Context Aware Mobile Learning and Various Notions to Understand

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Abstract

Mobile learning has been on the rage these days around the world in the research community. It has been observed that the wide applicability and understandability of this term and its related aspects are interesting to research fraternity. This paper brings forward various aspects of mobile learning along with different perceptions, understanding and issues circulating in the research circles and papers. This paper attempts to bring in the understanding of Mobile Learning, Some Design Issues in the literature, few projects of mobile learning, technological aspect of mobile learning and consequences of mobile learning in higher education and its applicability as said by many.

Keywords: Context, Design Issues, Higher Education, Mobile Learning.

1. INTRODUCTION

Mobile learning is any form of learning that happens when mediated through mobile devices [1]. Either in the formal education or in the informal education, it has been seen that the mobile learning is playing significant role in training people [2]. The more possibility of computers donning the role of a teacher/tutor, a learning tool is predicted by Koschman [3], in terms of control and representation of learning in collaborative manner.

It is will understood the huge jump in the number of mobile devices usage in the third world countries, and has been reported to be quadrupled between 1997 to 2007 [4]. It is predicted and estimated that the campuses of the universities will go mobile and wireless by 2015 [5][6]. More in particular the case with the developing countries like India, Pakistan and Thailand, the mobile learning will surely increase the educational horizons and decrease the digital divide, and all this is due the cost of the mobile devices going more and more affordable [7][8]. When seen in the countries of Europe, or Japan or Korea and to that matter Philippines, the number of people with mobile devices are more and this has resulted in the 100 percent penetration into the students.[9]

2. MOBILE LEARNING

In the words of Sharples [10], “Mobile learning (m-Learning) is the next generation of e-Learning and is based on mobile devices”. In the words of Quinn [11], mobile learning is defined as the learning that occurs with the help of mobile devices. The real mobile learning can be achieved in the mobile learning process [12] only when there is a proper mobile learning content available along with proper wireless applications, other wise it would become a mere communication and not education [13][14].

In the words of Freitas et. al., [15], the major elements of mobile learning is said to be the technology, the projects with creativity in solution and the education itself. Prensky [16] lists out – Listening, Observing, Imitating, Reflecting, Questioning, Estimating, Trying, Practicing, ‘What if-ing’ and Predicting to be possible activities in mobile learning process. Research studies on usability and evaluation have shown that the students are highly motivated and take the usage of mobile positively in the process of mobile learning.

In terms of Traxler [17], mobile learning is wireless with digital devices and technologies for public, as the learner participates in education. Ally [18] points out that the mobile learning is an intersection of mobile computer and e-learning, with search capabilities, accessing of learning resources at the will and on the go, and rich interaction. Sharples et al., [19], describe mobile learning not to be a just learning with mobile technology support, but more of processes of knowing through conversations, explorations across varied contexts among people and individual interaction. The competence in the mobile learning can be increased if the curriculum is restructured and well integrated with the wireless technology, mobile education and the application management.

In the study by Poonsri Vate U Lan, the demand for going to mobile learning has been observed in four fifths of the participants. And this indeed is clearly a huge demand for new age mobile learning. More over, the study also revealed that individual approach towards learning is the most preferred learning style for mobile learning when compared to the group oriented or collaborative style. There has been are constant reiteration from Lauriis and Eteokleous (2005) regarding the need to define mobile learning that considers all the aspects of M-Learning Process.

3. DESIGN ISSUES
In contrast to some studies, Daphne & Hsiao [20] emphasized on learning theory for the design of learning content for mobile learning as constructivist approach, in which the students, teachers and the experts will form a learning community and carryout learning activities that are more collaborative in nature. A major point raised by Ito [21], is that the students of mobile learning feel very much natural in mobile device use, but the schools could not get how to make to the students for teaching.

The features of mobile learning envisaged by (Huang, Huang & Hsieh, [22]) are:

1. Enhancing availability and accessibility of information networks;
2. Engaging students in learning-related activities in diverse physical locations;
3. Supporting of project-based group work;
4. Improving of communication and collaborative learning in the classroom, and;
5. Enabling quick content delivery.

The crucial aspects of mobile learning implementation are the challenges like small screen size; less memory, low bandwidth, and low battery power still haunt the progress. One of the primary aspect of mobile learning has been recognized as context or various contexts that occur outside the class room [23][24], where in the collaborative learning essentially looks at the community contexts[25].

Ting[26] cites that flexibility, accessibility, personalization in the learning activities as the advantages of the mobile learning that will impact greatly on the productivity and effectiveness of the learning activities of the mobile learner. It has been identified that the lack of proper infrastructural support as the biggest challenge in Africa to bring mobile learning into reality. For mobile learning, the content of the education does not change; it is only the delivery mechanisms influenced by radically changing new technologies along with the internet advantages bring the concept of any time and any place.

The traits like being digitally literate, always connected, community oriented are high among the now a days learners as per the observations of Oblinger [27][28]. Concerns like cost, compatibility, equity of access, security, privacy, ethical concerns where raised by [29][30] for effective and successful mobile learning implementation. Facer et. al.,[31] brings in the issues like low teacher confidence, training, technical obstacles with mobile devices are having negative repercussions on mobile learning process and the need to address them.

According to Attewell [32] and in the words of Cobcroft et.al., [33], “Mobile devices can help improve literacy and numeracy skills; encourage independent and collaborative learning experiences; identify areas where learners need assistance and support; mitigate resistance using ICTs; engage reluctant learners; enable learners to remain more focused for longer periods and promote self-esteem and self-confidence.”

When evaluating mobile learning, Giasemi et. al., [34], proposed six challenges that need to be considered with at most diligence. They are: capturing and analyzing learning in context and across contexts, measuring mobile learning processes and outcomes, respecting learner/participant privacy, assessing mobile technology utility and usability, considering the wider organizational and socio-cultural context of learning, and assessing in/formality. The above said challenges can be handled through A three-level framework for evaluating mobile learning is presented[34], comprising a micro level concerned with usability, a meso level concerned with the learning experience, and a macro level concerned with integration within existing educational and organisational contexts.

Colley et.al., [35] argue that “seeing informal and formal learning as fundamentally separate results in stereotyping and a tendency for the advocates of one to see only the weaknesses of the other … It is more sensible to see attributes of informality and formality as present in all learning situations”.

4. MOBILE LEARNING PROJECTS

Griffin and Symington [36] cited example of museum learning, where in the learner is understood in various terms like: instances where learners show responsibility for and initiate their own learning (e.g. by writing, drawing, or taking photos by choice; deciding where and when to move), are actively involved in learning (e.g. by absorbed, close examination of resources; or persevering with a task), make links and transfer ideas and skills (e.g. by comparing evidence), and share learning with experts and peers (e.g. by talking and gesturing; or asking each other questions).

In collaborative learning activities like field trips, story telling and adventure gaming, the cases of successful implementation of mobile phones has been achieved by Cole and Stanton. CTAD is uniquely possessing projects of mobile learning that are voice-only and primarily for the school dropouts in England [37]. Saipunidzam M. et al [38] found in their study the strengths and weaknesses of various models, the success levels of various learning activities when mobile devices are employed for learning. Implementation of study time tables, concept mapper and course manager on a PDA and their evaluation has been carried out by Corlett and his team.

In one of the projects[39], the outcome of the project has been understood in terms of what is working well and what is not working out in mobile learning has been found and reported. In Japan, for learning short English lessons, the students can dial up easily is implemented [37]. A mobile game to orient university students has been successfully implemented on personal digital assistant by Schwabe and his team. In a filed study by Constantiou et al (2004), it is
observed that the location-based services have been widely used by the mobile owners when they are travelling and recommends that it could possibly one of the major contextual feature to be utilized in the mobile learning process.

Mobile learning through games such as Crossword and Mathematics are in use, and also assigns grades to the learners once they complete it [37]. An expert study by Kuszpa, revealed that the occasional learning is successful, since, in it the learner repeats, reviews, memorizes the learning content and mobile learning is well suited to implement such forms of learning. The student’s learning patterns were studied by sending text nuggets and video messages to the students’ mobile phones to teach English lessons, by Thornton and Housner.

5. IN HIGHER EDUCATION

In terms of technological impact in higher education, Oliver and Harvey [40], suggest four kinds of impact namely: i) Impact of students’ learning, ii) Impact of individual academics’ practice, iii) Impact on the organization and iv) Impact on the country at large. When more students have access to pedagogic provision, it is natural that higher education will possibly get cheaper. Also, some of the applications in use have demonstrated it in Phoenix University and as well as in Jones International University. In the findings of Milrad (2003), it is reported that higher degree of self discipline, self-initiative are very much essential in making mobile learning a successful approach at higher education level.

The opportunities and challenges have been thrown upon the learner, teachers and the institutions with the more availability of low cost mobile phones, and the infrastructure associated with them, and this also brings forward the question of mobile learning activities to be either marginal or core to the bottom. The model proposed by Bates and Poole [41] for effective teaching and learning in higher education are: appropriateness, reliability, ease of use, costs, teaching and learning approaches, novelty, interactivity, speed and organizational issues.

6. TECHNOLOGICAL ASPECTS

The ability of the new age learners in terms of their ease with which they adopt to the ever changing new technologies has been observed in the generational differences by Prensky [42]. In mobile learning process, one of the major activities is the data collection, and some efforts have been made by concentrating on technology based implementations for solutions in this direction, such as mobile eye tracking(Wessel et al.][43], wearable interaction capture kits(Roto et al.][44]. These are advantageous in capturing accurate contextual data.

Contextual information collection has also seen other approach-based solutions where in the mobile learners’ experiences are recorded through surveys, diaries, interviews (Vavoula ) [45]; Clough & Jones [46]. Context is said to be any information that can help in characterizing the situation in which an entity exists (Dey 2000). This context could be a place, person, time, interaction between the mobile user and the mobile application along with both of them.

El-Hussein et. al., [47] emphasize that the mobile learning as an educational activity will be sensible only when the technology used is mobile in nature and learner is mobile when they carryout learning activity. The technologies like Organiser, GPS, Camera, Video Player, e-mail, MP3 facility, games are considered to be the most popular (Trinder)[48]. And will naturally become part of the mobile learning elements in the learning process to achieve the learning outcomes.

Thomas [49] envisages that pervasive learning facilitated by mobile technologies offers the desired and essential flexibility to mobile learners in various aspects like community, location, autonomy and relation. One form of solution for mobile learning proposed by Mileva et al.,[50] is performance-centered method, that tries to remove the disadvantageous combination of educational and technological challenges that exist in mobile learning.

In the words of Paul TJ James [51], the 5th wave mobile learning is technologically transparent and creates independent learners using MID enabled mobile devices. When read from the words of Paul TJ James, “the 5 Wave requires the adoption of both WiMax and 3G configurations in order to ensure or at least to provide the possibility of seamless operation and minimum restrictions in terms of coverage, speed and operational performance”. With 5th wave, the universities responsibilities will grow beyond normal activities and the huge burden of additional operational pressures may arise.

7. CONCLUSION

The ever growing and changing nature of mobile learning will surely result in greater research dimensions to come and the need to understand those dimensions, collecting them, collating them to bring in a big picture of mobile learning towards personalization of learning that ultimately leads to universal learning will take some time to reach. Until then all the research will grow in modules and finally there surely comes an integration point resulting totality of mobile learning.

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