



Mobile Applications & its implications in Education

Sharmila Devi
Doon Valley Institute
of Education, Karnal
sharmilataya@gmail.com

Mohammad Rizwan
Budha College of Education
Indri road, Rambha (Karnal)

Subhash Chander
Govt. P.G. College
Sec-14, Karnal(Haryana)

Abstract— Regardless of the hardware employed, as demand requires that more applications be re-authored for mobile formats, institutions may find it necessary to overhaul data-sharing and content-delivery techniques to support the mobile platform. Education includes online, distance and part time education. There are unlimited applications of mobile phones in the real world. Traditional informal education system process includes activities like admission, Personal Contact Programmes, Exam for any course in a University or Institution. In this process Mobile can play a great role in all the activities by providing a lot of benefits to students, teachers, parents and Universities itself. The paper examines certain important issues related with the effective implementation of Mobile phones in all levels of education and provides suggestions to address certain challenges that would help in the implementation of Mobile Phones in education. Here emphasis is given on the education field.

Keywords— ICT, Mobile Phone, Education, IT, M-learning

I. INTRODUCTION

Use of Information and communication Technology (ICT) is the way through which large population of India can be reached. During the Gyandoot project [16] as a case of empowerment to people using ICT, it was found that it helped in reducing harassment of people, corruption with increasing awareness among the people [1]. ICT has become a buzzword while talking about technology and its implications. The hardware, software, the methods and know how required or used in acquiring, storing, processing and displaying data and information is collectively known as Information Technology (IT). There is no use in gathering and rapidly processing information that can not be transmitted as fast. Also high capacity channels are of no use if they can not be used to full capacity. Convergence of IT and CT these two technologies gave birth to ICT [2]. Mainly education system is categorized in two categories namely formal and informal. The traditional regular teaching in schools and colleges is in the purview of formal Education. Other ways of getting education are included in the category of informal education. There are various claims and measures regarding how people learn. These claims and measures are usually based on average results from a large group. Large size of classes is also challenge particularly regarding course delivery, evaluation and assignment design [7]. Passive learning occurs when students use their senses to take in information from a lecture, reading assignment, or audiovisual. This is the mode of

learning most commonly present in classrooms whereas active learning involves the student through participation and investment of energy in all three phases of the learning process (input, operations, and feedback). This type of learning is more apt to stimulate higher cognitive processes and critical thinking [13]. Teacher has key role in the whole process whereas in case of Mobile phone based education various applications of these new tools are supplemented to make the teaching-learning process effective. Mobile Phones can play an important role in imparting education and improving the skills of both pre-service and in-service teacher professionals. In this paper how learning through mobiles can be made easier and effective for both formal and non-formal forms of education. Section 2 explains mobile application in formal education, section 3 explains mobile application in informal education, section 4 provides certain challenges in mobile learning, section 5 gives certain solutions of the bottlenecks and section 6 provides other implications of mobile phones in Education in Indian perspective.

II. MOBILE APPLICATION FOR FORMAL EDUCATION

Mobile Phone applications are becoming indispensable parts of contemporary culture, spreading across the globe through traditional and vocational education. In India the education system can be formally divided into three parts namely primary (including nursery and preprimary), High school or secondary level (High and senior secondary levels) and the college or higher level (including college, university levels).

In all these levels of education Mobile phone can be utilized for better teaching learning process. Using multimedia applications available in Mobile phones can result in the increasing retention rates, because people remember 20% of what they see, 40% of what they see and hear, but about 75% of what they see and hear and do simultaneously [5]. The use of the mobile devices in Teaching-learning process gives opportunity for students to interact with each other and with the teacher using the mobile devices. Mobile learning is new in education hence it is important for educators, researchers, and practitioners to share what works and what does not work in mobile learning so that the field of mobile learning can be implemented in a more timely and effective manner. Mobile devices are changing constantly with increasing capabilities and there is not enough time for everyone to conduct research and complete projects to learn about the best practices in mobile learning [10]. Mobile phone has the potential to remove the barriers that are causing the problems of low rate of education in any country. It can be used as a tool to overcome the issues of cost, less number of teachers, and poor quality of education as well as to overcome time and distance barriers [4]. There are various types of Mobile phones and applications available which can be utilized for the knowledge creation and dissemination in the modern world. Mobile phones having Radio, T.V, Internet and many other hardware and software applications can be utilised. The use of Mobile Phones in education not only improves classroom teaching learning process, but also provides the facility of M-learning.

A. Primary level

Government of India has announced 2010-2020 as decade of innovation. Reasoning and critical thinking skills are necessary for innovation [3]. Foundation of these skills can be laid only at primary level of education. Students who enter school are very curious, creative, and capable of learning many things. At this level, statement 'Picture is worth than thousand of words' is very much true in case of teaching – learning process. Students studying at this level take much interest in cartoons. They understand more through animated pictures. Hence if the same environment is created in schools for teaching kids at primary level may bring drastic changes in the education scenario. Nursery students can be taught by showing pictures, animals, fruits etc. With the help of Mobile and its peripheral devices, like T.V screen and computer students at this level are able to grasp a lot by hearing voices or sounds and animated motion of various animals. Language learning is also taught at this level. To know a new language at this age is easier as compared to other levels. Mobile phones can be used to teach phonetics and pronunciation. Lessons, poems & lectures by eminent scholars stored in computers or mobiles can easily be shown to the students time and again. Parents also can store good & useful lectures in any field in their mobile phones and can show those to their children. Such type of teaching and learning retains for long time in the minds of the children. Infrastructure needed for such environment is only a computer capable of mobile attachment and with T.V tuner card for running cable T.V

programmes on the computer. A latest mobile or smart phone with latest educational applications is required for it.

B High level

At high school level subjects like History, Geography, Political science, Physics, Chemistry, Biology, Physical education etc are taught. Lessons in these subjects can easily be taught by showing small movie related with the subject to create interest among the students. Internet is basic tool which can be utilized by teachers and students to find any information on any topic. Instead of showing complete movie, serial or programme, relevant part of that may be stored in mobiles and can be shown to the students of a class by attaching that mobile with the computer or Television. Such teaching –learning makes the environment very interactive and is liked by students.

C College level

At college level various facilities like computers, Multi Media (MM) Electronic Board, MM projector and other peripheral devices related with teaching learning process are easily available. Now easy availability of 'Aakash' tablet will help in providing and getting more education for teachers and students respectively. Various programs running on Edusat are also very helpful and provide good knowledge to the students. Soft skill recorded program on Edusat can help students in improving their English and communication skill so that they can be placed well in reputed Multi National Companies (MNCs). Certain lectures of eminent personalities are also delivered through Edusat. All such important and relevant lectures must be stored and must be available in format that can be accessible through mobile phones to teachers and students of affiliated Higher Education Institutes (HEIs). Mobile phone/tablet is connected to repository through Internet and utilized by the students and teachers for improvement as shown in fig 1.1.

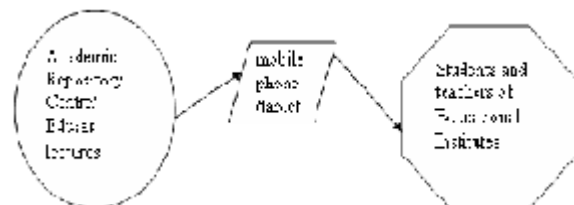


Fig 1.1 Mobile phone utilization for accessing academic repository

III. MOBILE APPLICATIONS FOR INFORMAL EDUCATION

The use of mobile technology is good for informal learning where learners can access information and learning materials from anywhere and at any time. It includes distance education and other open learning systems. There are so many universities and institutes providing facility of distance education. As mobile technology becomes more ubiquitous, there will be more use of mobile technology for informal learning. As soon as events happen around the world, users of mobile technology will be able to get up-to-date information on these events using mobile devices [10]. Once the students are enrolled, a unique number is generated called reference

number and it is provided to the particular students. In such an environment Mobile number of all the students is must. And for providing information to the concerned students regarding its second installment of fees, Personal Contact Programme (PCP) details, dare sheet, fee details etc can be provided immediately to the students with the help of mobile phone. Once the database having mobile number is created many of these functions can be done instantly. Short message service (SMS) of Mobile phone may be utilized for this purpose. After fees for admission is deposited the SMS must ensure the students that his fees have been deposited at right place for the particular course. With the help of such practices a lot of paper work can be saved and helps the environment making it pollution free. Moreover the enrolled students can be given username and password for using various online services through mobile phones. Instead of providing hard copy of study material, online study material in mobile readable form must be provided to enrolled students. Fees payment through mobile system must also be available on the portal of concerned University or Institute. All these activities will help in making the environment green. Exam results in such cases may be provided online on the same day as same is happening in case of online exams and entrance tests. This would help to sort out the problem of the delay in declaration of results of various exams by various universities. But all this must be the case for the informal education system.

IV. CHALLENGES OF M-LEARNING

Use of Mobile phones in education requires major shift in the way content is designed and delivered. New technologies cannot be imposed without enabling teachers and learners to understand these fundamental shifts. M-learning is any educational interaction delivered through mobile phones and can be accessed as per students' convenience from anywhere. Certain in built softwares in mobile phones like dictionary, geolocation, geography, data access, readers and maps can be utilized and adapted for educational purposes. M-learning hardware may include mobile phones, handheld PCs, tablets, the iPad, and notebooks, as well as devices such as the iPod touch that are able to run mobile applications [12]. Ongoing training is necessary for the trainers in institutions and organizations who are engaged in the design of curriculum, teaching materials and delivery of ICT-enabled education [8]. At this time Mobile phone is not utilized fully due to various challenges. Successful ICT initiatives meet three intertwined objectives: availability, access, and demand [6]. Mobile must be available and it must be accessible at demand. In the present scenario the following are the major challenges in the m-learning.

- (1) The access to ICT facilities whether by students or by teachers is of great concern in India. There are limited resources for buying Mobile phone, books, stationery, furniture and other classroom materials.
- (2) Teachers lack adequate qualification, training and their lesson plans are most often outdated or irrelevant. In many of

the HEIs certain new ICT tools like Multimedia board and visualiser are available but these are not in use.

(3) All teachers are not willing to introduce new technologies to themselves first and subsequently to their students. Another barrier is lack of trained teachers to exploit ICT proficiently.

(4) Rural population may not be able to pay hefty amount to utilize such ICT resources for education.

(5) Mobile phones are designed for talking and hence one of the major challenges in the implementation of ICT in education is the initial thinking that is based on the technology.

(6) One first thinks about the available technology and then a try is being made to apply it into education field.

(7) Major challenge for educators and trainers is how to develop learning materials for delivery on mobile devices.

(8) A lot of information available online may dissuade student learning. Students can feel isolated in absence of classroom like environment [11].

(9) Low bandwidth available for mobile phone is not going to serve the purpose.

(10) Compatibility and interoperability of software and educational applications is also of great concern.

(11) Implementation of RTE, in that case General Enrolment Ratio (GER) must be increased, how mobile phone can help in making aware about the RTE and enrolment of their children in school.

(12) Cost of smart phones and data plans is out of reach for some students.

(13) Small screen size and keys are difficult to use effectively, also there is additional strain on battery life imposed by mobile apps can be frustrating.

(14) Inbuilt M-learning softwares are rarely available. Reproducing the existing applications in mobile format can increase the workload of faculty.

V. PROPOSED SOLUTIONS

The first and foremost solution is the need to change the mind setup. As the word mobile is heard every one starts thinking about its facilities except its educational utility and tools. Mobile phone is thought just as medium of communication, for listening phone calls, songs and viewing and capturing photos.

(1) Accessibility issue can be resolved due to diminishing cost of mobiles and increasing number of applications in the education field.

(2) In this age of ICT, teachers also have to compete for getting latest knowledge and various new ICT tools and applications. Teachers must be trained well on various mobile learning applications to utilize such applications and their features in a well defined way.

(3) Proper motivation to the teachers is must because they are the ultimate implementers. Monetary incentives can be offered as means of motivation for teachers to practice Mobile phone.

(4) A nominal fees must be taken from students to use the resources.

(5) Cost is no longer an issue as prices of mobile phone and smart phones are decreasing at great speed and number of services are increasing day by day.

(6) Specifically education purpose oriented mobile phones can be designed and low cost devices like 'Aakash tablet' and such tools are made available with the largest telecommunication company BSNL can be more useful option.

(7) Learning material must be developed in format that may be easily displayed on mobile phones.

(8) Authenticity of online material can be increased by putting certain checks on the publishing the abusive and low standard material. GOI has already taken care of this issue and has asked major giants in this sector like yahoo, Google have been informed about the checks and legal frameworks to be designed in the certain timeframe.

(9) Bandwidth must be increased by governments.

(10) Accessibility of device to every citizen who need it for getting education must be increased.

(11) One educational application designed for NOKIA mobile phone may not properly for SAMSUNG or other company device. Application developer software developer for mobile phone must keep in mind its general application so that an application designed for Mobile X may run properly for Mobile Y also and vice versa.

(12) Different components in smart phones degrade from use, their functionalities, available resources and power supplies are still able to satisfy the requirement of educational applications [14]. Hence some smart phones may be used for education purpose even after these are discarded by their users. Second hand phones have some features which may be utilized for education purpose in developing countries.

(13) New Mobile devices have compatibility to attach with LCD, T.V and computer hence screen size at the important times for showing to whole class would not be a great problem.

(14) Stakeholders must stress on preparing new softwares and educational applications which can be used on the present and future coming smart phones.

VI. CONCLUSIONS

Role of technology is only to support the present teaching learning system. New type of devices are emerging day by day and diminishing distinctions between phones, PDAs, e-readers, and other types of hardware. Future mobile technologies may be able to present textbooks, create data

base, aid in library utilisation, and foster contextual learning. Mobile phone can benefit all parts of the education system, including student learning, teacher development and school management. Mobile phone must be taken as integral part of most learning activities for all subjects. Access to Mobile phones must ensure enhancement of traditional education systems, enabling them to adapt to the different learning and teaching requirements of the societies. Various Mobile phone enabled tools and systems are available and functioning well by helping in achieving the proper goals of education. The need here is to replicate those systems which are best suited to environment and interoperable one. Mobile learning has become an integral part of education in many parts of the world, and new research advances in design and implementation will ensure its increasing importance.

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