International Journal of Advanced Educational Research
ISSN: 2455-6157; Impact Factor: RJIF 5. 12
www.educationjournal.org
Volume 2; Issue 4; July 2017; Page No. 77-80

M-learning: Current trend in teacher education

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Abstract
Universities and institutions in the field of teacher education focusing upon the courses for using computers in education or they simply feel delighted to see the state boards at school level and National/State councils for Educational Research and Training are advancing at great speed to plan out integration of technology with education with teachers struggling to complete even the prescribed syllabus. The main purpose of the present study was to brief knowledge about M-Learning. E-Learning is the use of technology to enable people to learn. M-learning is often viewed as a component of a learning programme, something that supports the learning process as an add-on tool, rather than being the principal learning method. Mobile Learning is an E-Learning that uses mobile devices and wireless transmission. There is no doubt that we are becoming a much more mobile society. Mobile technologies are commonplace in our society. Their availability at relatively low cost has contributed to social change, particularly with college students who use their mobile phones to maintain relationships unbounded by proximity. Schools, Colleges and universities have generally been quick to adopt new technologies, often even before their educational value has been proven. Throughout its history, higher education has experimented with technological advances as diverse as the blackboard and the personal computer. The twenty first century promises to be "knowledge era "in which highly competitive "knowledge society" will make unprecedented demands on universities and other institution in the area of higher education. These demands can be met only through imaginative and effective utililisation of information and communication technology. In this regard M-Learning plays vital role. The rapid growth of information and communication technologies and rising computer knowledge of the students make possible appearance of these new educational forms. The relatively recent availability of 3G (Internet equipped) mobile phones and Personal Data Assistants (PDAs) will increase opportunities for mobile learning and web-based information can be used to expand the learning experience. A suggestive curriculum framework needs to be framed by National Council for Teacher Education and hence appropriate syllabus should be developed by different universities and authoritative institutions in the field of Teacher Education.

Keywords: mobile learning

Introduction

E-Learning is the use of technology to enable people to learn anytime and anywhere. E-Learning can include training, the delivery of just-in-time information and guidance from experts. A learning system based on formalised teaching but with the help of electronic resources is known as E-learning. While teaching can be based in or out of the classrooms, the use of computers and the Internet forms the major component of E-learning. E-learning can also be termed as a network enabled transfer of skills and knowledge, and the delivery of education is made to a large number of recipients at the same or different times. Earlier, it was not accepted wholeheartedly as it was assumed that this system lacked the human element required in learning.

However, with the rapid progress in technology and the advancement in learning systems, it is now embraced by the masses. The introduction of computers was the basis of this revolution and with the passage of time, as we get hooked to smartphones, tablets, etc, these devices now have an importance place in the classrooms for learning. Books are gradually getting replaced by electronic educational materials like optical discs or pen drives. Knowledge can also be shared via the Internet, which is accessible 24/7, anywhere, anytime. E-learning has proved to be the best means in the education sector, especially when training programs are conducted by educational institutions for professionals across the globe and students and teachers are able to acquire important skills while sitting in a board room, or by having seminars, which are conducted for students, research scholars of the same or the different organizations under one roof. The schools which use E-learning technologies are a step ahead of those which still have the traditional approach towards learning. No doubt, it is equally important to take forward the concept of non-electronic teaching with the help of books and lectures, but the importance and effectiveness of technology-based learning cannot be taken lightly or ignored completely. It is believed that the human brain can easily remember and relate to what is seen and heard via moving pictures or videos. It has also been found that visuals, apart from holding the attention of the student, are also retained by the brain for longer periods. Various sectors, including agriculture, medicine, education, services, business, and government setups are adapting to the concept of E-learning which helps in the progress of a nation.

M-learning is often viewed as a component of a learning programme, something that supports the learning process as an add-on tool, rather than being the principal learning method. From this perspective then, there's a link between M-learning and the concept of *blended learning*, in which learning takes place by a combination of conventional teaching methods and electronic and/or web-based resources. M-learning has been recognized as particularly beneficial in the education of young people, especially for students who may not be engaged by conventional approaches to teaching. Communication through mobile devices is now an expected function of daily life for

the majority of young people, and so use of them as a learning platform can prove far more motivating than traditional coursebooks and worksheets. Evidence suggests that M-learning is becoming an increasingly hot topic in educational circles, galvanized by various factors, including the falling prices of tablets and smartphones, the improved ease of use of touch screen and keyboard functions on these devices, and the fact that they're overtaking previous technology by conveniently functioning as a combination of the separate gadgets (e.g. laptop, phone, camera) people may have used in the past.

There is no doubt that we are becoming a much more mobile society. Mobile technologies are commonplace in our society. Their availability at relatively low cost has contributed to social change, particularly with college students who use their mobile phones to maintain relationships unbounded by proximity. Widespread availability of mobile devices and wireless networks offer enormous opportunities for knowledge acquisition both in terms of interaction with sources of information and in terms of collaboration. Development in microelectronics and telecommunication technologies provide continuing increase of processing power, improved interfaces, extended functionality, fast and diverse wireless Connectivity for mobile terminals. Combined with tendency to go down in price per unit and having advantage of being truly personal mobile devices have a potential to become a valuable learning and information acquisition tool for everyone. These things have opened a new door of learning to which we call M-Learning. M- Learning is the key issue for Higher Education.

Need to Use Technologies in Higher Education

Schools, Colleges and universities have generally been quick to adopt new technologies, often even before their educational value has been proven. Throughout its history, higher education has experimented with technological advances as diverse as the blackboard and the personal computer. Some technologies have become permanent parts of the higher education enterprise. Others, such as the slide rule and the 16-millimeter movie projector, have been replaced as more sophisticated or more cost-effective technologies have emerged to take their place. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. The use of ICT in education lends itself to more student-centred learning settings and often this creates some tensions for some teachers and students. But with the world moving rapidly into digital media and information, the role of ICT in education is becoming more and more important and this importance will continue to grow and develop in the 21st century.

What is Mobile - Learning:

M-learning or mobile learning is "learning across multiple contexts, through social and content interactions, using personal electronic devices. A form of distance education, m-learners use mobile device educational technology at their time convenience. Mobile learning is a rather new term which received ongoing attention during the new millennium, when mobile technology started its strong impact on society. Many authors view m-learning as a further development of e-learning. M- Learning has been defined in a number of different ways by experts. "M- Learning is any sort of learning that happens when the learner is not at a fixed, predetermined location, or learning that happens when the learner takes advantage of the learning opportunities offered by mobile technologies." Some experts clearly states that, 'M- Learning is nothing but a learning that takes place with help of mobile devices'.

Traxler (2005) has defined M-Learning as 'any educational provision where the sole or dominant technologies are handheld or palmtop devices.'

Sharples (2005) has defined 'Mobile Learning as a process of coming to know, by which learners in cooperation with their peers and teachers construct transiently stable interpretations of their world.'

Pinkwert (2003) states that 'Mobile Learning is an E-Learning that uses mobile devices and wireless transmission'.

By nature the M-Learning is a form of existing D-Learning {Distance Learning} and E-Learning.

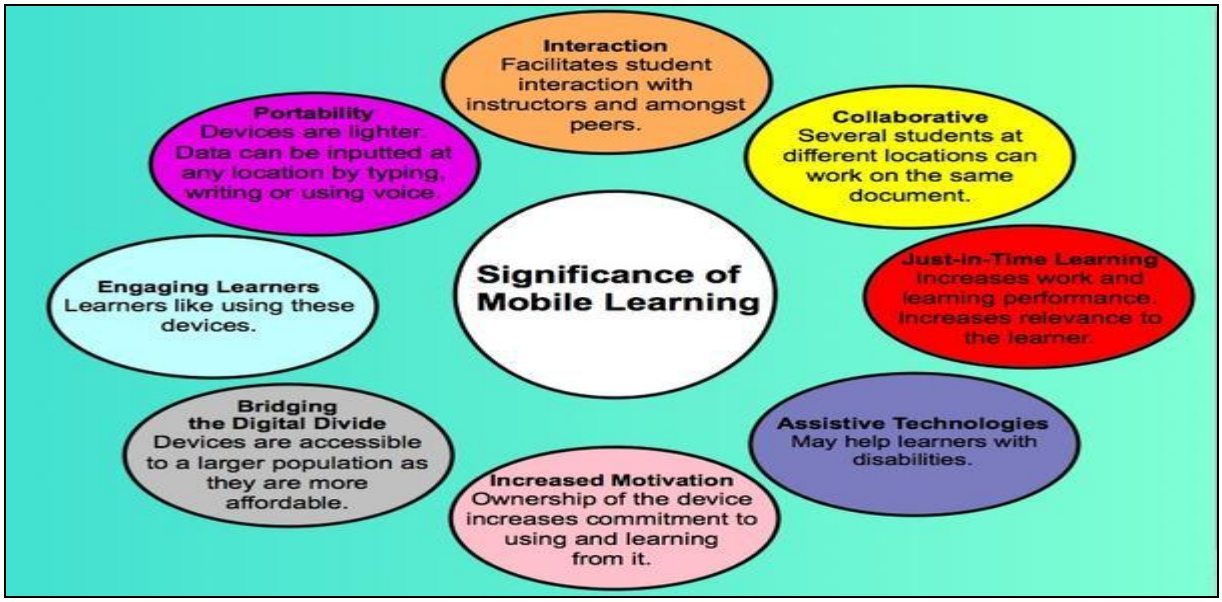
In short, the following diagram clearly gives us the meaning of M- Learning. No limitation of Time & Place.

Why M-Learning Now?

Historically, access for teachers and students in some countries to ICT has been limited. This posed a major barrier to the advancement of education. Now however, the mobile, cellular or smartphone (depending on where you're from) is changing that reality. There are currently almost 7 billion mobile phones in the world, almost as many inhabitants as on the planet. This opens up numerous possibilities for the advancement of education and learning. Did you know that in the city of Lahore, Pakistan, UNESCO run a project where they use SMS texts to distribute educational content to students in disadvantaged areas? Awesome right! This project seeks to help students retain and strengthen their new literacy skills, which are usually stunted if there is not constant practice.

Over the last ten years Mobile Learning has grown from a minor research interest to a set of significant projects in schools, workplaces, cities and rural areas around the world. Various research reports indicate that the largest demand throughout the world is for portable devices. Now a day, people were too crazy about using the portable devices for their day- today work. Because of following reasons, M-learning become famous in today's globalized era.

a) **Interaction during lessons**: Teachers and Students are able to get immediate feedback. This is especially easy for teaching large groups.
b) **Synchronous learning**: Teachers can interact with their students during their lectures.
c) **Convenience:** M- Learning is very convenience learning. Through this we can access from anywhere {e.g. from home, bus, class etc.} to content including quizzes, learning games etc.
d) **Collaboration:** Collaborative learning and also best learning takes place in M- learning because of sharing of information/ knowledge and immediate feedback.
e) **Portability:** In M- learning books were replaced by RAM and in this way learning occurs by using portable devices.
f) **Compatibility:** M-learning is specially designed for mobile devices.
g) **Edutainment:** There is a combination of games and learning for a more entertainment and effective experience.



Currently available Technologies for M- Learning

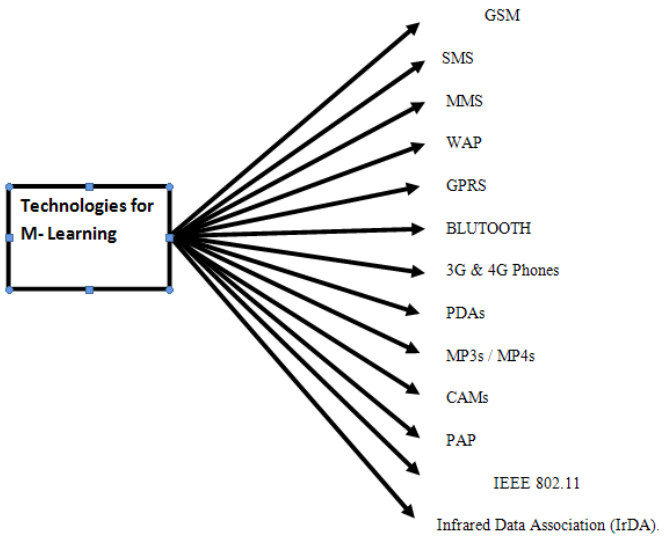


Fig 2. Different Technologies for M-Learning

1. **GSM:** Global System for Mobile Communications (GSM) is one of the leading digital cellular systems. It uses narrow band TDMA (Time Division Multiple Access). Originally a European standard for digital mobile telephony, GSM has become the world's most widely used mobile system in use in over 100 countries.
2. **SMS:** Short Message Service allows users to send or receives messages of up to 160 characters between mobile phones (text messaging)
3. **MMS:** Multimedia Messaging Service is a way to send not only text, but media such as audio, images, and video, from mobile devices (specifically, phones)
4. **WAP:** Wireless Application Protocol is an International protocol that allows users to access the internet via their WAP enabled mobile phones.
5. **GPRS:** General Packet Radio Service is an internet connection for mobile devices that provides greater speed of connection (171kb/s). GPRS provides about four times greater speed than conventional GSM systems.
6. **Bluetooth:** Bluetooth is a short range wireless connection, which enables Personal Digital Assistants to pass information to and from other mobile devices. Bluetooth makes it possible to transmit signals over short distances between telephones, computers and other devices and thereby simplify communication and synchronization between devices.
7. **3G & 4G Phones:** 3G and 4G mobile phones are very useful technologies for learning purposes. 4th Generation mobile phones will provide up to 100 megabits per second transmissions adequate for multimedia.
8. **PDAs:** Personal Digital Assistants have evolved to mini PCs able to carry out many of the basic functions of a larger PC using the Palm OS or MS Pocket PC operating system.
9. **MP3s / MP4s:** MP3s or MP4s is the audio file format that efficiently compresses files and enables them to be shared.
10. **CAMs:** Now a day, video cameras embedded into mobile phones and PDAs.
11. **PAP:** Personal Audio Player plays very vital role in mobile learning because of its audio function.
12. **IEEE 802.11:** IEEE 802.11 is a type of radio technology used for wireless local area networks (WLANs). It is a standard that has been developed by the IEEE (Institute of Electrical and Electronic Engineers).
13. **Infrared Data Association (IrDA):** This association defined a suite of protocols for infrared (IR) exchange of data between two devices, up to 1 or 2 meters apart (20 to 30 cm for low-power devices). IrDA devices typically have throughput of up to 115.2Kbps or 4Mbps. Smart phones, many PDAs, printers and laptop computers use IrDA protocols.

Above mentioned are the some useful technologies which plays very vital role in M- Learning. These devices help for following work.

For accessing documents
For accessing quizzes and for self-assessment
For participating in lessons and tutorials
For receiving various lectures archived or broadcasted live
For participating in virtual learning communities
For accessing video clips or audio libraries

Possible Transformation in Indian Higher Education by Using M- Learning

Mobile learning approach can be extremely crucial to revitalize the Indian higher education system.

1. Researches have proved that attainment of learning goals is done more successfully through Mobile learning approach. Interactions among teachers, students, experts and society get increased to a great deal. Pupils become more alert and active in their learning. Commitment, reflective thinking, intellectual maturity, cooperation, critical attitude and divergent thinking are enhanced among students.
2. Students will take the initiative, without remaining passive listeners they themselves will construct knowledge in the atmosphere of freedom, motivation & commitment.
3. Teacher will have a close look at the entire process. He will be able to create constructive realistic outlook among the students by inculcating social & moral values with the help of regular orientation, guidance & discussions with relevance to the content.
4. It will be possible to involve maximum students in the educational process. Therefore, quantitative as well as qualitative development of Higher Education will occur.
5. Learning will become more & more individualized. Two major transformations will occur regarding learning.
   a) Improvement in learning strategy (Flexibility regarding place, time & style of learning)
   b) Improvement in learning process (Instead of being receiver students will be researchers & creators of knowledge, availability of options, change according to students & content)
6. Errors of e-learning will be minimized and desired human touch will be provided to the educational process.
7. Smooth inclusion of technology in education will occur to make learning experiences more & more enriched.
8. Students learning will be sustainable & ultimately natural development of life long learning skills will occur among the students.

Advantages of M- Learning

1. **Interaction:** Through M - Learning it is possible to interact with each other. Student makes interaction with instructors as well as among each other.
2. **Collaboration:** M- Learning enables several students to work together on assignments even
   though they are at distance location.
3. **Portability:** 'Learning without School bag' occurred because of M- Learning. PDAs are lighter than books and enable the students to take notes or input data directly into the device regardless of location either typed, handwritten or using voice.
4. **No limitation of Time / Place:** 24/7 learning is the one of the important advantage of M- 'Learning. Learning can occurs at any place, at any time through M- Learning.
5. **Engaging learners:** The new generation likes mobile devices such as PDAs, phones and games devices.
6. **Increase motivation:** Owner ship of the handheld devices seems to increase commitment to using and learning from it.
7. **Bridging of the digital divide:** Since handhelds are more affordable than larger systems they are accessible to a larger percentage of the population.

Demerits of M-learning devices

Though M-Learning has various advantages, we cannot neglect its demerits also. We should try to overcome on these demerits.

- Devices can become out of date quickly
- Wireless bandwidth is limited and may degrade with a larger number of user
- Difficulties with printing, unless connected to a network
- Small screens of mobile phones and PDAs
- Limited storage capacities in PDAs
- Battery life/charge
- Lack of common operating system
- Lack of common hardware platform makes it difficult to develop content for all.
- Less robust
- Still difficult to use moving graphics
- Limited potential for expansion with some devices

Epilogue

The traditional education is made in classrooms where the teacher presents the learning material to a group of students. The educational technology depends mainly of teacher and the students must physically participate in the learning process. Regardless of obvious advantages as a direct contact between a teacher and students and immediate feedback the traditional classroom education has many disadvantages. The twenty first century promises to be "knowledge era "in which highly competitive "knowledge society" will make unprecedented demands on universities and other institution in the area of higher education. These demands can be met only through imaginative and effective utililisation of information and communication technology. In this regard M-Learning plays vital role. The rapid growth of information and communication technologies and rising computer knowledge of the students make possible appearance of these new educational forms. The relatively recent availability of 3G (Internet equipped) mobile phones and Personal Data Assistants (PDAs) will increase opportunities for mobile learning and web-based information can be used to expand the learning experience.

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