood of learners, enabling real-time participation in traditional classroom structured learning activities would provide innovative ways of attaining qualifications and certifications in higher education. Using videos and audio tools that allow learners to see instructors, view whiteboards, other students, ask questions, contribute, etc. would enrich the learning experiences of mobile learners. It is not without its challenges as in reliability of wireless networks, Internets, mobile devices, etc. there are also other administrative issues relating to the way the institution provides its services for accreditation and quality issues which need to be addressed appropriately. It is suggested that additional research need to be carried out to authenticate the workability of the suggested framework.

Literature

1. Georgieva E.S., Smrikarov A.S., Georgiev T.S., (2011): *Evaluation of mobile learning system*, Procedia Computer Science, Vol. 3.
2. Idrus I.M., Ismail I. (2010): *Role of institutions of higher learning towards a knowledge-based community utilizing mobile devices*, Procedia – Social and Behavioural Sciences, Vol. 2, Iss. 2.
3. Korucu A.T., Alkan A., (2011): *Differences between m-learning (mobile learning) and e-learning, basic terminology and usage of m-learning in education*, Procedia – Social and Behavioural Sciences, Vol. 15.
4. Martin S., Diaz G., Plaza I., Ruiz E., Castro M., Peire J, (2011): *State of the art of frameworks and middleware for facilitating mobile and ubiquitous learning development*, The Journal of Systems and Software, Vol. 84, Iss. 11.
5. Motiwalla M.L., (2007): *Mobile learning: A framework and evaluation*, Computers and Education, Vol. 49.
6. Ozdamli F., Cavus, N., (2011): *Basic elements and characteristics of mobile learning*, Procedia – Social and Behavioural Sciences, 28.
7. Peng H., Su Y., Chou C., Tsai C., (2009): *Ubiquitous knowledge construction: mobile learning redefined and a conceptual framework*, Innovation in Education and Teaching International, Vol. 46, No. 2.

PUSHING THE BOUNDARIES OF MOBILE-LEARNING IN HIGHER EDUCATION INSTITUTIONS: SYNCHRONOUS MOBILE LEARNING MODE

Summary

In a higher education context, mobile learning is not really mobile if it does not allow the learner to participate in real-time formal academic activities outside of the lecture rooms. Existing studies dwell more on either using mobile learning outside of traditional university academic activities in a context of its own or as a learning support to facilitate self directed learning or collaborative learning outside of the classroom. Some studies have also considered learning in informal settings with others examining its use in providing formal but flexible learning. Stretching this ubiquitous model of learning into the existing traditional formal learning arrangements offers both unique and extensive opportunities for students and the relevant higher education institutions to achieve real-time mobility. This paper attempts to (a) push our understanding and application of 'mobile learning' beyond current borders of application in HEIs, (b) extend a framework of mobile learning application in HEIs. The application of this kind of mobile learning will enable more options for the teaming number of students looking for more flexible and yet effective and efficient options for participating in HE learning.

Translated by Benjamin Kwofie, Anders Henten