

# **M-learning: An experience at Netaji Subhas Open University**

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## **Introduction:**

Open and Distance education system has gained widespread popularity over the years globally. The distance education has made a remarkable progress and gained undisputed acceptance as a viable alternative delivery system. In fact, the ICT is giving this system an edge over the conventional system. ICT can be used both for the instruction and delivery system. Many techniques and technologies are used depending on various factors like the nature of the source, the receiver and the channel of dissemination of information. New technologies provide opportunities including the ability to design tailor-made content which meets the individual needs. Information and communication technologies must be harnessed to support the education at affordable cost. The technology has the potential for knowledge dissemination, effective learning and development of efficient educational services. The educational systems of the developing countries are facing almost the same problems everywhere i.e. the rising costs in the face of budgetary constraints, lack of curriculum renewal, lack of good learning materials, lack of trained teachers which leads to low quality of education and very limited access to higher education for the rural and disadvantaged people including the women. In this situation, education of masses is one of the biggest challenges being faced by a populous country like India. Many of fruits of development cannot be reaped if the people remain illiterate and uneducated. The conventional colleges and universities cannot meet the requirement of the present society for their quest to knowledge through the formal education system. Therefore, it is felt necessary to evolve a system of education which can provide quality education to masses. It is only possible through the use of technologies in distance learning to accomplish the goal. The distance education system differs from the formal system of education not only in innovation and instructional design but also due to development in the use of non-print electronic media. Thus information and communication technologies play a significant role in the spread of knowledge in the higher education sector. The stakeholders of higher education institutions including the open universities are learners who are mostly from the age group of 18-35 years. They are easily amenable to any technological change or innovations in the teaching-learning process. The days when renowned teachers were teaching a few students in a small class room appear to be over, with the possible expectations of research and certain institutions of higher and specialized learning. A flexible and customized instructional system is the most important innovation of the open and distance learning mode which serves a diverse groups of students with differing age, academic background, belonging to all walks of life and scattered over a wide area including remotest villages. Communication technologies, particularly the electronic devices, more specifically the mobile devices are capable of overcoming the barriers where distance exists and has the potential to change the very nature of instructional process. The major objective of any media would help maximum students to learn effectively and retain the acquired knowledge.

## **Emergence of M-learning:**

As mobile phones, tablets and other devices become more prevalent and affordable, wireless technology can dramatically improve learning and bring digital content to students very effectively. The young generation love mobile technology and use it regularly in their personal lives. It therefore is no wonder that young people want to employ mobile devices to make education more engaging and personalize it for their learning needs. Young people are accustomed to personalized content and instantaneous in communication. They seek information around the clock and pursue information that is relevant to their particular interest. One of the most important advantages of mobile devices is their ability to provide personalized digital content 24x7. Mobile devices offer not just convenience and flexibility, but potentially a new way of learning. Equipped with cameras, video and sound recorders, and GPS, they enable students to become creators as well as users of information. Mobile learning (M-learning) by nature tend to ascribe to the student-centered approach because of its ability to connect people where ever

they are. Therefore, M-learning helps both independent and collaborative learning and can be used to help track students' progress and assessment.

### **E-learning and M-learning:**

Learning nowadays is becoming a life-long process. Teaching and learning are now no longer confined to classroom. With the advent and rapid expansion in Information and Communication Technology (ICT), the access to higher education is being expanded enormously. With the use of technology, education has become learner-centric, individualized, interactive and relevant to learner's need. ICT is contributing significantly in the growth of a more diverse range of educational opportunities very effectively. Students nowadays have become extremely adept in downloading the quality course contents from the on-line repository rather than attending otherwise mundane lectures in a classroom day after day.

E-learning plays a vital role in the present days teaching-learning process. It is being widely used in conventional system as well as open and distance learning system to impart different types of courses including professional and vocational courses. E-learning is best suited as a tool of delivery of content for borderless classrooms. E-learning facilitates any time any where learning. The learners can go through the lessons at her/his own pace and while travelling. E-learning is important not only for economic reasons but it has significant social benefits as well. By broadening access to higher education and training opportunities to the various segments of society, it has a potential to reduce the economic disparities caused by denial of higher education to the economically deprived sector of the society.

In ICT, now a days mobile technology is being widely used for educational purposes. The mobile phones are becoming more accessible and affordable. It may be said that M-learning is a sub-set of E-learning. With the advent of laptops, learners are able to avail the facility of learning during their travel and are relieved from dependency on their desktops computers. Further evolution led to M-learning where learners can use smaller devices that enable learning during their travel too. The increasing penetration of mobile phones, personal digital gadgets and smart phones has redefined and accelerated the growth of M-learning. Mobile devices being a truly portable communication media, the availability of learning content through mobile technology definitely expedites the learning process. In case of E-learning, one needs internet accessibility all the time to facilitate any where - any time learning. But in case of the M-learning, internet connectivity may not be necessary all the time. The unique features of mobile devices may help a person to remain connected with others through messaging system. The required academic content may also be saved in the device for future reading while travelling.

### **Role of mobile technology to improve access to Higher Education:**

The application of ICT has become part and parcel of everybody's life. Mobile is a modern technology used in any field in general. The mobile devices are very small and almost fit into the hand. They are easily portable and helpful in sending information including academic content to the learners both on-line and off line mode.

Technology enabled activities can sustain high levels of student engagement and peer collaborations compared to less technology intensive activities. With the help of mobile devices and technology, it is possible to customize educational content for individual student. M-learning increases access for those who are mobile or cannot personally attend the class room teaching due to the constraints of work or household activities. M-learning makes education more accessible that it enables learners to pursue their studies according to their own schedule. It makes it possible to extend education beyond the four walls of class rooms and beyond the fixed time periods and allows students to access digital content from home, communicate with teachers and work in a group on line. The value of mobile devices is that they allow students to connect, communicate, collaborate and create using rich digital resources. It enables learning at all times and in all places, during breaks, before or after shifts, at home or during travel. The present study also shows that some people utilize the time spent in transit to learn through e-books or mobile devices. For those in rural or remote areas where environmental and infrastructural challenges hinder other learning modalities, M-learning has the great opportunities to bring educational content through

micro chip in the hands of the learners. For the individual learner, mobile technology is much cost effective than other technologies like personal computers and broadband connections that are necessary for E-learning or online education. Thus M-learning broadens the availability of quality education materials through decreased cost and increased flexibility while also enhancing the efficiency and effectiveness of education administration and policy. M-learning is more than a mere extension of conventional education; it facilitates alternative learning processes and instructional methods with new learning experiences.

**Indian Scenario - Internet user:**

Telephone density or tele-density is the number of telephone connections for every hundred individuals living within an area. It varies widely across the nations and also between urban and rural areas within the country. India is fast expanding its tele-density. Despite having recorded a phenomenal growth in the internet user base, India is still lagging penetration. Though India has low Internet penetration at 19% compared with other developed and developing economies that have up to 90% penetration, the country has the third-largest Internet user base in the world, with more than 300 million users, of which more than 50% are mobile-only Internet users. The report also says that India is among the top three countries by the number of internet users, mobile phone users, and social media users. Driven by various policy initiatives, the Indian telecom sector witnessed a complete transformation in the last decade. It has achieved a phenomenal growth during the last few years and is poised to take a big leap in the future too.

It is interesting to see the growth path of internet users in India. The number of internet users in India has reached 354 million in June 2015. The figure indicates that India has more internet users than the population of the US and become the second largest country by the number of internet users after China. According to the report published by the Internet and Mobile Associate of India, the internet users in India has grown 17% in the initial 6-month of the last year. The other important aspect, besides 300 million Internet users is the rise of mobile Internet user in India. The number of mobile Internet users in India is 282 million in 2015, and there were 159 million mobile Internet users in India in 2014. What is encouraging is that mobile Internet users in grew at an impressive rate of 82.48% from 2014 to 2015.

Year	Internet Users (in million)	Mobile internet users (in million)
2013	189.6	110.17
2014	251.59	233.09
2015	302.35	282.81

Source: Annual Report, TRAI, 2014-15

The number of mobile internet users in India is expected to grow to 314 million by end of 2017 with a CAGR (compounded annual growth rate) of around 28% for the period 2013-17. This impressive growth would drive India with more than 50% of the internet user base being mobile-only user. India will emerge as a leading player in the virtual world by having 700 million internet users of the 4.7billion global users by 2025.

Indian mobile content usage is dominated by e-mail, chat, games, social networking and news. These categories gained popularity because they fulfil multiple needs of various stakeholders. The mobile data services would help to tackle the key issues relating to education, health, agriculture and the governance etc. The increase in smart phone penetration and increasing demand for internet-based services such as chat, video, music, pictures and social media through the mobile devices accelerate the growth in mobile internet usage.

**An experience of Netaji Subhas Open University:**

The state of West Bengal has a very rich heritage of education and culture. The State is marching forward towards the expansion of higher education as per the demands of the future to meet the challenges of

knowledge boom of the new millennium. Netaji Subhas Open University (NSOU) was established in 1997 by the West Bengal State Legislative Assembly to overcome the restrictions and limitations of the conventional system. Currently, about 3.20lakhs students are enrolled in sixty two courses of the University. The flexibility it offers in terms of choice of courses and period of over which these can be pursued, makes it attractive to those who are employed and cannot attend the regular classes. The University send the self learning materials (SLMs) to the registered students after their admission. For the benefit of such students, the university has commenced the ICT support to the enrolled students. The students of the NSOU are scattered through out the state. NSOU has already taken initiatives, to cater to the needs of the masses. The SLMs are now made available on-line as most of the materials have been digitized and uploaded on the university website. The idea is to use the technological devices that are already accessible to students in order to develop ways in which they could be supported. The use of mobile phones for education is premised on building informal learning which most students are familiar with formal learning opportunities for distance education learners. Mobile phones are most accessible to communities in terms of cost, geographic coverage and ease of use. According to M.L. Koole, mobile learning provides an enhanced cognitive environment in which distance learner can interact with their instructor, their course materials, their physical and virtual environment.

NSOU has started to bring learning content and academic support to students through mobile devices. The Mobile application enabled to access the Learning Management System (LMS). The app is also enabled for offline content viewing facility for the students using a micro SD card. It delivers high quality technology powered courses, using its powerful and hybrid mobile platform thereby removing the need for a computer and a high-speed internet connection for the students. Using the platform, students from even remote and rural areas of the country will be able to learn online for their degrees and diplomas on their smart phones. The students get access to their virtual classroom through their unique login ID and password within the Student Portal. The entire Student Portal is also available on a mobile platform. Students get access to ticketing system and their e-mails through the same.

M-learning through mobile phones can make use of the learning management system that is already available through internet. Where the internet accessibility is limited, mobile phones can also facilitate the learning process on off line mode through micro SD card. Without restrictions in the hands, the students can access the learning resources any where in the world where the internet is available. The University launched the M-learning project on pilot basis for its vocational teachers training programme namely Diploma in Pre-Primary Teachers' Education (DPTTE). A survey was conducted among the students to investigate the mobile learning benefits and to analyze the students' perception on mobile learning. Under the project the structured questionnaire was circulated among the enrolled students to examine their attitude and self efficacy about the M-learning.

The study shows that almost all the students enrolled in this particular course use mobile phones for social purposes and majority of these mobile phone have numerous features like pictures, video, games, instant messaging and internet. Even some low-end mobile phones have these features that enable them to be used in education, research, reading etc.

The University tried to motivate the students to use their mobile devices for their learning purpose. To facilitate any where any time learning, the university developed the A/V lectures and digitized course materials for the students of the said teacher training programme. The university encouraged the students to use the mobile phones to have experiences of any where any time learning. These A/V lectures and digitized course materials were distributed in a Micro SD card among the students of this programme. Where the internet connectivity is not available specially in rural areas, the students take the advantage the off line mode i.e. they use the Micro SD card. The same content (A/V lecture and course materials) is also available on the university website which can be accessed online any time any where. The study shows that there is positive impact of the mobile technology by which the educational content can be delivered both on-line and off line mode In this survey, Likert scale has been used to examine the attitude of the students towards M-learning.

The structured questionnaire was distributed among all the enrolled students (502 in number) scattered in both urban and rural areas. The responses to the questionnaire have been grouped in three tables given below. Table I shows the learners' attitude towards the M-learning, Table II shows Learners' self-efficacy of M-learning and Table III shows Learners' attitude towards A/V lectures in the memory SD Card. The study shows that the majority of the learners under study are technology savvy and they do not face any difficulty to download and save the academic content like digitized course materials and A/V lectures. The study proves that the learners are enthusiastic in using their mobile devices to have the new learning experience.

**Table I: Attitude towards M-learning**

	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree(%)
A mobile device can help me to attain more ideas in learning	49.33	27.33	10.00	13.33
A mobile phone is helpful for my learning	45.33	24.67	18.67	11.33
A mobile phone can enhance my desire to learn	61.33	23.33	8.67	9.99
I feel bored using a mobile device	6.67	3.33	26.67	63.33
I am not good at using a mobile device	3.33	10.00	29.33	57.33
I love to use mobile device in learning activities	63.33	25.33	8.67	2.67
I can use my mobile device without the help of others	48.00	43.33	6.67	2.00
It saves time when I use mobile because I can learn without time and space constraints	71.33	21.33	4.67	2.67
It is quite fun to use a mobile device for learning	51.33	7.33	14.67	26.67

**Table II: Learners' self-efficacy of M-learning**

	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree(%)
I can download a figure from the internet using a mobile device	74.67	19.33	4.00	2.00
I can log on to the website on my mobile device	71.33	17.33	6.67	4.66
I can check a hyperlink to enter another website using my mobile phone	58.00	14.67	17.33	10.00
I can create a file on my mobile device	54.00	28.00	6.67	11.33
I can use mobile device to discuss with my peers about the learning materials	62.00	28.00	5.34	4.67
I can take pictures on my mobile device to show the related information	52.00	35.34	12.66	--
I think mobiles are very ideal for learning	77.36	14.62	3.66	4.36

**Table III: Learners' attitude towards A/V lectures in the memory SD Card**

	Strongly Agree (%)	Agree (%)	Disagree (%)	Strongly Disagree (%)
A/V lecture is a good use of technology for learning at a distance	69.00	18.66	7.67	4.67
A/V lectures motivate learners to learn effectively	49.33	22.00	15.34	13.33
Use of A/V lecture is more effective as a learning tool with today's learners than previous generations of learners	36.66	28.00	24.66	10.68
Pictures, diagrams and graphics in the A/V lectures enhance learning	42.00	23.33	20.00	14.67
Video animation makes the A/V lecture attractive and understandable	55.33	27.33	7.34	10.00
The use of A/V memory card in any subject for teaching-learning will grow rapidly	64.66	20.67	6.00	8.67

Because of increasing use of mobile technology by the younger generation, the learners demand course materials be delivered on mobile devices to be accessed from any where any time. At the same time today's learners are nomadic in nature and continuously move from one place to another. As the learners move from one place to other frequently, they should be able to access the course materials using mobile technology regardless of where they are located. The M-learning gives them benefit of any time any where learning even if there is no internet connectivity. The internet penetration in rural area and urban area in India is 12.41% and 50.15% respectively. Therefore, M-learning can play an important role in imparting education in India. Only thing is that the learners should be motivated and encouraged to use their mobile devices for the academic purpose to empower themselves which will in turn convert our society as a knowledge society in true sense. The survey was among all the students of Pre-Primary Teachers' Education which is about 500 students. The feed back from these enrolled students have been taken into consideration to study the efficacy of M-learning and learners' attitude towards the M-learning.

### **Conclusion:**

Mobile technologies, therefore, impact educational outcomes by altering the character of education and learning because the nature of mobile technology converges with and facilitates new learning experiences. The new learning is personalized, learner-centred, collaborative, ubiquitous, and lifelong. Likewise, mobile technology is increasingly personal, user-centred, mobile, networked, ubiquitous, and durable. The literature indicates that the benefits afforded by this convergence should exert a positive impact on educational outcomes. The mobile technology bears a striking resemblance with the green revolution. Its objective is to take education to the doorsteps/ palms of the aspirants of higher education according to their needs in a customized form.

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