MOBILE PHONE AS A COST-EFFECTIVE OPTION FOR M-LEARNING IN TERTIARY EDUCATION IN NIGERIA: PROSPECTS AND PROBLEMS

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Abstract

One major tertiary education objective is to educate its students to become flexible graduates, excellence-driven, global in perspective, innovative, creative and life-long learners that can easily adapt to the changes eminent in the information society. Achieving these requires among other factors, the adoption of appropriate and cost-effective means which supports the inculcation of collaborative and lifelong learning skills, technology use skills, knowledge sharing skills and social networking skills into students. Therefore, this paper looks at the prospects of adopting mobile phone as a cost-effective M-Learning in Nigeria tertiary education. It looks at the concept of M-Learning, as well as the problems in form of challenges associated with the use of mobile phone for M-Learning in tertiary education in Nigeria. The paper recommended that institutions should create awareness for the learners to make use of mobile phone facilities and functionalities.

Keywords: *M-Learning, Tertiary Education, Mobile Phones*

Introduction

The proliferation of Information and Communication Technologies (ICTs) and the increase in the quest for their use in educational institutions have not only affected the structure of tertiary education but has also affected the way teaching and learning is done in these institutions. Over the years, several efforts have been made to improve the quality of education instruction delivery through electronic media. The traditional method had always been complemented with the use of projectors, audio, and video cassettes. Recently, special attention has been directed to the influence of Information and communication technology (ICT) on instructional content design and delivery.

The emergence of internet technology as a means of information creation, manipulation and dissemination has also heralded new approaches to instructional delivery and content design where methods of communication to the learners are achieved through various means. Many aspects of the learning process, from the presentation of information to assessment of learning outcomes and performance, can now be supported using widely accessible information and communication technologies. Unlike classroom based learning, or traditional Computer-Based Training (CBT), which require groups of learners attending a central training location, the Internet allows the delivery of instructions anytime, and in any place (Walters, 1999). The benefits from Internet-based are typically seen in relation to cost saving and improved training efficiency. It offers flexibility and considerable improvement on learning process by allowing learners to access instructional contents on demand.

Towards this vision, tertiary education is committed to the appropriate, effective and sustainable use of ICTs to broaden access to and improve the quality and efficiency of tertiary education service delivery. It evolves and nurtures an information and communication technology framework designed to enhance, broaden, strengthen and transform learning to develop the learner into a person who is excellence-driven, global in perspective, innovative, ingenious and creative, with a deep sense of community and concern harmony and the common good (Brewster, 2001). The quality of and access to

tertiary education substantially remains the overriding goal of educational development. Thus, all educational interventions are been geared towards ensuring the empowerment of learners with life-long skills through the use of appropriate technologies. Hence the need for a cost-effective option for m-learning for Nigerian tertiary institutions.

The Concept and Meaning of M-Learning

In the traditional classroom environment, learning is static and fixed and learners have to go to a site of learning such as school or college at specific times. In addition, learning is also, most of the times, teacher-centred with lack of instructional facilities and heavy reliance on the textbooks as the exclusive teaching and learning materials. However with M-Learning, learning can take place anytime and anywhere. Brown (2003) opines that M-Learning is a sub-set of e-learning, the macro concept that includes online and M-Learning environments.

Wikipedia (2009) defines M-Learning as 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. And that M-Learning focuses on the learner interacting with portable technologies such as handheld computers, Mp3 players, note books, and mobile phones. M-Learning technologies have ceased to be the preserve of technicians and experts, as teachers and learners have begun to integrate them into the normal teaching and learning practices. M-Learning is often blended with other types of learning, as a mobile device could act as a tool for thinking. For instance, when learners know that everything they say is being recorded or is easy to record, their behaviour would change positively.

Alexander (2004) describes M-Learning as a form of learning that has established the legitimacy of nomadic learning. This is because, like the nomads, learning moves with the learner. M-learning is convenient, in that, it is accessible anytime, anywhere and like other forms of E-learning, it is collaborative and instant feedback and tips can be received by the learners. It is also engaging. It brings new technology into the classroom and uses different types of activities. In other words, it uses a blended learning approach. It can also be a useful add-on tool for students with special needs, for instance, the deaf. Attewell (2005) reiterates that M-learning is not just about learning using portable devices, but learning across contexts. In M-Learning (ML), education is delivered by means which enable the students to communicate free of classroom pressure and to help teachers in remote locations or working across a range of schools. It is learning that reflects a focus on how society and its institutions can accommodate and support an increasingly mobile population (Network Tutorials, 2007).

Sharples (2009) opines that M-learning gives the opportunity to design learning differently, to create extended learning differently, to create extended learning communities, to provide expertise on demand, and to support a lifetime of learning. According to Chinnery (2006), M-Learning environments might be face-to face, distance, online, self-spaced, or calendar-based. It is also a great way to achieve personalized learning because students can, choose what, and how they learn, when and where.

However, Brown (2003) opines that, the strength of M-learning should be on communicative and interactive rather than on content and that M-learning should be a supportive mode of education and not a primary mode of education. Also that, possibilities and latest development in mobile technology must be tested against practicality, usability, and cost-effectiveness. Mobile technologies should offer endless opportunities for empowering individuals and communities through access to knowledge, means of expression and coordinated action.

Wikipedia (2010) observes that M-Learning currently serves not only as a primary source of education for students but also supports the retention and utilization of newly acquired skills. And that through mobile participation in short exercises and tasks, learners are able to keep their talents sharp while reducing the risk of degradation of value, skills, and ability. Attewell (2005) writes that M-Learning is unique, in that, it does not only allow anywhere, anytime and personalized learning but also enliven the learners by adding variety in conventional lessons or courses. Also that M-Learning helps to remove some of the formality from the learning experience and engages reluctant students.

Kukulska-Hulme (2006) opines that M-learning helps to deliver closer integration of learning with everyday communication needs and cultural experiences. It empowers learners to give them a greater say in their learning experience with a view to increase their motivation.

The purpose of M-Learning is to make computers really enter human lives, just as air, water and electronic and easy to use just as our pen or paper. This thought has been widely accepted and catching many people's eyes since the late 1990s. M-Learning is a new paradigm shift. The core idea of M-Learning is to change past technology centered computing made to humanize computing paradigm. In this kind of computer paradigm, computer itself will disappear from the sights of use, take an inconspicuous supporting roles imperceptibly embedded in our environment, which will at last make human focus on the task to complete not on the machine.

Properties and Characteristics of M-Learning

M-Learning is effectively a sub-category of the lager concept of e-learning. According to Quinn (2000), M-Learning is the intersection of mobile computing and e-learning, accessible resources wherever you are, strong search capabilities, rich interaction, powerful support for effective learning, and performance based assessment e-learning in dependent of location in time and space.

Klopfer et al (2002) gives five properties of mobile devices which can produce educational benefits. These are: Portability, Social Interactivity, Context sensitivity, Connectivity and Individuality

Other characteristics of M-Learning include:

a. Accessibility: Learners have access to their documents, data or videos from anywhere. The information is provided based on their request. Therefore, learning involved is self-directed.

b. Interactivity: Learners can interact with experts, teachers or peers in the form of synchronous or asynchronous communication. Hence the experts are more reachable and the knowledge is more available.

c. Situating of Instructional Activities: The learning could be embedded in and out of daily life. The problem encountered as well as the knowledge required are all presented in their natural and authentic forms. It helps learners to notice the features of problems situations that make particular actions relevant.

d. Adaptability: Learners can get the right information at the right place in the right way.

e. Immediacy: Wherever learners are, they can get any information immediately. Therefore learners can solve problems quickly. Otherwise, the learner may record the questions and look for answers later.

f. Permanency: Learners can never lose their work unless it is purposefully deleted. In addition, all learning processes are recorded continually every day.

The Prospects of Mobile Phone as Cost-Effective Option for M-Learning

Out of all the mobile computing systems, mobile phone has been widely accepted as an instructional delivery medium or device and its use should be continually encouraged because of the following considerations:

a. Price: The cost of obtaining a mobile phone is declining. In the early 90s when mobile phone was introduced, it was very expensive and considered a luxury. Today, the emergence of the Asian countries in the business of mobile phone manufacturing has brought the prices down to an affordable level.

b. Increased Ownership: Few years back, mobile phone is owned only by the rich and the elites and used only when it is absolutely necessary. Today, mobile phone has become an essential commodity among the rich, elites, maids, school children, artisans, market women and even beggars on the-street. The ownership structure had been expanded such that mobile phone now becomes an indispensable tool both for the rich and the poor.

c. Improved MobileTechnology: There has been tremendous improvement in mobile technology. Mobile phones now come with improved and sophisticated functionalities. The emergence of large scale integration of miniaturized chips has also reduced the size of mobile phones. The situation now is the smaller the device, the higher the functionalities, the lower the cost, and the more durable. Mobile phones now come with enriched web functionalities that qualify them for use as m-learning tools.

d. Low Maintenance Cost: The call rates of mobile phones are declining while the volumes of data that can be transferred through mobile phones continue to increase at lower costs. The transfer rates of data had also improved tremendously. The cost of repairing mobile phone is very low while the mean time between repairs has come down tremendously.

e. Extensive Training Not Required: One aspect of mobile phones is that the user does not need any extensive training to be able to use it as a basic tool. The device applications are user friendly and can come with local languages. A complete illiterate can use it almost immediately after acquiring it. This makes it a useful tool for delivery of instructional content.

f. Video and Audio Functionalities: Visual content can be delivered conveniently while audio functionality is readily embedded in any mobile phone. The quality of broadcasting video and audio content had continued to improve and can be received anywhere and anytime.

g. Proliferation of Platforms: Even though mobile phones are produced by different manufacturers, the content delivered to anyone can be exchanged. The content delivered to any mobile phone can also be ported to any device on any platform irrespective of the maker without distortion or manipulation.

h. Convenient Feedback: Mobile phone can be used as a synchronous device because the instructor can respond to learner's requests immediately. It can also be used as asynchronous device where instructor's response to learner's requests are delayed and acted upon at a convenient time.

i. Increased Awareness: The awareness of mobile phone as a cheaper medium of exchange of data and voice had continued to build up. The service providers are helping out in the crusade and they seize every opportunity to dash out data and voice bundles to deserving customers. The manufacturers of mobile phones are not left out of the awareness crusade as they also dash out the equipment to customers during business promotions.

j. Mobile Number Portability: This gives opportunity for mobile subscribers to switch from non-performing service provider to a preferred provider without the loss of their mobile number.

Dawson, (2007) noted that many mobile phones are cheaper to purchase than desktop computers and laptops, and that introducing the mobile phone as a low-cost teaching and learning tool is quite possible. He also stated that mobile devices require less technical support than computers and laptops. When considering the adult learners, the mobile phones allow the learner to learn autonomously, collaboratively and provide opportunities to conduct learning experiences outside the teacher-managed classroom by expanding learning beyond the four walls of the classroom and thus allowing interactions in the real world including new interactions to be brought into the classroom.

Another relevance of the mobile phone is its image capture function allowing teachers and students to bring the outside world into the classroom (Ekamuake & Wishart, 2010). The mobile phones' video camera helped student to capture an event of interest that could be otherwise be missed. Mobile phone can be used to connect the lesson content to students' prior knowledge and correct misconceptions during the classroom. A sensor system for environmental education was developed using mobile phones as a means of enhancing learner participation and motivation. A participatory design approach was used to develop the sensor system. This enables

the learners to collect a range of sensor data using probes and mobile phones. Also, mobile phone video and image capture can be used to produce a snapshot of the conditions they had experienced. On their retain to the classroom, the data were downloaded onto a personal computer.

Challenges or Limitations of Mobile Phones for M-Learning

M-Learning generally is not faultless. Wang and Higgins (2005) opine that M-Learning has technical, psychological, as well as pedagogical limitations. They argue that, if one is to go by the definition of M-learning as anywhere, anytime learning, by people in air planes, trains, buses or in their rooms, for example, there will be psychological limitation. They argue that students or company staff who have worked so much would want to relax while on journey back home or in their rooms instead of learning. Moreover, learning needs effort and brainwork. Wang et al (2005) also add that, consideration of the environment in which learning takes place is paramount. According to them, if learners feel that the mobile environment is not conducive to learning, it can have a detrimental effect on the way activities are undertaken.

On pedagogical limitation, Wang et al (2005) opine that because M-learning theoretically takes place anywhere, anytime, it is hard to follow- up on the learning achievements of those attempting it. They also argue that m- learning, individuals take full responsibility of their own learning whereas, most organizations or individuals like to keep track of who is doing what to whom and when, using some form of learning management systems. They add that in m-learning courses, it is hard to administer supervision, and course organizers have no reason to trust that the answers sent from a mobile phone, for example, are being sent personally by the actual registered mobile phone holder and m-learner. Rovai (2002) also says that studies and statistics show that between 20% -30% of those who begin distance learning (e-learning or m-learning) courses do not finish. According to him, in an m-learning environment, the lack of a firm framework tends to encourage laziness and absence to a learning atmosphere.

On technical limitation, Koole (2009) in her Framework for Rational Analysis of Mobile Education (FRAME) proposes that M-learning occurs in an intersection of device, learner, and social aspects. As a result, it is important to assess characteristics such as the physical characteristics (size and weight), input capabilities (e.g. Keypad or touch pad), output capabilities (e.g. Screen size and audio functions), file storage and retrieval, processor speed, and the error rates, i.e.; malfunctions which result from flaws in hardware, software and/or inter face design. In addition, she proposes that learners' skills also play a central role and prior knowledge and experience with mobile devices for learning as well as feelings towards activities can positively or negatively affect the way in which learners engage themselves with mobile-based tasks. Furthermore, their availability can be limited. Other drawbacks of M-learning include limited non-verbal communication, limited message lengths, lack of cultural context and potentially limited social interaction. Kulkuska-Hulune (2006) also argues that many of the mobile devices that learners have access to are simply not designed for educational purposes, which means that learners will find them difficult to use for the activities that teachers expect them to undertake.

As cost-effective as mobile phones are, they are not without their own problems. Adomi (2006) carried out research on mobile phone usage patterns of library and communication science students at Delta State Tertiary, Abraka, Nigeria. He enumerated some of shortcomings of mobile phones usage as follows:

i. Frequent network failure.
ii. High cost of recharge cards/airtime.
iii. Limited area of coverage.
iv. Occasional scarcity of recharge cards.
v. Power outage.
vi. Lack of privacy in mobile shops/ booths/kiosks.
vii. Interconnectivity problem.
viii. Delay in delivery of text messages.
ix. Congestion in mobile phone shops/booths/kiosks.
x. Handset interception through duplication of SIM cards.
xi. Low memory capacity and
xii. Low data transfer rate.

Conclusion

ICT integration into education has presented avenues to increase learning opportunities and improve teaching and learning processes. However, today's learners want to receive instructional contents at any place, anytime, and at a relatively lower cost. Advancement in technology has made mobile telephony a relatively cheaper option and efforts should be made to encourage the use of mobile phones for the delivery of instructional content in tertiary institutions.

Mobile phones are no longer simple phones, they are powerful and efficient tools for mobile communication and achieving tertiary goals education. 3G enables institutions and their government council to transcend the social and education challenges they face today or may face tomorrow. More so, there is a growing importance of the role of 3G technology, not only as a medium of communication, but also as a tool for the achievement of tertiary development objectives.

Mobile phones represent new and fast growing development in ICTs innovations. Their adoption for teaching and learning that have been adjudged information society compliant has also been growing. The prospects revealed in this paper is that mobile phones posses the potential to become very reliable instructional technology that can be used by teachers and students to achieve feats that have been hampered by technology divide. The fact that mobile phones can be taken to any location where teaching and learning are taking place and still receive Internet signals makes them unique. However, much is still left to be done in terms of harnessing them for education purposes and this may need the collaboration of various stakeholders.

Recommendations

Effective adoption and utilization of mobile phones as a cost-effective option for M-Learning largely depend on the stakeholders of tertiary education. Therefore, I recommend that:

1. Mobile learning as a new way of obtaining learning experiences anywhere and anytime should be embraced by every learner on the move.
2. Every tertiary institution trainer or instructor should be encouraged to package learning experiences in handy formats so that they can be presented to the learners on any mobile computing system.
3. Institutions should embrace mobile learning and evolve policies that will entrench it in their curricula. They should also create awareness for the learners to make use of mobile facilities and functionalities as learning alternative.
4. Institutions should partner with mobile phone service providers to provide m-learning support in their mobile software applications.
5. The service providers should decrease the network congestion and inter-connectivity bottleneck.
6. Maintaining favourable regulatory and investment climate should not be ignored.
7. The government should improve on supporting infrastructure, such as power and transmission facilities.

References:

Adomi, E.E. (2006), Mobile phone usage patterns of Library and Information Science students at Delta State Tertiary, Abraka, Nigeria *electronic Journal of Academic and Special Librarianship.* 7(1) pp10-17.

Attewell, J (2005). Mobile technologies and learning (electronic version). A technology update and m-Learning project summary.

Brown, E.(2003). Mobile learning explorations at the Stanford learning laboratory speaking of computers. Retrieved on 30th May, 2014, from http:llsll.stanford.edu/projects/postings/289.html

Callum, K.M. and Kinshuk, (2006), *Mobile Technology in Facilitating Learning Goals. In mLearn 2006.* Banff, Canada.

Chinnery, G.M (2006). Emerging technologies. Going to the MALL: Mobile assisted language learning. Language Learning and Technology, 10 (1), 9-16.

Dawson, D. (2007), Handheld Technology for mobile learning. London Latimer Trend.

Klopfer, E,. Squire, K,. & Jenkins, H. (2002). Environmental detectives: PDA as a window

into a virtual stimulated world. Proceedings of IEEE International Workshop on wireless and mobile technologies on education. Vaxjo, Sweden. IEEE Computer and Society, 95-98.

Koole, M. (2009). A model for framing mobile learning. In M. Ally(Ed). Mobile learning: Transforming the delivery of education and training(25-47). Athabasca: AU Press.

Kukulska-Hulme, A. (2006). Mobile language learning now and in the future. Milton Keynes: The open Tertiary. Retrieved on 11/5/2011 From http://www.//as.ac.uk/ resources/papers/6238.

Networking Tutorials(2007). Introduction to mobile technology and communications. Retrieved on 5 May, 2013 from www.networktutorials.info.

Quinn C. (2000). "*M-learning, mobile, wireless in your pocket learning,* Retrieve from www.linezine.com.features.c.g.mm.htm.

Rovai, A.P (2002). Building sense of community at a distance. International Review of Research. In open distance learning. Retrieved From http://www.irroddl.org/ content/v3.1/rovai html. Assessed on 24 July, 2011.

Sharples, M (2009). The design of personal technologies for lifelong learning. Computers and Education 34, 177-193.

Wang, S and Higgins, M (2005). Limitations of mobile learning. Retrieved from http://www.jalt call .org/Journal//articles/2-1-Wand pdf. on October, 2010.

Wikipedia (2013). Mobile-assisted language learning. Retrieved from http://en.wikipedia. org/ wiki/mobile-assisted-language-learning. Accessed on 21 March, 2011.