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Using Mobile Phone Technologies to Maintain Quality of Education in Ethiopia: A View beyond the Prevalence of Academic Dishonesty

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Abstract

The 21st century is characterized by the increasing access to sophisticated but affordable and portable technologies that are contributing much to the world. Specifically, in Ethiopia, mobile technologies are rapidly attracting new users, providing increasing capacity, and introducing more sophisticated uses to the citizens. However, it is becoming somehow common to ban using mobiles phones in classrooms among teachers in Ethiopia due to fear of cheating and plagiarism. At the same time, various scholars around the world have been investigating the trends of using these technologies for learning in both formal and informal contexts. The integration of such technologies into teaching and learning has been more gradual, as educators need to understand how they can be effectively used to support various kinds of learning and develop effective methods and materials for mobile assisted learning. Therefore, this review article analyses the trends, principles, merits and demerits, global experiences, and future considerations of using mobile to maintain the quality of education in Ethiopia which is becoming the due concern of our nation.

Keywords: Mobile phones, Learning, Quality education, Academic dishonesty.

Contents

1. Introduction

In recent years, there has been a growing body of evidence that the spread of ICT (information and communications technologies) can have substantial benefits for economic development. The growing use of the Internet and email has, for many people and organizations, revolutionized the speed and ease of communications, both within their own countries and, especially, across international borders.

As a part of the world, Ethiopia is also showing a significant development in exploiting advanced technologies such as mobile phones with their sophisticated applications. According to the Ethiopian Telecommunication corporation website, 17.4 million citizens are subscribed to use mobile phones (The Official Website of ETC). This figure is target to be 65 million in 2015. This implies that currently almost one of every five citizen has a mobile phone since the total population is about 85 million. Thus, it is a high time for educators have to design strategies to exploit this technology, which is becoming accessible for most of the people, to improve the quality of education across the nation.

On the other hand, more than one-third of the world's adult population, most living in the developing world like Ethiopia, has no access to printed knowledge, new skills, and technologies that could improve the quality of their lives (Dhanarajan, 2009). Inequalities in access to education continue to pose major barriers in the developing world, and the delivery of cost-effective and quality education remains a persistent problem.

In the attempt to find viable solutions to these problems, much hope has been placed in new information and communication technologies (ICTs). It is believed that ICTs can empower teachers and learners by facilitating communication and interaction, offering new modes of delivery, and generally transforming teaching and learning processes.

Of the many different forms of ICTs, mobile phones are thought, for several reasons, to be a particularly suitable tool for advancing education in developing regions. With the increasing attention now being given to the role of mobiles in the educational sector in developing countries, there is a need at this juncture to take stock of the available evidence of the educational benefits that mobile phones provide in the developing world.

2. The Impacts of Mobiles in Educational Outcomes

The literature on mobile learning points to a variety of benefits that mobile phones could have on the educational sector. For heuristic purposes, the impacts of mobile phones on educational outcomes that are identified in the mobile learning literature can be classified into two broad categories. On the one hand, mobiles supposedly impact educational outcomes by improving access to education while maintaining the quality of education delivered. On the other hand, mobiles purportedly impact educational outcomes by facilitating alternative learning processes and instructional methods collectively known as *new learning*.

2.1. The Role of Mobiles in Improving Access to Education

In theory, mobile learning increases access for those who are mobile or cannot physically attend learning institutions – those who would not otherwise be able to follow courses in a traditional educational setting due to the constraints of work, household activities, or other competing demands on their time. Mobile learning makes education more accessible in that it enables learners to pursue their studies according to their own schedule. The portability of mobile technology means that mobile learning is not bound by fixed class times; mobile learning enables learning at all times and in all places, during breaks, before or after shifts, at home, or on the go. Interestingly, however, while mobile learning is portable, it is not necessarily associated with physical movement. According to a study conducted by Vavoula, few people actually utilize the time spent in transit to learn (Sharples *et al*., 2005).Mobile learning, as Visser and West (2005) suggest, can also increase access in those situations where cost represents a significant barrier to learning. For those in rural or remote areas where environmental and infrastructure challenges hinder other learning modalities, particularly eLearning, mobile learning presents great opportunities. For the individual learner, mobile technology is much less cost-prohibitive than other technologies like personal computers and broadband connections that are necessary for eLearning.

The ubiquity of mobile phones, moreover, means that educational services can be delivered with learners' existing resources. In as much as mobile technology presents a less cost-prohibitive medium for learning, it represents an important avenue by which to reduce the gap between the haves and the have-nots in contemporary society where access to knowledge and information is increasingly important (Van Weert, 2005).

In regards to cost, the benefit of increased access afforded by mobile learning is particularly relevant in the developing country context. Many developing countries are completely bypassing investments in costly, fixed telephone infrastructure for the installation of mobile phone networks (Traxler and Dearden, 2005; Sharples *et al*., 2007; Motlik, 2008). Thus, mobile learning provides a potential way forward for the expansion of education programs to larger segments of the population rather than via the eLearning model that has been adopted in much of the developed world. Mobile learning allows a method of educational delivery that could be more cost-effective than internet earning methods, not to mention that the ubiquity of mobile phones means that many people are already familiar with mobile phone applications (Motlik, 2008).

In so much as mobile learning exerts an impact on educational outcomes by increasing access, mobile learning represents a continuation and improvement of distance learning through increased utility and applicability (Keegan, 2002). Mobile learning, the literature suggests, broadens the availability of quality education materials through decreased cost and increased flexibility while also enhancing the efficiency and effectiveness of education administration and policy.

2.2. The Role of Mobiles in Promoting New Learning

Others suggest that the benefits of mobile phones are not merely limited to increased access to educational services. Mobile learning, they indicate, can also facilitate changes in the character of learning modalities that in turn

impact educational outcomes. In this regard, mobile learning represents more than a mere extension of traditional forms of education; mobile learning facilitates alternative learning processes and instructional methods that the theories of new learning identify as effective for learning.

According to proponents of new learning, mobiles facilitate designs for personalized learning in that they are responsive to difference and diversity in the way learning occurs. They facilitate designs for situated learning by providing learning during the course of the activity – in the field for a botany student, in the classroom for a teacher trainee, or in the workshop for an engineer. In this sense, mobile learning also facilitates designs for authentic learning, meaning learning that targets real-world problems and involves projects of relevance and interest to the learner (Kukulska-Hulme and Traxler, 2007; Traxler, 2007).

The supposed value of mobiles also arises from the manner in which they facilitate lifelong learning. Mobiles can support the great amount of learning that occurs during the many activities of everyday life, learning that occurs spontaneously in impromptu settings outside of the classroom and outside of the usual environment of home and office. They enable learning that occurs across time and place as learners apply what they learn in one environment to developments in another (Sharples *et al.*, 2005; 2007).

Mobile phones theoretically make learner-centred learning possible by enabling students to customize the transfer of and access to information in order to build on their skills and knowledge and to meet their own educational goals (Sharples *et al.*, 2007). Mobile learning thus exerts a democratizing effect on the learning experience as learners take a greater responsibility for the learning process instead of being passively fed information by an instructor. Whereas in traditional models of education the goal is the transfer of knowledge from teacher to student, mobile learning empowers students to actively participate in the learning process to make it a process of construction and not mere instruction (Dela Pena-Bandalaria, 2007). Mobile learning thus represents learning that is not 'just-in-case,' education for the sake of producing a bank of knowledge, but rather represents learning that is 'just-in-time,' 'just enough,' or 'just-for-me' (Traxler, 2007). As a facilitator of new learning, mobile learning goes beyond an emphasis on the possession of information to enabling learners to find, identify, manipulate, and evaluate existing information (Brown, 2003).

Mobiles can also supposedly facilitate knowledge-centered learning by providing efficient and inventive methods by which students can learn with understanding – meaning that they deepen their understanding of a specific subject matter rather than merely memorizing large amounts of information – and then use this knowledge as a basis for new learning through integration and interconnection. Mobile devices make possible assessment-centered learning as well by enabling the provision of continual feedback throughout the learning process, presenting learners with diagnosis and formative guidance as to what might be improved or what might be learned next. Moreover, in providing prompt feedback, mobile learning maintains the appeal of learning and provides a motivating factor that can at times be lacking in traditional modes of education (Geddes, 2004). Mobile phones also facilitate community-centered learning, meaning learning that the learner deems valuable because of its relevance to the surrounding social context; mobile learning facilitates learning that can be used to achieve socio-economic goals that respond to problems, such as problems related to health or family care confronting the surrounding community (Wagner and Kozma, 2005; Sharples *et al.*, 2007).

Given that social interaction is central to effective learning, as indicated by theories of new learning, mobile phones should also impact educational outcomes by facilitating communication. Mobiles permit collaborative learning and continued conversation despite physical location and thus advance the process of coming to know, which occurs through conversations across contexts and among various people. Via mobile technology, learners engage in conversation whereby they resolve differences, understand the experiences of others, and create common interpretations and shared understanding of the world (Nyiri, 2002; Sharples *et al.*, 2007).

In promoting educational modalities that accord with the theories of new learning, mobile learning should offer an appeal aspect that also impacts educational outcomes. Mobile learning can be particularly appealing for those who have not succeeded in traditional learning environments; it can attract those not enamoured by traditional learning approaches that are generalized and decontextualized in nature. Mobile learning is also beneficial in that it can provide immediate feedback and thus provide continued motivation for those who are not motivated by traditional educational settings. Moreover, mobile learning presents an appeal simply because the use of mobile technology in and of itself presents something new and exciting for a great array of learners (Geddes, 2004).

Mobiles, therefore, should impact educational outcomes by altering the character of education and learning because the nature of mobile technology converges with and facilitates new learning. The new learning is personalized, learner-centred, situated, collaborative, ubiquitous, and lifelong. Likewise, mobile technology is increasingly personal, user-centred, mobile, networked, ubiquitous, and durable (Sharples *et al.*, 2007). The literature indicates that the benefits afforded by this convergence should exert a positive impact on educational outcomes.

3. Quality Education

What does quality mean in the context of education? Many definitions of quality in education exist, testifying to the complexity and multifaceted nature of the concept. The terms efficiency, effectiveness, equity and quality have often been used synonymously (Adams, 1993). Considerable consensus exists around the basic dimensions of quality education today, however. Quality education includes:

- Learners who are healthy, well-nourished and ready to participate and learn, and supported in learning by their families and communities;
- Environments that are healthy, safe, protective and gender-sensitive, and provide adequate resources and facilities;
- Content that is reflected in relevant curricula and materials for the acquisition of basic skills, especially in the areas of literacy, numeracy and skills for life, and knowledge in such areas as gender, health, nutrition, HIV/AIDS prevention and peace;

- Processes through which trained teachers use child-centered teaching approaches in well-managed classrooms and schools and skilful assessment to facilitate learning and reduce disparities;
- Outcomes that encompass knowledge, skills and attitudes, and are linked to national goals for education and positive participation in society.

This definition allows for an understanding of education as a complex system embedded in a political, cultural and economic context.

4. Merits and Demerits/ Limitations of Mobile Learning

It is often clear that technological innovations have great roles in promoting learning in various contexts. Learning through some technological devices enables the learners to learn in a non-classroom environment when they are at home in front of their personal computers online or offline. However, there is also considerable number of challenges or limitations.

4.1. Merits of Mobile Learning

A. Improved Access to Education

Mobile learning improves the access of educations due to its very nature. First, individuals can use relatively inexpensive everyday technologies that can be manageable at lower income level. It also provides better opportunities to acquire skills at one's own pace, with a degree of privacy that may be missing when using shared computer facilities or relying on equipment belonging to somebody else. This is particularly important for women and girls. Moreover, it gives good support for preferred modes of interaction, e.g. accessing audio content or participating in social networks on the move. It also avails authentic learning needs and caters for interests beyond what is provided in class, through access to additional content such as podcasts or free learning materials.

B. Support for Vital Communication

Quick communication with valuable response/feedback is very important in classroom environment. Mobile learning supports this by creating opportunities for learners to give immediate feedback on their learning experience. This leads to better assessment and diagnosis of learning problems as they occur. Mobile learning also provides psychological support for those at risk of dropping out, through social networks or personal guidance from a mentor.

C. Attracting Underserved Populations of Potential Students

This one is a critical advantage of mobile learning that contributes for both access and quality of education. It is clear that mobile learning makes learning materials accessible to a larger audience, through podcasts, mobile applications, blogs and e-books, which are seen by potential students. This provides opportunities for disadvantaged social groups to improve their life chances through learning.

D. Improving Teaching Quality

Mobile learning revitalizes the curriculum. It provides opportunities for teachers to rethinking teaching methods and implementing improved feedback to learners. In addition, it turns geographically dispersed learners into a valuable teaching resource by enabling them to contribute their local knowledge and research data more easily. Mobile learning also supports learner retention, progression and transition.

E. Supporting Continuing Education

It makes the learning experience more tailored to the changing needs of individuals, encouraging learners to return for knowledge updating and further study. Moreover, it provides equitable access to education, for those suffering exclusion for social or economic reasons. It fosters the culture of lifelong learning by which learners are taking part in organized education but also habitually using personal technologies to support inquiry and knowledge building whenever the need arises. Mobile leaning develops a culture of life-wide learning, whereby individuals recognize the value of learning in unconventional or everyday contexts and are enabled to realize the full breadth of their potential contributions to society.

4.2. Demerits or Limitations of Mobile Learning

A. Awareness Creation and Management

Educational establishments face the challenge of persuading educators that mobile technology is a serious option for education rather than a gimmick. Established educators resent the loss of control implied by mobile learning activities that are learner-led and take place outside the classroom. Uncertainty about digital content rights management may inhibit production of mobile-friendly content. Development of mobile applications requires up-skilling or employing specialist staff.

B. Skills and Competence

Educators often lack the competences required to develop mobile learning opportunities for their students. Conventional assessment or evaluation practices are put under scrutiny as mobile learning may call for different outcomes. Learners may be familiar with mobile devices in general but not as learning tools. Educators may not feel competent to support learners who are primarily focused on real-life learning, and those who expect mobile learning to cater to their individual preferences or needs.

C. Finance Challenges

Approaches to the implementation of mobile learning have included sponsorship from device manufacturers which has enabled organizations to provide whole cohorts of learners with devices. Whilst this is useful as a

springboard, it raises issues of ownership and sustainability. Recent thinking favours use of learners' own devices or assisting them to buy an inexpensive device.

D. Musclenous Challenges

The need to keep a mobile device charged for longer periods of use remains an issue.

Small screen size can limit activities such as reading, although many learners are content to read in this way. Costs of connectivity must be considered alongside the cost of the mobile device, as both teachers and learners perceive this as a barrier to widespread use.

Environmental factors such as sunshine and rain impact on the practicality of learning outdoors. Unwanted noise and interruptions can impact on the quality of learning in public areas and when travelling.

5. Best Practices in Mobile Learning

As mobile learning fosters the quality of the teaching learning process, various countries has been exploiting it. According to UNESCO (2010) - Institute of Information Technologies policy brief has examined the practice across the world and forwarded the following as the best ones.

A. Individual and Mass Education

Mobile learning works best when used to support learner-led inquiry, communities and social networks, work-based, field-based and game-based learning, continuous reflection, as a way to collect evidence of achievement, to promote social inclusion and to sustain lifelong learning. Learners should be encouraged to collaborate with teachers to define how a mobile device can best support their learning, and to share this knowledge with others. By attending to the needs of learners with disabilities, learning provision is also improved for those who have hidden disabilities and those who learn more effectively when material is presented in alternative ways.

In mass education, mobile learning should be used to support wide-scale literacy and numeracy increase and teacher training. It can improve classroom interaction by giving learners the chance to communicate their ideas by texting or responding to surveys through their mobile phones, which helps to overcome shyness and leads to improved participation. It can also be used to offer a personalized learning experience within a large group. Mass distance education can be enhanced by using mobile devices as an additional means of contact and a way to capture experiences and data from different parts of the globe.

B. Teacher Training

Teacher education for mobile learning should cover mobile pedagogy as well as some technical training to build confidence. Teachers need opportunities to use mobile technology for personal learning and preparation of teaching materials, and to share resources and practical case studies. Informal mutual support pairings and networks are beneficial, since access to technical assistance may be difficult in remote locations and these structures also help teachers keep abreast of rapid developments in technology and pedagogy.

C. Gender-Related and Child Education

Mobile devices appeal to girls and women as well as boys and men, although they may favour different activities. Mobile learning supports empowerment of underprivileged, marginalized groups, particularly women and children in rural areas. Developing literacy and numeracy skills leads to reduced dependence on others. For example, women can take part in mobile learning programmes which enable them to receive text messages on the phone to practise their reading and writing. Mobile games have been used by children and elders in rural areas in India to learn the English language.

D. Learners with Disabilities

The organizer functions usually included in mobile devices are useful for those with learning difficulties, to help them organize their lives and achieve some independence if relevant. Dictionaries downloaded to mobile phones or games consoles, are helpful as reference tools for learners with dyslexia and other learning difficulties. Text-to-speech conversion and voice recognition are valuable for users with disabilities or learning difficulties.

6. Feasibility to Practice in the Ethiopian Context

Ethiopia is one of the African countries which has given due emphasis to access quality education to its citizens. In this effort, it has established more than many universities, colleges, high schools and primary schools. These days the government is committed to work towards ensuring the quality of education in different academic levels ranging from the lower to the higher levels.

As the issue of quality becomes the critical in the Ethiopian context, it is feasible to support the teaching learning process through recent technological innovations like mobile phones which are almost accessible for most of the students. The best experiences which various countries practiced to bring quality in education can be considered and adapted to the Ethiopian context.

One of the quality issues in education is teacher training. If teachers are not well trained and equipped with varieties of methodological knowledge, it will be difficult to maintain the quality of classroom instructions. Mobile learning provides teachers with varieties of teaching methods whenever they want to use them in classrooms regardless of time and place constraints. That means it trains them in informally. Likewise, teachers in Ethiopia should be trained how to use their mobiles in order to access for varieties of teaching methodologies so as to be used in a classroom to meet their students' interest.

Mobile learning considers gender related issues in education. Ethiopia is making a significant progress in bridging gender gaps. This attempt can be better achieved if mobile learning is introduced in various levels. As

mobile phone is common for boys and girls (men/ women), it creates equal opportunity to access resources and learning materials depending on their needs.

The other best practice which seems to be very importance for Ethiopia is the use of mobile learning for learners with disabilities. As the regular classroom doesn't give equal opportunity for the learners with disabilities, it is better to look for other mechanism to bridge the gap- that is mobile learning. Learners with disabilities of download lectures on specific topics, dictionaries embedded with pronunciation and etc. which really make them competent with other students.

Finally, mobile learning has a lot to contribute for the quality of education. Experiences revealed that developed and developing countries are exploiting it in their education system. But, they included it in their education policy with details of strategies that consider their contexts. Likewise, Ethiopia, as a beginner, is expected to incorporate mobile learning in a policy framework for its formal implementation.

7. Conclusions

Many teachers in developing nations think the quality of education learners in the rural setting are getting is of low quality as a result of overcrowded classes as well as limited resources (Wabwoba, 2011). This becomes true in Ethiopia in which 85% of the population lives in the rural areas. This calls for thought of information communication technologies, especially mobile technologies which are becoming accessible to the rural community today, to fill the gap

It is not in doubt, however, that mobile technologies has the potential to play a more powerful role in increasing resources and improving the environment for learning. Mobile phone technologies also have the potential to improve greatly the accessibility of education to all irrespective of place, time and shortage of resources. Wireless technologies that are inclusive of mobile phones have great potential and are fairly affordable in many developing nations. Mobile devices enable both the teacher and students to employ computing power without time or location constraints.

However, these very mobile phones have raised a lot of debate and seem to be very controversial within the schools. Love them, or hate them, the chances are very high that students already own cell phones. Instead of burning them in schools it is better to consider how best they can be used positively thus integrating them into the classroom routines. Since the students already own this technology, and need very little teaching on how to use it, educators need to think of how to take advantage of the opportunity that they present.

Wireless learning environments, which are embedded in mobiles, offer many educational possibilities that are near impossibility to achieve in any other learning environments. Wireless learning environments have the following features based on its ability to link to various computing powers with mobile learning devices: enhancing availability and accessibility of information networks; engaging students in learning-related activities in diverse physical locations; supporting group work in projects; improving communication and collaborative learning in the classroom, and supporting quick content delivery.

Thus, the Ethiopian education system should consider those advantages which have significant potential to ensure the quality of education in the country. That means, instead of banning mobile phone in schools, we have to design policy and strategies to exploit them in the way mobile technologies contribute to the quality of education. Similarly, stakeholders should be oriented and trained formally on how to exploit the technology before officially launching it.

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