CHALLENGES AND OPPORTUNITIES FOR MOBILE LEARNING AS AN ASSET FOR DEVELOPMENT

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ABSTRACT

In every society, education is the most important objective and a catalyst for development. In today’s era of computer, e-learning has brought the education to a wider population, improved the quality of education and also brought the transparency in the education system. Meanwhile, the cost, handiness and interactive display of the mobile devices such as smart phones, has made it much popular. Thus, the task which has been started by the e-learning can be accomplished by the mobile learning. This will help to spread the accessibility of the education to everyone especially in the developing country like India where there is a high demand of information related to health, agriculture and education. In the last few years this gap has been covered by SMS-based applications. So, mobile technologies such as SMS-based applications are catering to the needs of a large population. Mobile learning encompasses learning at all levels i.e. both formal and non-formal that uses an information network whether fully or partially for course delivery interaction. This paper examines different challenges and opportunities for providing mobile learning to the common masses in India.

Keyword: E-Learning, Mobile Learning, Information and Communication Technologies, Net neutrality, Sustainable Development, Web based learning

[1] INTRODUCTION

Universal Education is a human right as well as one of the Millennium Goals proposed by the United Nations for human development. Nowadays, individuals need to learn new abilities to face life challenges, instead of learning perishable or encyclopedic knowledge. Among these new abilities, digital competences are necessary to develop in the Information Society. In the Information Society, digital competences are key aspects to change the current educational models to include Sustainable Development.
The Human Development Report 2001 [1], postulates a direct relation between the Digital Divide and the opportunities for development of a region or country. The Digital Divide concept refers to the differences between groups or countries to access ICT technologies. Addressing the Digital Divide problem, means working in different dimensions: infrastructures, access to ICT equipment as well as teaching the basic skills to interact with ICT. This last dimension, presents a new challenge for education: teaching digital competencies.

The digital divide separates countries and social groups in two groups: the ones that have access to ICT technologies and the ones that do not have. But among ICT technologies, there is one technology that has the potential to break the digital divide, because it is widely used in developing countries: mobile phones.

According to the International Telecommunication Union (ITU) [2], there are 370 million mobile users only in Africa. Wireless coverage and mobile phones is a technology that is spreading really fast in Africa (mobile cellular penetration in Africa in 2010 is about 68%), and is being adopted for multiple purposes by its inhabitants. In the Information Society Report published by the International Telecommunication Union, the developing countries are experiencing an important increase on the use of mobile phones. The ITU states that: “It is a technology that has permeated more widely than any other into new areas, and we must examine how we can utilize this technology going forward, to help narrow the digital divide”.

Since mobile phones are widely used both in developed and developing countries, we propose to use this technology to implement e-learning in developing countries (this is called mobile learning or m-learning). Authors believe that m-learning will not replace e-learning but complement it.

[2] ICT INFRASTRUCTURE IN INDIA

IT infrastructures face many problems in developing countries. Problems such as intermittent electric supply, overheating of networking components, lack of adequate infrastructures and IT systems personnel, problems generated by climatic conditions (sand and dust), and even theft of hardware. Because of these handicaps, it is very hard and expensive, to build and maintain information systems applications; because servers cannot last. Only government and huge companies, usually owned by foreign capital, are able to build and maintain data centers. Despite the hostile environment there are two IT technologies that remain functional in most developing countries: Internet access and mobile phones.

Internet or DSL connections are still very expensive and can be accessed only by companies and small part of the population. Meanwhile Internet access is still provided to a high percentage of the population by Internet cafe businesses. Internet cafes are widespread, relatively cheap and allow individuals and small businesses access to the Internet without the need to own and maintain a computer.
Mobile phones are spreading really fast in developing countries. The proliferation of mobile phones in developing countries is due to several factors. One of the most important ones is the relatively low cost of the mobile terminal. In most of the world countries, it is possible to find a mobile phone for about 40$. Besides, there is a second hand market that allows people from developing countries to buy a mobile phone for a low price. These second hand market starts in the developed countries, where people tend to change their mobile phone regularly. These terminals that are no longer used in the developed countries are sold in the developed countries for a lower price.

Mobile phones are personal devices that serve many purposes for its owner: communications (voice, SMS - Internet access is not widespread yet), photo and video camera or music. Sometimes mobile phones are used as lanterns, since public illumination coverage is very low and many homes do not have electric power supply. For many people in developing countries [3]:

- Mobile phones are their only computing device.
- They are portable networked computers.

In developing countries there are high demand of information related to health, agriculture and education. SMS-based applications have covered this gap in the last years, creating a huge market for SMS. So SMS-based applications and in general mobile technologies are providing information services to a large percentage of population. Mobile phones are being used intensively throughout Africa for a lot of purposes such as heath, agriculture, education or banking services [3]. Mobile phones allow:

- Communication with family and friends.
- Access to information by subscription to various short code services such as news updates. These updated may be coffee or other agricultural price updates. The user types a short code and then receives and update of information.
- Emerge of innovative mobile services such as mobile payment (for example, this service is called m-pesa in Kenya).
- Innovative individuals are building solutions based on mobile phones to different types of problems.
- Job creation.

The successful stories around mobile technologies in developing countries share one element in common: the solutions are envisioned, applied and adopted bottom up, instead of top down. When mobile technologies offer open and general-purpose systems, the people have figured out ways to use the technologies to satisfy the needs they need the most. Meanwhile top down designed services are usually destined for failure, because they usually miss the real needs of the population and become very expensive due to communication campaigns to foster adoption.
MOBILE LEARNING FOR DEVELOPMENT IN INDIA

There has been a rapid growth of mobile technologies and services in almost all the developing countries. This has generated a positive feeling among the academics and other professionals that mobile technology can improve the education in those countries as result universal primary education, which is one of the Millennium Goals proposed by the United Nations, can be achieved. The fight against digital divide and for sustainable development can also be fought by the mobile technology.

In 2004, Brown [4] has proposed a model for m-learning in Africa. The University of Pretoria (South Africa) started an m-learning pilot project at 2002. In this university three programs of the Faculty of Education adopted the m-learning pilot project. For this project 99% of the students had mobile phones and almost all of them lived in rural areas with having no fixed ICT infrastructure. Bulk SMS were used for basic administrative support to the students. The project was quite successful because learners responded in mass and almost immediately on information provided in SMS-messages. Some conclusions of the project were that:

- M-learning is a very supportive mode of education.
- M-learning provides flexibilities for a variety of learning and lifestyles.
- The most suitable mobile device for learners in Africa is the mobile phone.

In 2008, Mekuria [5] and [6] described a master in mobile computing which was developed at the Makerere University, Uganda, that helped develop more advanced mobile services adapted to the socio-economic situation of developing countries. This master program provides students with knowledge to develop software applications and services for mobile devices as well as to promote sustainable development because:

- Students that finish the program go back to their home village with a mobile service to be tested by the people of the village.
- Students learn important knowledge to develop mobile services.

From the teacher point of view [7] developed two initiatives to bring universal primary education to developing countries. The Digital Education Enhancement Project (DEEP) carried out an initial study into the potential of ICT for teacher education in developing nations, working with teachers and institutions in Egypt and South Africa.

The overarching research questions for DEEP were:

1. How does ICT transform the pedagogic knowledge and practice of teachers and the communities in which they live and work?
2. What is the impact of ICT- enhanced strategies on pupil achievement and motivation?

The SEMA project was started in Kenya in 2003 to support school based teacher development. The project used SMS messages broadcasting for several purposes such as: delivering study guide
material, content such as hints, tips or summaries, reminders or urgent messages about errata or cancellations.

[4] CHALLENGES OF MOBILE LEARNING IN DEVELOPING COUNTRIES

Although mobile phones have rapidly spread in developing countries, the availability and accessibility of this technology does not assure that it will succeed in fighting against the digital divide.

There is another dimension of the digital divide that affects the attitude of people towards technology. Depending on the attitude of people towards technology, we can find consumers and producers of information and knowledge. Consumers are those people that only use ICT to find information and applications. Creators are people that do not only look for information or applications but also create or produce information and knowledge.

To break the digital divide, it is important to break the divide between consumers and producers. It is not enough to learn how to use technology to find information. It is necessary to learn how to contribute in the creation of information and knowledge.

The previous point is very important in developing countries because if they only use information provided by developed countries, they may risk from cultural colonization. For example, like the cultural colonization suffered in Europe from the EEUU TV series in the 1970s.

This tendency towards the creation of knowledge and contents is already developing in many places. From 2000, new elements that influence the learning process started to appear. Technologies such as the Web 2.0 are elements that are influencing the way we learn as well as the way teachers teach. Tools such as blogs, wikis, podcasts or social networks are changing the learning process. For example, students may be able to discuss a variety of topics with people of different countries around the world. They use the acquired knowledge to do their assignments. With the introduction of Web 2.0, e-learning is changing because students participate in the creation of contents. Students became producers of contents [9].

Net neutrality, the guaranty that the quality and cost of Internet access is independent from the kind of service that is used and intended for, is a key quality that needs to be preserved if mobile Internet has to become an asset for education, innovation and development. Last year Google and Verizon signed an agreement stating that net neutrality should be preserved in landlines, but could be overseen on the mobile space to foster its development and economical viability. But this development and economical viability is only on behalf of the operator, who by the way is already earning a lot of money. In Europe we have already seen with WAP phones, how a crippled Internet access only delays the adoption of the use and kills innovation. Europe had the lead in mobile technologies because its adoption of the GSM standard for digital mobile communications, and lost it to American companies (Apple, RIM and Google) because of a true open Internet access
and experience. If developing countries get a crippled Internet access it will only slow down or prevent its adoption and the benefits presented in this paper.

[5] CONCLUSIONS

In the Information Society, information and knowledge have a central role in development. A country can grow and develop in the Information Society without large infrastructures because information and knowledge is the key to social economic growth. This is one of the reasons why mobile technology has succeeded in developing countries, while other ICT technologies have not. Mobile phones do not need large communication infrastructures and the cost of the device as well as the cost of mobile services is relatively inexpensive.

Mobile technology may encourage young entrepreneurs from developing countries who create new mobile services or applications. This socio-economic activity may provide new job creation among other benefits. If the Information Society must succeed in developing countries, it is necessary to incorporate basic ICT skills in education. It is also important to improve Internet access, maximize the use of open source software and adapt it to the local socio-economic situation.

REFERENCES


