

Theoretical perspective: E-Learning Challenges and Proposed Framework in Developing Countries

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Abstract

The foremost purpose of this paper is to identify the footprint of e-learning and the major challenges of e-learning in developing countries – in particular in Ethiopian higher learning institutions – and to eventually propose a framework to facilitate e-learning.

One of the most obvious problems in e-learning is finding a suitable e-learning framework which provides a guideline for the implementation of e-learning and considers the technical, operational, organisational, cultural, socio-economical and contextual domains, especially in the context of developing countries. The aim of this paper is to review e-learning challenges and identify different e-learning frameworks from previously conducted research which focuses on developing countries, and to propose a framework which encompasses major e-learning elements and components such as technological, pedagogical, training, contextual and individual aspects.

The solutions discussed in the framework can be implemented in various ways, depending on the situations of the educational institutions and the users. The framework may serve as a guideline for traditional and distance education universities in developing countries.

Keywords

e-learning, e-learning framework, e-learning challenges

Introduction

E-learning serves as a major tool in ushering educational institutions into a new stage of development. The increased deployment of learning technologies in higher education will also reduce the price of hardware and connectivity (Salmon 2005).

This new form of knowledge transmission has benefited universities by transforming the current teaching system from a package of information to be delivered, into a permanent open learning environment, which has given birth to the digital campus. E-learning further provides great flexibility for learners to choose the specific place for their studies and the amount of time that they wish to devote to their training, to suit their professional and personal programmes. This has made it possible to implement major projects at

lower costs and thus bolster some companies in a world of global competition. E-learning has also maximised the advantages of face-to-face discussion and online methods as a combined teaching mode which contributes to the development of the learner's knowledge (Osguthorpe 2003).

However, in developing countries, and particularly in the Ethiopian context, there are insufficient studies on e-learning systems which provide an e-learning framework that summarises the challenges and proposed solutions to implement e-learning in higher learning Institutions. Though a great quantity of research has been conducted by different researchers on e-learning throughout the world, there are a few references to e-learning in developing countries like Ethiopia. The limitations of a face-to-face type of education is clearly identified in the Ethiopian Education Sector Development Program (ESDP) report, which refers to

“the fact that a large majority of the Ethiopian population lives in rural areas and in fairly dispersed communities which poses specific problems for the education sector: spreading education and enshrining equitable access to education presents specific challenges in accessing education in such a geographic context” (ESDP 2010:9).

The report further pinpoints Ethiopia's long-term achievement plan to become a middle-income country. This calls for an economic transformation that requires the application of science, technology and innovation. The unfolding increase in the commitment to the overall level of education envisions the further expansion of access to high-quality basic education and the improvement of the overall literacy rate in the population (ESDP 2010:9).

Literature Review

In literature reviews of the work of different scholars the status of e-learning in developing countries and in particular Ethiopia, the challenges of e-learning, and the development of e-learning frameworks are discussed. The aim of this paper is to discuss e-learning challenges and propose an e-learning framework based on previously conducted research.

Status of E-learning in Developing Countries and in Particular in Ethiopia

As indicated by La Rocque and Latham (2003), education is the foundation of African development. A number of studies have shown that education, and especially primary education, has a positive effect on economic growth, earnings, and productivity in developing countries. Technology, and e-learning in particular, can help developing countries in Africa to meet both old and new challenges by providing a flexible and cost-effective medium for educating large numbers of school-age and adult Africans. E-learning have many potential benefits, but because of inherent challenges such as financing, skills, and capacity, it is highly unlikely that African governments will be able to “go it alone”. For this reason partnerships with the private sector are absolutely essential to bridge the digital divide and bring e-learning to Africa in a big way. The global market for e-learning and the current provision of distance learning and use of ICTs in education in Africa were discussed (La Rocque & Latham 2003). The following six goals were set (La Rocque & Latham 2003):

- improving early childhood care and education
- ensuring that by 2015 all children have access to, and complete, free and compulsory primary education of good quality

- ensuring equitable access to life-skills programmes
- achieving a 50 percent increase in adult literacy by 2015
- eliminating gender disparities in primary and secondary education by 2005
- improving all aspects of the quality of education

Currently, ICT has become very important in facilitating open and distance education for broader communities. Through the use of multimedia technologies, e-learning ensures access to information for education, training and lifelong learning purposes. Developing countries are benefiting from the recent expansion of e-learning thanks to the establishment of major facilities like infrastructure, technology and relevant content, and a responsive learner community. The benefit of e-learning is that anyone can avail themselves of this learning and teaching aid from anywhere, as there is no geographical barrier limiting access. Global participation is possible, as the internet has made the process much easier and comfortable (Gallagher 2001). Njagi (2006) explains that the e-learning project at the Ethiopian Civil Service College (ECSC) in Ethiopia includes ICT infrastructure like ICT equipment, internet connectivity, durable system stability, the maintenance of system quality, and the application of technical standards amongst other things. In terms of economy, financial safety devices have been provided for and resource efficiency and effectiveness are taken into consideration. The organisational and administrative structures are favourable for e-learning and have the support from top management. Socioculturally, a training/learning culture of self-study is promoted and supported. As far as didactics are concerned, the qualification and commitment of educational personnel are stressed, as well as the integration of e-learning in curricula, and reusability (the application of didactical standards). The objectives of the e-learning project were to develop, implement and support three online courses – Procurement, Human Resource Management and Computer Basics – and build the capacity of civil servants throughout the country. The project began in January/February 2006 after an international e-learning advisor was recruited to coordinate and support the development and implementation of the e-learning project.

Various research projects have been conducted on the status of e-learning in developing countries like those in Africa. Unwin (2008) indicated in a report that summarised information about the status of e-learning in Africa (based on 316 responses to a questionnaire circulated in 2007 to people on the e-Learning Africa database) that some of the respondents were unable to say which Learning Management System (LMS) they were using, as they are not using an integrated formal learning management system at all, but are rather using basic digital technologies to enhance their learning. They interpreted e-learning simply as accessing information from the Web. This indicates that e-learning is in its infancy in Africa. As a result of the survey, the Ethiopian federal government, in conjunction with the State Technical and Vocational Education and Training (TVET) Authorities and representatives of the ICT sector are currently developing an appropriate strategy for the further development of ICT and blended learning (including e-learning), and addressing the issues of e-module development, the development of distance education in TVET, the necessary human resource development and other factors influencing the availability of ICT in the TVET sectors. The respondents to this survey were from 42 different African countries, such as Kenya (15%), South Africa (12%), Nigeria (11%), Ethiopia (9%) and Uganda (8%).

Challenges of E-learning

The fundamental obstacle to the growth of e-learning is lack of access to the necessary technology infrastructure. Poor or insufficient technology infrastructure is just as bad, as it can lead to unpleasant experiences that may cause more damage than good to teachers, students and the learning experience. While the costs of the hardware and software are falling, there are often other costs that have not been

factored into the deployment of e-learning ventures. The most important of these are the costs of infrastructure support and maintenance, as well as the appropriate training of staff to enable them to make the most of the technology (Naidu 2003).

Andersson and Grönlund (2009) conducted research on the critical challenges of e-learning, with a particular focus on developing countries. The researchers conducted a comprehensive literature review of e-learning challenges for the purpose of understanding how e-learning can be implemented in developing countries. The literature study found 278 papers, which were summarised to 60, based on exclusion and inclusion criteria designed to find papers of the best quality, as well as papers that clearly investigated the well-defined challenges. In this research, 30 specific challenges were found and grouped into four categories, namely courses, individuals, technology and context. The researchers concluded that the challenges are equally valid for both developed and developing countries; though in developing countries more papers focus on access to technology and context, while in developed countries more papers concern individuals.

Similarly, Omidinia, Masrom and Selamat (2011) conducted research on e-learning and ICT infrastructure in developing countries. The objective of the research was to analyse what had been achieved up to that point in time to make e-learning a major success and transform Iran. The aim of the research was to review the challenges and infrastructure of e-learning in developing countries. The researchers argued that it is important to understand all the challenges faced by those concerned with implementing e-learning in developing countries. The research findings showed that the success of e-learning depends on implementation expertise, technology focus, open source technology and one-time funding.

Sife, Lwoga and Sanga (2007) conducted research on the application of ICTs in teaching and learning by reviewing the e-learning context in Tanzanian universities and noted that the implementation of e-learning in Tanzanian universities is still very low, despite the opportunities provided by open-source technology and the government. Some of the Tanzanian universities still face many challenges associated with the lack of a systematic approach to ICT implementation, lack of awareness, and poor attitude towards ICTs, as well as a lack of administrative and technical support, transformation in higher education, staff development, and ownership.

Task Force e-Learning – COIMBRA Group (2012) mentioned that although there is awareness across European higher education institutions that ICT plays an essential role in pedagogical innovation, truly effective use of ICT remains unreliable. A great deal of competent design and implementation work is needed in order to ensure that these technologies truly facilitate or realise 21st century student-centred, competence-oriented and flexible higher education, rather than renewing and reinforcing purely instruction-based practices.

Even though different researchers have been trying to investigate e-learning challenges, one of the most obvious problems is finding validated e-learning frameworks which provide a guideline for the implementation of e-learning which considers the technical, operational, organisational, cultural, socio-economical and contextual domains.

E-learning Structures

The aim of this paper is to propose an e-learning frame of reference that will contribute to the implementation of e-learning by filling the gap in the existing e-learning approach of developing countries. As stated by Garrison (2011), the 21st century e-learning goal is to provide a framework for understanding the application of e-learning in higher education.

Similarly, Bada and Khazali (2006), Sankale (2006) and Nodumo (2007) indicated that the use of ICT in higher education institutions can potentially enhance the quality of teaching and learning. However, the existing e-learning platforms of higher education institutions in developing countries are not fully optimised. This may be attributed to barriers such as a lack of suitable structures that bridle the successful integration of e-learning in education systems.

As Engelbrecht (2003) explained, e-learning models provide valuable frames of reference for understanding the integration of technology and pedagogy and new e-learning models are continually emerging as new research findings in the area of e-learning becomes available. According to Engelbrecht, e-learning models are attempts to develop frameworks to address the concerns of the learner and the challenges presented by the technology, so that online learning can take place effectively.

In line with this, Deepwell (2007:36) explained how quality can be incorporated into the e-learning framework via evaluation. The researcher mentioned that “e-learning evaluation methodology is a powerful means of ensuring quality and stability as part of e-learning implementation”. Deepwell (2007) conducted his research by examining a five-year evaluation study of an institution-wide implementation of e-learning. The evaluation framework developed through this study was constructed with three purposes in mind, that is, monitoring, development, and knowledge. He argued that by being embedded in the pedagogical, technological, cultural, and organisational domains, the developed evaluation framework enhanced the initiative and afforded quality to it.

Glancy and Isenberg (2013) also conducted research on the conceptual e-learning framework which supports self-directed learning. This conceptual framework was developed based on the andragogy theory, the transformative learning theory, and the media synchronicity theory and supports self-directed e-learning as it has the potential to out-perform not only the current management-like blackboard, but also traditional face-to-face learning for adult education. The testing result of the concept showed increased online activity, innovation, and creativity on the part of learners.

Kituyi and Tusubira (2013) conducted another investigation of the e-learning framework. The objective of their research was to design a framework for integrating the concept of e-learning into higher education institutions in developing countries. The researchers used a qualitative method (questionnaires) to collect their data and subsequently used descriptive statistics to analyse the data. The authors claimed that their results could improve the integration of e-learning into higher education institutions operating in developing countries, as the framework they developed provides a step-by-step approach to be used to integrate e-learning. The framework also identifies the key stakeholders and their roles to ensure the success of the integration of e-learning.

Huang (2010), on the other hand, conducted research on a framework for a hybrid e-learning model. The objective of the research was to develop a planning and implementation framework for a hybrid e-learning model. It was done by ascertaining the administrative difficulties involved in the operation of a part-time Library Information System (LIS) postgraduate programme in Taiwan, and by creating possible e-learning opportunities to alleviate those difficulties. This paper was the first paper to borrow two classic management theories in this field of research. The two theories are industrial organisation (IO) and the resource-based view (RBV). The researcher collected the data through a qualitative interview approach which enabled him to understand the social and organisational context. Consequently, he found four practical applications that demonstrated how LIS educators could formulate an action plan for a part-time LIS postgraduate programme using e-learning.

In their research on the design of a framework for integrating e-learning in higher education institutions in developing countries, Kituyi and Tusubira's (2013) collected data from 266 university students and the staff of five universities in Uganda using a questionnaire. The data were analysed using descriptive statistics. The requirements for e-learning integration were identified as: the use of projection equipment; the use of e-learning methods to teach and a face-to-face method to administer tests and exams; harmonisation of the course content for e-learning and face-to-face consultation during the design phase; the incorporation of 3D pictures, audio and videos in classrooms, and so forth. The developed framework was validated for applicability using case studies in all the participating universities. The validation results indicated that the proposed framework, if well implemented, could help improve e-learning integration in higher education institutions operating in developing countries. This is because the framework provides a step-by-step approach to e-learning integration and also identifies the key stakeholders and their roles to ensure the successful integration of e-learning.

Islam (2013) also conducted research on a framework for e-learning in developing countries, which summarised the challenges and corresponding solutions. Islam noted that there are gaps in the research on e-learning challenges and corresponding solutions for the implementation of e-learning in developing countries in general. The researcher indicated that no study was found which simultaneously focused on the problems and the solutions for the implementation of e-learning in developing countries. Islam's framework identifies five major challenges with several subcategories, such as pedagogical, training, technological, contextual and individual aspects. The framework included a set of proposed solutions such as open education resources (OER), online lecture material including outlines, a national committee for ICT in education, and the introduction of a flip method. The framework is as follows:

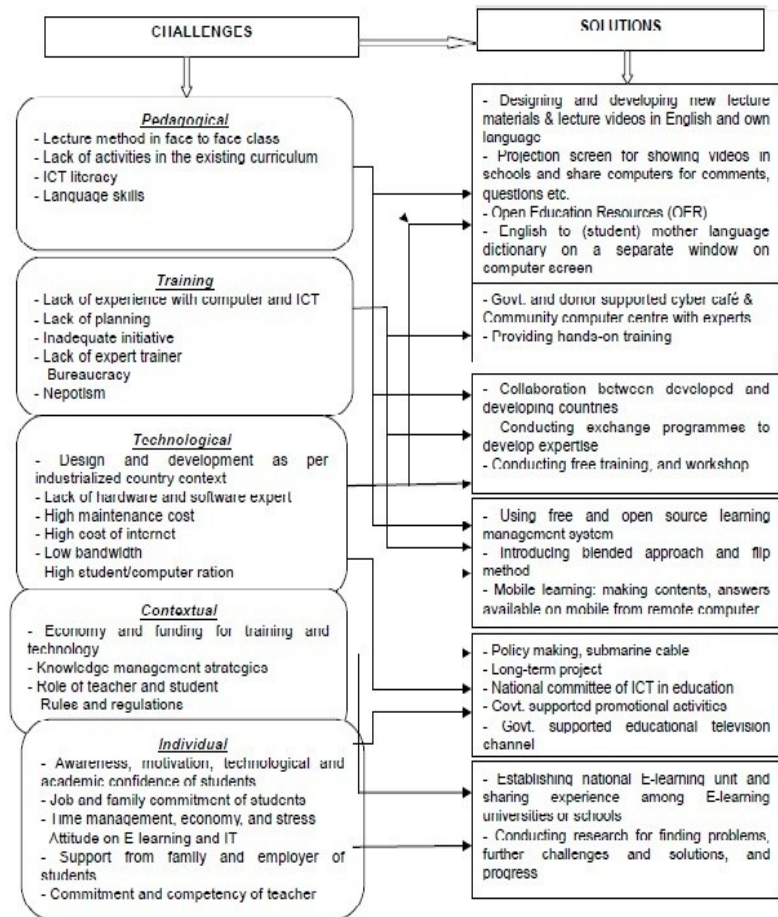


Figure 1 Framework for E-learning Challenges and Solutions in Developing Countries (Islam 2013)

A framework for employing e-learning is a valuable tool for knowledge management. It encompasses the planning and implementation elements necessary for organisations to leverage existing technologies and implement new ones to promote organisational learning and contribute to the management of organisational knowledge (Wild, Griggs & Downing 2002).

Conclusion

When developing an e-learning framework, it is important to do so strategically by attempting to identify and analyse all e-learning elements and components in order to develop an instrument which can make valuable contributions to the facilitation of e-learning.

It is evident from the work of various researchers that one of the most obvious problems is finding a suitable e-learning framework which provides a guideline for the implementation of e-learning and takes into consideration the technical, operational, organisational, cultural, socio-economical and contextual domains.

Even though different e-learning frameworks have been developed by various researchers, I will propose the application of the e-learning framework which was developed by Islam (2013), as this framework summarises the e-learning challenges and the solutions for these challenges in developing countries in general. The conceptual e-learning framework developed by Islam encompasses five major challenges, namely the technological, pedagogical, training, contextual and individual challenges. In the framework each identified challenge covers several subcategories, such as language skills, ICT skills, awareness, motivation, the interest of users, lack of expertise, low bandwidth, shortage of ICT resources and administrative matters. The framework proposes a set of solutions for a number of challenges such as open education resources (OER), online lecture material, a national committee for ICT in education, and the flip method. The solutions discussed in the framework can be implemented in various ways and in different contexts, depending on the situations of the educational institutions and users (students and lecturers). This framework can therefore be a guideline for traditional and distance education universities in developing countries to offer courses online in the open distant learning (ODL) scenario, even though it rests on previously conducted research without empirical data on students' experience of e-learning challenges. Because of the recentness of the research, it is likely to provide up-to-date information on the existing e-learning challenges and the relevant solutions which can be considered to implement e-learning in developing countries.

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