Using Mobile Devices To Improve Learning Technologies

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Abstract—learning via mobile devices is widely accepted by the learner community. Learners are interested in using all available resources through mobile phones and PDAs to access information anytime and anywhere. The aim of mobile learning is to provide an educational environment in which learners can learn without any limitation of time, place, or device, thereby realizing a more creative and learner-centered educational process. Mobile devices like laptops, PDA and mobile phones can accompany the learner into the field and can at the same time exploratory activities, for instance by enabling learners to sense and record aspects of the local environment. With use of mobile devices, learners learn as if they are in a real classroom environment. Learning technologies provided a very wide range of learning activities, in order to attract students from higher education. This paper describes the effects of using mobile devices to improve learning technologies.

Keywords-E-learning; M-learning; D-learning; PDA; mobile devices

I. INTRODUCTION

Rapid developments in ICT and evolving learner behaviors require learning institutions to continuously revaluate their approaches to pedagogy, both in the physical and virtual ‘classroom’ spaces. The rationale to undertake a review into mobile devices was to understand and embrace the changes in learners, teachers and institutions in concert with associated ICT advances, whilst acknowledging the risks. Research into, and application of, mobile learning potentially brings the rewards of placing institutions at the forefront of pedagogical practice and addresses student requirements for flexibility and ubiquity, that is, ‘anywhere, anytime, and any device’ learner engagement.

The use of mobile devices is not referring to thumb drives, USB drives, memory sticks portable flash drives, or portable externally enclosed hard drives. Mobile devices specifically refer to Cellular (or Mobile) Phones, and Smart Phones. Bear in mind that some of the older models, such as the initial Palm and BlackBerry series devices do not have radio (cellular) capability and are simply used to store Personal information (contacts, calendars, memos, to-do lists, etc.).[9] The focus is on the teacher who is standing in front of a classroom. A blackboard, an overhead projector, a video projector and occasionally Internet access for instructors are provided in a classroom. The early advance in the field of education in the 20th century was to design and broadcast a number of educational programs through radio and TV. In addition the increasing availability of low-cost mobile and wireless devices and associated infrastructure heralds both opportunities and challenges for educational institutions and their teachers and learners.

Through this paper, described the Pervasive Studies in learning technologies from E-learning to Mobile learning to Pervasive Learning In Section 2, In section 3 the Advantages of M-learning comparing to E-learning will be presented. In Section 4 we will focused on the Mobile devices Benefits in M-learning then Categorized of mobile devices in M-learning in section 5. Finally, the paper will be ended by conclusions.

II. PERVERSIVE STUDIES IN LEARNING TECHNOLOGIES

New Later learning materials were produced and delivered in digital form instead of the printed form. The next phase was the arrival of multimedia and hypermedia technologies, enabling the delivery of learning materials through CD ROMs thereby improving the effectiveness of learning. The advantage of these educational CDs was that it can be customized and reused according to the learner’s needs. Rapid development of Internet and WWW lead to web based learning environments. It provided tremendous opportunities for learning. In mid 90’s, a number of web based learning environments like E-learning systems were developed. [4, 5, 6]

In distance education, learners’ utilization of ICT resources is essential, as is the involvement of providing or regulatory institutions, in optimizing the potential of e-learning within a knowledge-based economy. Significant to learners’ involvement in e-learning is the notion of e-readiness, that is, their ability to make use of e-learning resources and multimedia technologies to improve the quality of learning. [3]
It comprises all forms of electronically supported learning and teaching. Mobile learning is E-learning through mobile computational devices like Palmtops, PDA, cell phones etc. So even though face-to-face interactions are missing in these models, high-quality learning contents and better delivery mechanisms made them attractive than the traditional classroom approach. Since the price of mobile devices has dropped, they are extensively used in our lives. Nowadays hardly you can find a person without a mobile device.

M- Learning is the new stage of the progress of distance learning (D-learning) and E-learning. By nature the M-learning is a form of existing D-learning and E-learning. Distance learning, electronic learning and mobile learning offer methods, which decrease the limitations of traditional education. Historically the distance education has more than one hundred years of experience and traditions. Its main characteristic is the distance and time separation between teacher and students. The E-learning offers new methods for distance education based on computer and net technologies. Simultaneous to E-learning the other forms of D-learning still exist (for example satellite based D-learning). [1]

The learning form is gradually promoted from E-learning to Mobile learning to Pervasive Learning. Pervasive computing, also named as ubiquitous computing is a rapidly developing area of ICT. The term refers to the integration of ICT into people's lives and environments. It enables authorized access to anytime-anywhere-any device-any network-any data. Devices used in mobile learning cannot obtain the context of learners. So in this e-Society, the knowledge acquired at schools and universities may be insufficient for the whole life span. [7, 8]

III. M-LEARNING ADVANTAGES COMPARING TO E-LEARNING

Developing informatics technologies and technological devices have progressed rapidly in education field in our times. Informatics technologies used in education have progressed rapidly and dependably in such a way that traditional education methods have left their importance to technological education methods. This progress revealed the notion of E-learning. With the support by today’s mobile technologies to E-learning within D-learning concept, the notion of M-learning provided technological progress in education. Although E-learning has much more advantages than traditional education methods, some deficiencies of its own have lead science world to new pursuits. The development of mobile Technologies and the need for movement of the technology in education to new dimensions have revealed the new notion M-learning.

The M-learning advantages comparing to E-learning are:
1) It can be used everywhere at every time;
2) Most of mobile devices have lower prices than desktop PCs;
3) Smaller size and light weight than desktop PCs;
4) Ensures bigger students' engage as M-learning is based on technologies, which students use in everyday life;
5) Using GPS technology the M-learning can provide location dependent education. [1]

IV. MOBILE DEVICES BENEFITS IN M-LEARNING

A. Helps learners to improve their literacy and numeracy skills and to recognize their existing abilities

Although the learners were involved in mobile learning for fairly short periods of time, some mentors reported perceived improvements in their learners' reading, writing skills. Most improvements were noted amongst those learners initially described as being ‘less able’ or having ‘very limited ability’. Some of these improvements seem to have been due to mentors, and learners themselves, not recognizing existing abilities. One mentor reported that a learner 'perceived reading to be a book based activity but he was able to read texts and information regarding the device very well … perhaps his biggest barrier to reading is his self-evaluation of his reading ability, and negative educational experience!' [10]

B. Can be used to encourage both independent and collaborative learning experiences

Many Learners taking part enjoyed the opportunity to use the mobile devices to learn independently of a group setting for a variety of reasons. For example one mentor who worked with learners experiencing housing related difficulties noted ‘he preferred to work independently, as he felt under no pressure, and could do it all in the evenings’ and another ‘they have said it has been great being able to use materials in private. When they come into the centre it can be embarrassing because everyone can see what they are doing on the computer’. Others welcomed the opportunity to work collaboratively. For example a learner stated ‘it is good learning and helping other people’ and ‘[it is] probably better to work together with new technologies, someone to ask. It also puts some pressure on you to achieve something’.

2 Personal Digital Assistant
3 Global Positioning System
C. Helps learners to identify areas where they need assistance and support

A mentor involved in the project has been working with a homeless young adult who regularly truanted while at school and subsequently left without any qualifications. The mentor reported that as a result of participation in the M-learning project her client has not only developed a greater confidence in his current reading and writing abilities but has also been inspired to seek help to improve his mathematical skills from the local Adult Basic Education Centre. When reporting the young adult’s post-trial attitude to learning the mentor noted that ‘now he knows this is something that he really needs to work on and is now ready to do so’.

D. Helps learners to remain more focused for longer periods

A mentor told our researcher: ‘The group was observed to be remarkably focused and calm during the session when given the devices in contrast to their normal behavior in the sessions. They were far more focused and gave up to two hours of time to the devices when it is normally difficult to focus them for 15 minutes.’ It is possible that this effect was due to the novelty of using mobile devices and whether this is the case or not will become clearer over time.

E. Helps to raise self-esteem

Loaning equipment to young adults to use in their personal environments has resulted in other benefits not directly related to the learning experience. In particular, there have been reports that some of the learners were surprised and proud to be trusted with such expensive and sophisticated technology. For example, one project mentor noted: ‘He took really good care of it. He pointed out that because of his background no one else would have ever trusted him with a mobile. This has meant more to him than the actual device itself as he feels respected.’ It would seem that the mobile devices are prized highly by the young adults who have taken part.

Allowing them personal responsibility for the care of the devices enables them to feel trusted and seems to help to build up their self-esteem. Another boost to some learners’ self-esteem came when they realized that as experienced users of mobile phones they possessed useful skills which others perceived as important. Some of these learners became ad-hoc mentors to their peers and gained further self-esteem as a result. [10]

F. Helps to raise self-confidence

Many mentors observed changes in their learners’ level of general self-confidence. This was not specifically linked to the development of their confidence in using ICT or their confidence in the areas of numeracy and literacy, but linked to self-esteem as discussed above. For example, a mentor supporting traveler education stated ‘low self esteem and lack of self confidence [was] much improved when working with others, willing to take risks and try things out. Much gained by discussion with others’. Another mentor reported that a learner who used the driving theory test learning materials ‘had not tried it before but by the time he had finished using it he was passing every time. This has given him the confidence to go and learn to drive, as he may not have tried before at the thought of the theory test’.

V. CATEGORY OF MOBILE DEVICES IN M-LEARNING

Today’s mobile devices are multi-functional devices capable of hosting a broad range of applications for both business and consumer use. The term mobile device is used to mean a wide range of consumer electronics. Usually mobile device is used to describe the devices that can connect to the Internet. However, some will classify digital cameras and standard MP3 players as mobile devices as well.

The main types of mobile devices used in the education process are: [1]

A. Notebook computers

From one hand they have such abilities as desktop personal computer; from the other hand they have small sizes and support wireless communications. These computers’ quantities exceeded those of desktop computers because of their prices being low in today’s world. Laptop computers have much more features than some desktop computers in terms of equipment. With their features of being portable and plug and play, as well as with the development of mobile communication technologies and the facility of internet connection almost everywhere, laptop computers’ usage in mobile learning is unquestionable. [2]

B. Tablet PC

These are one of the newest mobile devices. They also have full range of abilities as personal computers. Some of them haven’t keyboard but have software to recognize handwritten text. Tablet PCs are a type of notebook computer that has an LCD screen on which you can write using a stylus. The handwriting is digitized and can be converted to standard text through handwriting recognition, or it can remain as handwritten text. The stylus also can be used to type on a pen-based key layout where the lettered keys are arranged differently than a QWERTY keyboard. Tablet PCs also typically have a keyboard and/or a mouse for input.

Examples of Table PCs: Samsung Q1, Toshiba Portage, Fujitsu Life book, Motion Computing, IBM ThinkPad. [11]
C. Personal Digital Assistant (PDA)

They have small sizes and significant processor power. New models support more than 65000 colors, recognize handwritten text and can play different types of multimedia files. The main operating systems used are Palm and Microsoft Pocket PC. Today, pocket phones are close to personal computers technologically and can perform most of the work of personal computers, with the development of mobile software products and mobile operating systems such as Microsoft Windows Mobile, Symbian OS. Even, some models can be used as computer and mobile phone; therefore they provide access to data in any circumstance.

Their bigger screens than those of mobile phones were seen as an advantage in terms of mobile learning, but this advantage has been removed because of the wideness and touch ability of screens of new phones. The constantly-progressing technology of mobile phones has navigated PDAs’ usage to mobile phones which are close to smart phones. In addition, people are more liable to use notebooks which are newly produced for pocket phones and contribute to the development of 3g technology. [2]


D. Cellular phones

The low class devices mainly can be used for voice communication and sending and receiving of text messages. Some of their disadvantages are low memory capacity and low data transfer rate. The cellular phones from the higher class can be used to Internet access via 4WAP or 5GPRS technologies. They also can be used to send and receive the multimedia messages.

E. Smart Phones

They are hybrid devices which combine the abilities of cellular phones and PDA. They have smaller sizes than PDA and bigger than cellular phones. Typically they haven't full sized keyboard and can recognize handwritten text. They use Symbian, Windows Mobile or other operating system. As they have Internet browsers they have potentiality to be successfully used in the mobile multimedia education. They can be used with operating systems such as Microsoft Windows Mobile, Symbian OS etc. these devices, used successfully in multimedia learning, are without doubt among important devices of mobile learning with their abilities to connect internet, operate Office programmers etc.

VI. Conclusions

M-learning will became more and more popular with the progress of information and communication technologies. Its common use with the traditional education will correspond to the needs of educational quality improve. The fact that mobile technologies progress and it meets people’s needs faster has increased the interests in mobile technologies and their usage. Moreover, by solving scanning problems faced in accession to education environments and servers by mobile devices, online accession opportunities are provided from all mobile technologies.

The development of mobile technologies and use of mobile device in learning technologies has provided important advantages in works of experts as well as for those in need of data. In conclusion, the development of mobile technologies and their ongoing progress with mobile devices have raised the interests of mobile learning and have contributed much too every field of education. The objective is a society with access to knowledge and learning for everyone.

REFERENCES


