

# Mobile Learning: Revolutionizing education

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**Abstract**—Advancements in mobile industry have affected many fields including education. Even though the traditional classroom environment still exists, recent technological advancements are dramatically transforming the face of traditional teaching-learning process (Martin). Advancements such as e-learning, m-learning have made education more accessible, more personalized, and more meaningful than ever before. Educational institutions around the world are constantly under pressure to remain competitive and effective due to expectations of their stakeholders. They are quickly embracing these developments as opportunities to improve the effectiveness of education.

**Keywords**— mobile learning, mLearning, student motivation, ubiquitous learning, pedagogical impact, any time learning, anywhere learning

## INTRODUCTION

Recent revolutions in mobile industry have made mobile devices accessible and affordable to masses. Mobile phones, tablets, smart phones have become more prevalent. This has resulted into ever increasing penetration of mobile phones. Today, there are around 4.6 billion mobile users around the world and this number is only going to increase in future. There has also been remarkable development in mobile and wireless communication technology leading to 3G, 4G, Wi-Fi services becoming easily available on mobile devices. The convergence of these two fastest growing technologies have opened many new opportunities in the form of mobile web and mobile applications. In today's world mobile phones have become ubiquitous. Mobile apps have gained huge popularity because of their simplicity, user friendliness, speed, and portability. Mobile web sites are becoming equally popular because they can be accessed anywhere on the go. They make the required information available anytime, anywhere to the user, wherever and whenever required. Mobile Apps have influenced many areas including m-commerce, entertainment, advertisement, education, as well as healthcare.

In today's world smart phones have become ubiquitous and an integral part of our lives. They have been adapted so readily by everybody because of their ability to perform a variety of tasks that normally a desktop computer will do. Smart phones of this era are equipped with multi-core processors providing massive onboard processing power and are equipped with large storage capacity, and open operating systems. Due to their attributes such as mobility, instant connectivity, convenience, personalization, location awareness, smart phones have gained huge acceptance from all over the world. The integration of technologies such as mobile phones and wireless communication has added new dimensions and capabilities and has revolutionized many areas such as m-commerce, healthcare, advertising, entertainment as well as education.

## WHAT IS MOBILE LEARNING?

The advancements in mobile industry have affected many fields including education. Even though the traditional classroom environment still exists, recent technological advancements are dramatically transforming the face of traditional teaching-learning process (Martin). Advancements such as e-learning, m-learning have made education more accessible, more personalized, and more meaningful than ever before. Educational institutions around the world are constantly under pressure to remain competitive and effective due to expectations of their stakeholders. They are quickly embracing these developments as opportunities to improve the effectiveness of education.

In recent years, statistics have shown that the highest number of mobile users are in the age group of 18-34. This coincides with the age group of students seeking education at various levels from undergraduate, post-graduate, or even higher. This age group amounts to almost half of total mobile phone users. For most youths their phones are never further than 1 meter away 24/7. This fact makes mobile learning a very effective method to impart education. Mobile learning can be defined as Stevens and Kitchenham (Stevens) "meaningful learning that occurs through the use of wireless handheld devices such as cell phone, personal digital assistant, mini-

computer, or iPod". In general terms mobile learning can be defined as when the learner is not at a fixed predetermined location and when the learner takes advantage of learning opportunities offered by mobile devices Kukulka-Hulme, A. (Kukulka-Hulme).

Mobile learning cannot be viewed as a replacement to the traditional classroom environment but it can certainly complement the current teaching-learning process. The young generation today seems to be straying away from the classrooms. At the same time, they are showing a huge interest in mobile phones and are spending more and more time on phones. This addiction of theirs can be leveraged to deliver the knowledge. One more strong argument towards this mode of learning is the pervasive nature of mobile phones. Even though it is true that educational institutions have done huge investment in establishing well equipped computer labs for students and students may also have desktop computers at home, the fact remains that the students are away from their homes most of the times and the access to the college labs facilities is only for restricted time. Hence, this "anywhere, anytime" mode of learning is more appealing to the students.

## **RELATED WORK**

There are a few case studies available to assess the factors such as sustained interest of students in this novel method of learning, scalability and efficacy of the medium, etc. In the study conducted by Florence Martin and Jeffrey Ertzberger, they have tried to address various issues such as to access effect of mobile learning on achievements of students, the attitude of students towards this new medium of learning, and differences in delivering the content using various media, etc. Their studies have resulted in the students showing positive attitude towards this new method of learning. This new medium of learning has potential to engage students for longer durations and also have positive effects (Martin). Kai-Yi China, Yen-Lin Chen have created a mobile learning support system to model a ubiquitous learning. The study allows the students access study material with the help of 2D barcodes and GPS technology. The use of GPS adds feature of location-awareness to the system. In this study, the authors have observed that the ubiquitous learning environment in the form of mobile learning can greatly enhance the learning experience of the students and give them an opportunity to learn by interacting with their environment (Chin).

The authors Chee-Kit Looi et. al report an study conducted in a school in Singapore. This study was aimed to assess the effectiveness and sustainability of the mobile learning process at various levels. The authors findings have shown that both the teachers and students have shown sustained interest in the mobile learning methodology and have been able to obtain better academic results (Looi). Authors Sung Youl Park, Min-Woo Nam and Seung-Bong Cha have conducted a study to determine student's adaptation and use of mobile learning methodology. Their findings are based on various factors such as self-efficacy, system accessibility, relevance, usefulness, ease of use, etc. Their study has shown positive attitude of students towards adapting the mobile learning environment. The study also indicated that this methodology satisfactorily fulfill parameters such as efficacy, relevance, accessibility, and ease of use (Park).

In their paper, the authors Matthew Kearneya, Sandra Schucka, Kevin Burdenb and Peter Aubusson have tried to investigate the pedagogical framework for mobile learning. Their aim was to examine mobile learning form a pedagogical rather than technology perspective so that it will help researchers and developers to design mobile learning material more effectively. With the help of two studies conducted separately, the authors have suggested a pedagogical framework based on three distinct features namely, authenticity, collaboration, and personalization (Kearney). K. Ciampa has reported experiences of teachers and students who have used tablets in the regular school environment as a learning aide. The purpose of the evidence-based study was to measure motivation of students towards mobile learning. They have identified six categories that simulate intrinsic and extrinsic motivation of the participants. The categories they have identified are namely, challenge, curiosity, control, competition, co-operation, and recognition (Ciampa). There has also been some research of the learning applications that can recognize gestures and emotions of the user and can decide what further steps should be taken by the user (Ally).

## **BENEFITS OF MOBILE LEARNING**

The traditional formal learning technique has some spatiotemporal constraints such as time and location. For example, both the teacher and students have to be physically present in the classroom in the formal education system. The time is also has constraints of predefined semesters and timetables. Mobile learning provides a more informal environment where these constraints can be relaxed providing a more flexible "anytime, anywhere" learning environment (Jacob). There are number of factors that motivate learners and educators to choose mobile learning. Some of the factors are given below.

- 1) Ubiquitous Access – Due to the pervasive nature mobile phones and with the help of wireless networks, learning material can be available to the students from anywhere and can be delivered on demand. The student is not restricted to be physically present on the campus (Jacob). This is proving to be the strongest benefit of this mode of learning.
- 2) Self-regulated learning - Mobile learning gives learners more opportunity to be in control of their own learning and offers the flexibility to learning at their own pace.
- 3) Personalized feedback – Assessment tools can be designed to generate accurate and personalized feedback (Bidin).
- 4) Collaborative learning - Mobile learning environments may encourage the peer review process and may result in improved learning experience. Learners that are having a common goal can benefit with more participation in collaborative learning (Bidin).
- 5) Affordability of tool - Mobile phones, tablets, and other connected devices have become more prevalent and affordable than their desktop counterparts. They also provide a more convenient and less expensive method to access Internet. This can dramatically improve learning and bring digital content to students (Martin).

Mobile learning can also prove to be beneficial in the fast paced business world. This offers convenience to the corporate to complete their training at their own convenience without taking out time from their already busy workday. It also allows the employees of an organization to collaboratively share resources. It also offers the advantage of productively filling the dead time of the employee such as waiting for a printing job to complete or commuting home on train.

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#### CONCLUSION

Mobile learning is a revolution in e-learning. Integration of rapidly growing wireless communication technologies such as 3G, 4G, Wi-Fi and affordability of mobile devices has provided an “anytime, anywhere” computing platform. This has enabled accessing web content from anywhere at any time very easy. This has attracted a vast majority of young population. Today’s youth spends majority of the time on their mobile phones browsing the web, updating social status, or playing games. This addiction of theirs can be utilized constructively through the medium of mobile learning. There are many factors of mobile learning such as ubiquitous access, self regularized learning, personalization of content, collaborative learning that can attract the younger generation back to learning who are found to be straying away from traditional methods of classroom teaching. Even though mobile learning cannot replace traditional method of classroom learning, it can definitely provide a viable medium that can complement the traditional way of learning in many ways. It has been observed that applications of mobile learning are increasing rapidly in formal and informal education. Even though there have been some studies conducted, a thorough investigation should be performed to access the efficacy and impact of this technology-enhanced learning methodology (Hwang). At the same time, it also becomes important to review negative effects and limitations of mobile learning.

#### REFERENCES:

- [1] Ally, Mohamed and Prieto-Blzquez, Josep. "What is the future of mobile learning in education?" *Revista de Universidad y Sociedad del Conocimiento* (2014): 142-151.
- [2] Bidin, Samsiah and Ziden, Azidah Abu. "Adoption and application of mobile learning in the education industry." *Procedia-Social and Behavioral Sciences* (2013): 720--729.
- [3] Chin, Kai-Yi and Chen, Yen-Lin. "A mobile learning support system for ubiquitous learning environments." *Procedia-Social and Behavioral Sciences* (2013): 14--21.
- [4] Ciampa, K. "Learning in a mobile age: an investigation of student motivation." *Journal of Computer Assisted Learning* (2014): 82--96.
- [5] Hwang, Gwo-Jen and Wu, Po-Han. "Applications, impacts and trends of mobile technology-enhanced learning: a review of 2008-2012 publications in selected SSCI journals." *International Journal of Mobile Learning and Organisation* (2014): 83-95.
- [6] Jacob, Seibu Mary and Issac, Biju. "Mobile learning culture and effects in higher education." *arXiv preprint arXiv:1410.4379* (2014).

- [7] Kearney, Matthew and Schuck, Sandra and Burden, Kevin and Aubusson, Peter. "Viewing mobile learning from a pedagogical perspective." Research in learning technology (2012).
- [8] Kukulska-Hulme, Agnes. "Mobile usability and user experience." Mobile Learning: A handbook for educators and trainers (2005): 45--56.
- [9] Looi, Chee-Kit and Sun, Daner and Wu, Longkai and Seow, Peter and Chia, Gean and Wong, Lung-Hsiang and Soloway, Elliot and Norris, Cathy. "Implementing mobile learning curricula in a grade level: Empirical study of learning effectiveness at scale." Computers \& Education (2014): 101--115.
- [10] Martin, Florence and Ertzberger, Jeffrey. "Here and now mobile learning: An experimental study on the use of mobile technology." Computers \& Education (2013): 76--85.
- [11] Park, Sung Youl and Nam, Min-Woo and Cha, Seung-Bong. "University students' behavioral intention to use mobile learning: Evaluating the technology acceptance model." British Journal of Educational Technology (2012): 592--605.
- [12] Stevens, Dawn and Kitchenham, Andrew. "An analysis of mobile learning in education, business and medicine." Models for interdisciplinary mobile learning: Delivering information to students (2011): 1--25.