

# The Role of Mobile Phone Learning in Escalating Access to Open Educational Resources (OER) in Developing Countries

*Zainab Ruhwanya, Grace Mbwete and Magreth Mushi*

The Open University of Tanzania,  
zainab.ruhwanya@out.ac.tz

***Abstract:** Open educational resources (OER) are digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research. In view of the fact that the mobile phone is a device that is used more than any ICT device in developing world, mobile phones are considered to be the most suitable tool for moving forward education in developing countries. Different studies have shown the potential of mobile phone in supporting formal and informal learning. What mobile phone has in common with OER is the flexibility and can be accessed anywhere anytime. This paper will look into OER, the current trend of mobile phone learning, and how mobile phone can be used to increase access to open educational resources for disadvantaged groups especially those in Sub Saharan Africa.*

**Key words:** open educational resources, e-learning, mobile phone learning

## INTRODUCTION

Learning materials at higher learning institutions around the globe are no longer the sole properties of the university or the individual teacher, but the properties of the social communities around the world. Currently we have witnessed universities, as well as institutions and individuals around the world developing and distributing teaching and learning materials for free through the Internet. The trend has resulted into what is called 'open educational resources' (OER).

Recently OER movements have gained much popularity, the development and sharing of OER materials is growing day by day. Many OER materials are accessible through the Internet in pdf, plain web pages, power point and images just to name a few. Despite the growth, the potential and promise of OER in learning, its access is still a challenge to people in developing nations especially those in Sub-Saharan African countries, considering the facts that the Internet usage through computers in these counties is still low compared to other parts of the World (ITU, 2009). There is definitely the need for an alternative to computers so as to give equal access to the disadvantageous group such as those of developing world. A mobile phone is considered to be the most suitable tool to overcome the challenge as it is considered the suitable tool for moving forward education in developing countries; different studies have shown the potential of mobile phone in supporting formal and informal learning (Gordon and Waaga, 2010).

This paper will look into open educational resources, the current trend of mobile phone learning and how can mobile phone increase access to open educational resources for disadvantaged groups, especially those in Sub-Saharan Africa. The paper is divided into the following sections.

Section one will give an overview of OER and mobile learning. The second section will discuss OER in developing countries. Section three will discuss the implementation of OER and Section four will discuss mobile phones and OER in developing countries.

## **OER OVERVIEW**

UNESCO defines open educational resources (OER) as “digitized materials offered freely and openly for educators, students and self-learners to use and reuse for teaching, learning and research” (OECD, 2007). Being a production and dissemination mode, OER are not involved in awarding degrees or in providing academic or administrative support to students. However, OER is the tool that support learning process be it formal, non formal or informal learning.

OER include different kinds of digital assets such as learning content, tools and implementation resources<sup>4</sup>. Learning content includes courses, course materials, content modules, learning objects, collections, textbooks, streaming videos, tests and journals. Tools include software that supports the creation, delivery, use and improvement of open learning content, searching and organization of content, content and learning management systems, content development tools, and on-line learning communities. Implementation resources include intellectual property licenses that govern open publishing of materials, design-principles, and localization of content. They also include materials on best practices such as stories, publication, techniques, methods, processes, incentives, and distribution.

## **MOBILE LEARNING**

Mobile learning or m-learning has different meanings for different communities. Although related to e-learning and distance education, it is distinct in its focus on learning across contexts and learning with mobile devices (Desmond, 2005).

According to Wikipedia online ([www.wikipedia.com](http://www.wikipedia.com)), mobile learning is defined 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. In other words mobile learning decreases limitation of learning location with the mobility of general portable devices.

The term covers learning with portable technologies - including but not limited, to hand held computers, MP3 players, notebooks and mobile phones (Gordon and Waage, 2010). M-learning focuses on the mobility of the learner, interacting with portable technologies, and learning that reflects a focus on how society and its institutions can accommodate and support an increasingly mobile population. There is also a new direction in m-learning that adds mobility of the instructor and includes creation of learning materials "on-the-spot, "in the field" using predominately smart phone with special software such as AHG Cloud Note. Using mobile tools for creating learning aides and materials becomes an important part of informal learning. M-learning is convenient in that it is accessible from virtually anywhere.

M-learning, like any other forms of e-learning, is also collaborative; sharing is almost instantaneous among everyone using the same content, which leads to the reception of instant feedback and tips. M-learning also brings strong portability by replacing books and notes with small RAMs, filled with tailored learning contents. In addition, it is simple to utilize mobile learning for a more effective and entertaining experience. For this paper the term m-learning means learning by using mobile phone.

Wireless and mobile technologies also make it possible to provide learning opportunities to learners that are either without infrastructure for access (e.g. rural or remote learners) or continually on the move (e.g. business professionals). The relevance of m-learning for Africa

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<sup>4</sup> [www.wikipedia.org](http://www.wikipedia.org)

lies in the fact that the majority of learners in Africa are without infrastructure for access. Interesting to note is that the adoption rate of mobile technologies in Africa's developing countries is among the highest rates globally. Forecasts estimate almost 100 million mobile users in Africa by 2005<sup>5</sup> and it is also shown that at the end of 2006, three out of four people were covered by a mobile signal in developing regions (ITU, 2008).

### **OER IN DEVELOPING COUNTRIES**

It can be agreed that OER is still a foreign term to most learners in developing countries. The emergence and use of the Internet with its web technology after the new millennium, holds great potential in everything, especially the way people learn. This applies also to the OER; the development of information technology is rapidly making it more powerful OER.

According to (OECD, 2007), the implications of computer based information technology are entirely different for societies at different socio-economic developmental scale. In a developed society, a computerized reservation programme is process efficiency. In developing world, it has multitude of other connotation. The Indian railway's reservation programme, for example, worked as an unbiased, equal opportunity mechanism that eliminated system bureaucracy in a single sweep. The information technology has had a far deeper and multi-dimensional impact in developing world than in the developed world. On a similar note, open educational resource (OER) is deceptively an equally powerful, multi-dimensional tool capable of galvanizing developmental process on an unprecedented scale.

Globally, thankful to the collectives of people, organizations and government bodies, things are finally coming out of the closet. It would be too much for asking at this stage, but definitely there are signs everywhere that OER might actually take off and meet the expectations the world has in it. The last five years had been eventful from the point of view of OER movement. The most important event, in this regard, had been the MIT's<sup>6</sup> initiative to put its content for the world to use. This actually has galvanized the movement in a single stroke. Universities after universities across the world are falling in line to emulate and improvise the process and at the same time create a flux that ensures people joining the movement in greater numbers.

The success of MIT's OER initiative, points to the basic requirements of a successful initiative. If we visit MIT site, then we shall soon realize – “what makes it different to others?” They have

- (i) Comprehensive list of courses and
- (ii) Choices within a subject area.

Again, it is surprising that though many of the courses are nothing but assortment of bullet pointed PPT presentation, but that serves the purpose to a certain extent as the same is often complimented with more verbose course posted alongside on similar topics/subjects. We can imagine the impact when MIT eventually converts these lecture notes into a fully documented leveraged course material. Now it can be visualized easily that it is all but the beginning. There is lot to be done and done more effectively. OER's significance is not limited to institutions. That has precisely been the hall mark of WWW platform. It is not

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<sup>5</sup>[http://matheasy.webstarts.com/uploads/The\\_role\\_of\\_m-learning\\_in\\_the\\_future\\_of\\_e-learning\\_in\\_Africa.pdf](http://matheasy.webstarts.com/uploads/The_role_of_m-learning_in_the_future_of_e-learning_in_Africa.pdf).

<sup>6</sup> [ocw.mit.edu](http://ocw.mit.edu)

bounded. The scope is infinite – from imparting preparatory lessons for grade I to teaching RICE electrical engineering course to an aspiring engineer in Tanzania.

### **IMPLEMENTING OER IN DEVELOPING COUNTRIES**

To implement the OER, it is important to understand how the core functionality of the platform “WWW” is in the dissemination of information and knowledge – the basic elements of an effective education system. The progress of implementation of OER is largely dependent on understanding of readiness and availability of information technology particularly the Internet because the web-based OER require availability of sufficient bandwidth. To implement OER in developing countries and run successfully it is necessary to notes the following:

- (i) There has to be information and communication technology (ICT) infrastructure. OER requires incorporating Internet access with adequate data bandwidth. Developing countries, overall, still do not have adequate these infrastructure in place. However, there are some efforts by different governments to make sure the Internet infrastructure is available. This is witnessed by the SEACOM fiber optic network which has been recently launched by the coast of Eastern Africa, Tanzania is among beneficiary countries and the broadband backbone was launched in May 2010. However, penetration data bandwidth in places far from urban areas is still a big problem.

Although, OER can be used by various kinds of institutions, ranging from primary school to higher learning institutions, for the time being it is mostly used by tertiary and higher learning institutions which have Internet access, until the price of bandwidth becomes cheap and available in developing countries.

This means involving governments, institutions and communities in a sustainable manner with the implicit aim to spread the bandwidth as far and as deep as possible by making use of satellite communication channels. This can also include public-private partnerships especially with mobile phone networks which are mostly used by many in developing countries.

- (ii) Although the rate of user data bandwidth percentage is low in developing countries, the absolute number of potential users of educational materials is actually bigger than many developed countries due to the large population base. It may be taken into account that these regions actually produce more skilled labour (engineers and doctors), where OER can be a stimulus to improve the quality and standard. Hence the use of mobile phones in accessing these materials.
- (iii) There is need for cooperation between local governments and other institutions including international organizations. Local governments must realize that education is one of the instruments that will improve human existence. For effective implementation of OER local government should cooperate with international organizations dealing with education. The government should make sure higher education can be accessed without any discrimination. This brings about the need for effective use of mobile phones.
- (iv) The implementation of the OER in developing countries should be adjusted to the prevailing conditions. There is need of educational materials to be tailored to local needs. The availability of good educational materials tailored to local needs that have been secured by the decision makers in developing countries.

## MOBILE PHONES AND OERS IN DEVELOPING COUNTRIES

Since many people in developing countries use mobile phones in their day-to-day activities, this simple technological tool can also be used to learn via OER. The following are the ways mobile phones can be used to access OER:

- (i) Voice – In developing countries most of people have basic phones, those with voice capabilities only, although they are fast being replaced and upgraded. They are basically radios, which pick up and send signals on certain pre-determined frequencies. Students can use these phones to learn literature, poetry, public speaking, writing and history.

Of these, language is probably the most obvious. Given the huge demand and market around the world for English lessons and practice, cell phone is one kind of learning that is already readily available.

- (ii) Short Messaging Service (SMS) has been available on cell phones for several years. This feature has caught on like wildfire among young people in Europe and Asia, with literally billions of SMS messages being sent every day around the world. SMS messages, which can be written quickly, even in your pocket (especially with “predictive text”), offer enormous learning opportunities.
- (iii) For self-learners, SMS can be used for pop quizzes, to poll students’ opinions, to make learners aware of current events for class. It would be a simple matter of using SMS technology by individuals and competitive/collaborative groups for analysis and diagnosis of data and responses, whether in a historical, literary, political, scientific, medical or machine-maintenance context.
- (iv) For learners whose mobile phones have memories (or memory card slots) that accept downloaded programmes and content, entire new learning world opens up. Mobile phone users can download tools and teaching programmes available on personal computers, and, given that the phones are communications devices, use the tools for collaboration in new and interesting ways. All manner of applications can be downloaded including voice, text, graphics, and even specially designed spreadsheets and word processors with additional “content” added when needed.
- (v) For educators and learners with more sophisticated mobile phones, Internet browsers are now being built in. A growing number of mobile phones, especially those that use the faster “3G” (third generation) protocol, web sites specifically designed for mobile phones are becoming more and more numerous. A dictionary, thesaurus, and encyclopedia can be instantly accessed via a mobile phone browser onto the hands of every learner. It gives them instant access to MIT Courseware<sup>7</sup> and other OER provider turning their mobile phones into research tools. Students studying nature, architecture, art or design can search for images on the web that match what they find in life in order to understand their properties, style and criticism.
- (vi) High-resolution screens allow for meaningful amounts of text to be displayed, either paragraph by paragraph, or flashed one quick word at a time, with the user setting (and generally greatly increasing) his or her own reading speed. Better graphic displays also mean that such text can be accompanied with pictures and animation (and, of course, sound – it *is* a phone). Students who studies anatomy and forensics can view animations in their subjects via their mobile phones.

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<sup>7</sup> <http://ocw.mit.edu/index.htm>

- (vii) There are video cum phones hitting the market, capable of taking and sending short, typically 10-30 second, video clips. This extends the phone's learning possibilities even farther, into television journalism (most TV news clips are less than 30 seconds), as well as creative movie-making. A terrific educational use of short video clips would be for modeling effective and ineffective behaviours relating to ethics, negotiation, and other subjects.

## CONCLUSION

Although there is an increasing number of institutions and individuals that are sharing their digital learning resources over the Internet freely and openly, there is still no equity in OER materials access between the developed and the developing world due to poor ICT infrastructures such as lack of Internet connectivity, low usage of computers, low data bandwidth etc. Mobile phone has been identified as the tool that can be used to tackle the challenge in learners of developing world.

In this paper we have shown ways on how mobile phones can be utilized to gain the full potential of open educational resources (OER) to people in developing world. However, there is still a need for OER developer especially those in Africa to take into considerations the fact that there are least use of computers, lack of broadband Internet connections and low bandwidth. Therefore OER developers should consider developing OER materials that are both accessible to computers and mobile phones thereby achieving equity in attainment of the best possible learning materials to people in developing nations.

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