

# Mobile Learning for Education in India - A Feasibility Study

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**Abstract:** *The increasing growth and implementation of mobile technologies has made social changes in several areas such as Communication, Entertainment, Technology and so on. This development led to the introduction of mobile phones and its use in education is remarkable. Since India is one of the fastest growing markets for mobile phone services, this paper presents the prospects and challenges involved in implementing mobile learning in India. The aim of this paper is to describe the current state of mobile learning, the benefits, barriers, and challenges that would support teaching and learning. This paper analyses the different study carried out based on mobile learning technologies in different countries and brought in suggestion of mobile learning and proposed the theoretical significance of mobile learning in education.*

**Keywords:** *Mobile learning, M-Learning, Educational technology*

## I. INTRODUCTION

Mobile learning (M-Learning) came in to picture in the past years as a widely used learning mode, with its drastic growth of mobile and computer technology [1]. Mobile learning has optimistic features of teaching, such as interactivity and mobility. It was greeted by learners, because their digital learning can be carried out anytime and anywhere. Mobile learning became an important learning mode in education, as it is easy to use for both teaching as well as learning purpose. Various researchers has given different definitions to Mobile learning [2]. In Quinn [24] mobile learning is viewed as learning, with the use of mobile devices. Traxler [21] states mobile learning, as an educational interaction between students and the educational materials, which can be remotely accessed from any location, using the mobile technology. Kinash et al. [19] describes m-learning as using of mobile devices for educational purpose. The challenge in imposing mobile technology is to create a platform that can support various kind of learning settings and activities, and its acceptance in various places. [7]. M-learning also provides the opportunity to change the past learning approaches in order to give students a flexible approach to handle their learning experiences. A high participation and enthusiasm is essential for both students and teachers, while implementing mobile learning in education [3].

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Appropriate educational use has to be identified in order to apply mobile learning initiative at the education level. The importance for improves mobile functionality is being understood and acknowledged by higher educational institutions within the design of learning environments [4].

The remaining section of the paper is systematized as follows. Section II describes the scope of mobile learning in education, advantages and its disadvantages. Section III describes the acceptance of mobile learning in different countries towards education. Section IV consists of conclusion remarks and the future scope of mobile learning.

## II. MOBILE LEARNING

M-learning as an emerging technology in the education domain has brought many sights for both students and instructors in order to improvise the learning process. Mobile learning as the name suggests, delivers mobility in various dimensions such as mobility of technology, learners, educators, and learning. M-learning has been used in various sectors of education like Kinder Garden, primary and secondary schools, and higher education institutions. Mobile learning has been implemented in several universities around the world in order to provide mobility in the learning process. Queen's University Belfast used wireless devices such as tablet PCs and Personal Digital Assistant (PDAs) for facilitating feedback from teachers to their students [10]. DePauw University has introduced a method of classroom interaction and management system through which students can do group learning and it helps them to solve problems which are all assigned by their instructors [11]. Abilene Christian University implemented mobile learning with the help of iphones and ipads to enhance learning among the students [12]. Princess Nora University in Saudi Arabia is using wireless mobile devices to teach languages [13]. Hence, the introduction of M-learning in higher education has already started in many countries to support better learning.

### A. Advantages and Disadvantages of M-learning

Mobile learning as an innovative technology also has its own advantages and disadvantages. Many researches shown that the mobile learning provides mobility to the learning process which in turn the learning process is made easy and enjoyable [13], [14], [15],[16] and [17]. Also it creates a non time bound interaction space between the teachers and the students. Mobile learning, with the help of mobile devices makes the students to get freed from the traditional way of learning through books. [18]. It also eliminates the physical limitations for accessing the teachers and the learning materials.

A notable advantage of Mobile learning is that students with disabilities can easily and actively participate in the learning process [19]. In contrast mobile learning has some disadvantages also. The mobile device screen plays a major role in the learning process through mobile learning. The Mobile devices with small screens, limited memory and limited battery life can make the learning little bit tougher. It was mentioned that mobile devices could distract the student concentration within the class[17] and the instructors may feel it hard to deliver lectures.

### III. ACCEPTANCE OF MOBILE LEARNING IN VARIOUS COUNTRIES

A study of student's acceptance towards mobile learning in higher education in Indonesia [4] was conducted in 2015. The study involved 420 undergraduate students at Sam Ratulangi University. The students were circulated with the questionnaire focusing on three variables such as ease of use, innovativeness and usefulness. The survey results show that the students were rated highly in perceived usefulness and perceived ease of use as a part of teaching learning process. The study proved that the students have a good view on mobile learning. Daniyar Sapargaliyev [7] examined the scientific works of Russian scientists who investigated the impact of mobile learning in higher education and found that in Russia, there is an extensive use of SMS for the dissemination of educational information. The author concluded that mobile learning is perceived as a part of distance education system..

Ali Aloyayr and Rachel McCrindle[8] claims that learning process through mobile devices is a notable improvement in the education field in Saudi Arabia. Students are well directed to implement this technology with their mobile devices. They also suggested that the interface through which educational content is delivered to the learners is very significant and it differs between the genders. They found that girl students prefer to learn from video/cartoon interfaces meanwhile boys prefer to study through video interface. Georgi Tuparov, Abdulrahman Ahmed A.Alsabri et al[9] conducted a study concerning penetration of active mobile learning in higher education in the Republic of Yemen. The results show that students are comfortable with the use of smartphone facilities in the day to day activities, but they do not use smartphones for learning purpose, as the Republic of Yemen still do not offer enough e-learning and m-learning resources.

Lu Aofan, Yan Zhang, Chen Qianqian and Tingwen Chang [3] proposed a model of mobile learning acceptance. They employed a stepwise multiple regression analysis, and it was evaluated based on the data collected from the participants at Beijing Normal University. The results indicate some significant effects on behavioral intention to use mobile learning. The study suggests that mobile learning can happen anytime anywhere and also do not require management of students. Fig 1. Shows the world wide Mobile learning five year (2010-2015) growth rates by country

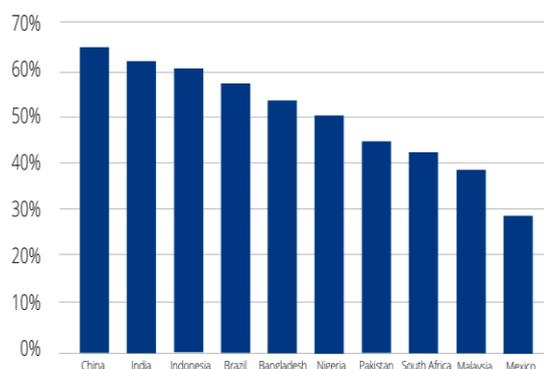


Fig.1.Mobile Learning Growth rates (2010-2015) Worldwide

### IV. MOBILE LEARNING IN INDIA

As per the press report released by Telecom Regulatory Authority of India (TRAI) on March 2018, the number of telephone subscribers in India gets increasing from time to time. The urban and rural subscription growth rates were 1.79% and 2.82% respectively during the month of March, 2018. The urban and rural subscriber's share in total number was 56.51% and 43.49% respectively at the end of March, 2018.



Fig. 2. Total Telephone subscribers(in Millions) in India

At the end of March 2018, Total wireless subscribers increased to 1,183.41 million. The monthly growth rate increases to 2.29%.

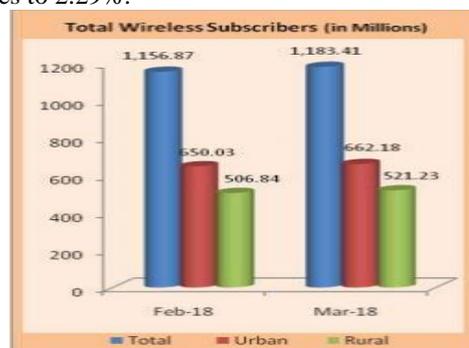


Fig.3. Total Wireless subscribers (in Millions) in India

The statistics reveals India with a huge opportunity for implementing mobile learning initiatives in education sector and yet there has been a very limited number if research carried out on mobile learning in India [25].

Matthew Kam et al.[22] used their conclusions from former ICT pilots in Uttar Pradesh that strategies for designing educational technology for developing countries were to be different from developed countries and they should include an artist or a technical creator, small-group collaborative learning through digital storytelling and a combination of paper-based with computer based activities. They found that combined and peer learning was apparent in the process of learning and also the students were proud of their achievements and personal success in making digital artifacts. But most of the schools had limited time in the school schedule for the use of computers in the school. Students faced a lot of challenges in using the technology, especially using PowerPoint, and also most of the schools do not have a computer lab for learning. Students preferred mobile and compact devices rather than Desktop computers and paper based learning materials. Also the study says that there was a lack of parental support for their children's schooling in those rural areas.

Matthew Kam et al. proposed mobile games on mobile phones to be efficient for learning ESL (English as a second language) in a rural under-resourced setting. Such games had to be educational as well as enjoyable for the target users, who have limited exposure to technology. They proposed the reception-practice-activation cycle for informing designs of such games. They suggested maintaining a differentiation between learning and fun to some extent for effective designs. The receptive phase developed competency like vocabulary, alphabet, etc. in ESL. The activation phase tested the player on something they learnt in the receptive phase. They found that there were significant gains in learning while playing the games. The content was relevant and dated. They also conducted a semester-long pilot on mobile learning in collaboration with an NGO in North India. The study was conducted in an after-school format where participants were 27 children who passed a basic numeracy and ESL test. The study included mobile phone training to start with and proceeded with ESL learning and concluded with an assessment. The ESL sessions followed a specifically designed curriculum with a set of ESL games on mobile phones. Assessments showed that participants had an increase in post test scores, high scores were obtained by students in higher grades versus lower scores which were obtained by lower grade students. They also found that academically weaker students gained from teacher directed pedagogy while academically stronger students benefited from a self-paced self-directed mobile learning approach. Kumar et al.[23] used mobile games to conduct studies on ESL studies and found that using games, learners who articulated a word aloud was more advantageous for learning than silently practicing it. They findings corroborated the finding that oral production of language was critical for new learners of a language as an oral output provided specific input back to the mind, which in turn assisted a learner to transition from declarative knowledge to productive knowledge. Research done in mobile learning has been limited to small groups and pilot studies and has not been used to inform policies to create larger movements in the sphere mobile learning. It is clear from previous research that applications, programs and initiatives, especially in rural and semi-urban parts of the

country using mobile learning will have to follow learner centered design and take the user into account in the process of design to engage children in meaningful experiences and produce an actual impact. Using standard games/applications or replicating a successful program in another corner of the world would be less useful and impactful in the Indian context. Mobile learning initiatives will have to be implemented at a larger scale in order to have sturdier findings for a large population and inform policies and further research in general.

## V. CONCLUSION

Mobile learning as an emerging technology in education sector will have a huge effect in the process of learning. The various study shows that learning which happened through digital mobile devices will provide the learners a different and innovative experience in learning. India as a growing market for Mobiles and its related services, mobile learning will bring a great impact in the teaching learning process in the education. Also since the formats and the quality plays a major role in mobile learning, more concentration should be shown on the technological possibilities for delivering the digital content through mobile phones.

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