Exploring the Implementation of Blended Learning in a Developing Country: A Case Study of Uganda

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This paper explores on how the blended learning method has been implemented in the developing country such as Uganda. Many higher education institutions in Uganda have acquired a new form of learning using technology that they combine with the traditional learning methods. Implementation of this form of learning using technology has been challenged by several factors. Many of the challenges are attributed to the conditions that exist in a developing world such as lack of appropriate technology. In spite of the several challenges blended learning has been implemented in relation to the existing internal procedures to suit the developing world context. The study strategy aimed to identify if the procedures initiated for implementing blended learning in the developing world were suitable. A case study approach was adopted in order to inspect these implementation procedures used within a higher education setting. The results from the study indicate that despite the lack of the appropriate technologies, infrastructure, pedagogical knowledge, quality assurance procedures and capital to invest, hybrid policies/frameworks are implemented. For this reason, a lot of higher education institutions are falling short of the implementation policies adopted. Therefore the paper stipulates that it is not simply adopting what the developed world has done but designing what suits the contextual setting that the particular country poses.

1. Introduction

Traditional learning methods do not meet the contemporary needs of our information society any more (Gütl et al., 2004). Traditionally learning was carried out in a designated place, at a particular time and by a known tutor. To exemplify this, Jay Cross observes (in Downes, 2007), “For sixty years, we’ve thought of learning as residing in the formal models exemplified by schools, universities, and training programs. Common to these top-down formats is a curriculum that rests on the beliefs and worldview of the authorities in charge.”

Advances in technology all over the world have contributed to the paradigm shift in several areas such as education. Today learning can occur ubiquitously due to the technological factors that have broken the geographical barriers to learning. Detecon (2002) observes that the potential of e-technology for the developing countries is breathtaking, and the significance of this for e-learning
is huge. Especially in Africa, the current status requires innovative ways to support education for all (UNESCO-IITE Report, 2003). Thus, technology-based solutions have been increasingly established to overcome these problems. The need to invent more innovative ways of providing learning is being driven by the changing conditions and unique contexts in which learners find themselves. Devlin *et al.*, (2001) note as follows:

“Half the world’s population is under age 20; we have essentially no hope of educating these young people by conventional means. New learning modules can provide access to high-quality learning opportunities for a wide variety of students, the vast majority of whom will never have the luxury of a residence-based higher education.” (Devlin, *et al.* (2001) in Larson and Wasserstein (2003))

According to Downes (2007), learning will increasingly be available not so much in learning institutions but in any given environment in which learners find themselves. Many developed countries have adopted the use of technologies to enhance learning in almost all educational sectors. This has further increased the need for lifelong learning especially in the adults. Developing countries have also appreciated the need for this form of learning that can be carried out ubiquitously.

According to Gütl, *et al.* (2004), the main objectives of an innovative solution for an e-learning system are:

i) personalised retrieval, management and presentation of relevant and timely information for learning activities;

ii) support of various learning and teaching paradigms; and

iii) improved knowledge of the users’ behaviour.

Innovative learning environments are not so much dependent on the use of ICT, but rely more on the organization of the learning situation and the ability of teachers to use technology to support pedagogical learning objectives that change and transform traditional learning activities (Grünbaum, *et al.*, 2004). According to Dalgarno (1996), the changes that have occurred in accepted approaches to teaching and learning in recent years have been underpinned by shifts in psychological and pedagogical theory, culminating in moves towards a constructivist view of learning.

The future direction of e-learning has been defined as “blended learning” (Mitchell, 2001). Looking at Uganda in particular as a developing country, emphasis on the use of technology during education has been encouraged by the government. Many educational institutions have adapted the use of technologies for enhancing the traditional classroom teaching. How the technology has been implemented varies from one institution to another depending on the needs and resources. The growing demand for post-secondary education and the teacher-student ratio in Uganda has also encouraged the adoption of blended learning. This form of flexible learning is well sought by many institutions to lead them in attempting the major challenges to delivering learning. Due to the wide implementation of blended
learning in Uganda today, it is significant that strategies, policies, frameworks be explored and reviewed for effective use.

2. Brief Background

According to Brennan (2004), there have been six major waves of technological innovation in learning, and this is applicable to both developed and developing countries. Writing can be considered as the first technological innovation, with phonetic alphabets, papyrus and paper. Printing was the second, with moveable type. The third was broadcast media such as film, radio and television. The fourth was a range of mass media storage devices including audiocassette, videotape and CD. The fifth was the mass produced computer with CD-ROM. The sixth is the current networked, web-based e-learning revolution. With each of these innovations, new forms of blended learning arose, and the various stages overlap depending on the particular application context.

Blended learning therefore is not new, as it has been driven by a series of technological innovations in learning for many centuries (Brennan, 2004). What has given the term ‘blended learning’ a new impetus is the exciting and powerful array of web-based options that have cascaded on to the market over the last few years. Institutions that formerly relied purely on students gathering in campus-based classrooms are suddenly able (and many seem eager) to offer their programming on the Internet. Similarly, institutions accustomed to large-scale distance delivery via print or television are now being asked to provide more flexible, interactive, and responsive net-based alternatives.

In Uganda, e-learning is now becoming popular in providing college education in most institutions of learning and in the workplace. Distance education, especially of the correspondence type, has been at the vanguard of these developments, but campus-based students are also mixing and matching their classroom and online learning in all sorts of often unanticipated ways.

The transformation of the education sector in order to embrace the new learning paradigms is being driven by a number of broad economic, technological, and social trends that have accelerated in recent years. One of the key ones is the significant increase in the demand for higher education in both developed and developing countries. LaRocque and Latham (2003) estimate that the overall demand for higher education is expected to grow from 48 million enrolments in 1990 to 159 million in 2025 – an annual growth rate of 3.5 percent. From an economic perspective, the International Data Corporation (IDC, 2004) has estimated that world revenues in the corporate e-learning market will surpass $21.1 billion by 2008, compared with a $7.9 billion market in 2004 (van Dam, 2005). According to this estimate, the market for online courses offered at universities will continue to grow about 25% to 30% a year. For this reason, it is important to explore how developing countries are embracing the new learning environment, with a view to establishing the inhibiting factors and suggesting probable solutions.
3. Putting Blended Learning Into Context

To understand the concept of blended learning, it is good to understand the concept of learning. van Dam (2005) believes that formal learning occurs to a large extent through education and training. Elkington (2002), as cited in van Dam (2005), defines training as a change in skills, and education as a change in knowledge. van Dam (2005), therefore, concludes that learning is the process of acquiring new skills and knowledge with the goal of improving performance. He summarizes the relationship between education, training and learning in figure 1 below.

Fig. 1: The Relationship Between Education, Training and Learning (Adapted from van Dam, 2005)

With the introduction of modern technology to deliver learning, several terms have been introduced, including distance learning, e-learning, online learning, computer-based learning, and web-based learning, etc. Kruse and Keil (2000), as cited by van Dam (2005), acknowledge in their book Technology-Based Training, that there is much overlap and convergence in the definitions with regard to technology and learning. Over the past few years, training professionals have become more pragmatic in their approach to technology-based media by using it to augment traditional forms of training delivery, such as classroom instruction and text-based materials (Brennan, 2004). This trend has led to the rise of the term “blended learning.”

In defining “blended learning”, most authors concentrate on the word blended. To blend means to “form a harmonious compound, become one” (Concise Oxford Dictionary 8th edition, 1990). Blended learning, therefore, refers to the use of two or more distinct methods of training (Brennan 2004). This may include combinations such as blending classroom instruction with online instruction, blending online instruction with access to a coach or faculty member, blending simulations with structured courses, blending on-the-job training with brown bag informal sessions, or blending managerial coaching with e-learning activities (Brennan, 2004).
Dr. Margaret Driscoll identifies four different concepts in defining blended learning (Wikepedia). The first defines blended learning as meaning “to combine or mix modes of web-based technology (e.g. live virtual classroom, self-paced instruction, collaborative learning, streaming video, audio, and text) to accomplish an educational goal” (Driscoll, 2002). The second definition describes blended learning as meaning “to combine various pedagogical approaches (e.g. constructivism, behaviorism, cognitivism) to produce an optimal learning outcome with or without instructional technology” (Driscoll, 2002). The third definition from Driscoll (2002) defines blended learning as meaning “to combine any form of instructional technology (e.g. videotape, CD-ROM, web-based training, film) with face-to-face instructor-led training.” The fourth concept defines blended learning as meaning “to mix or combine instructional technology with actual job tasks in order to create a harmonious effect of learning and working” (Driscoll, 2002). In summing this up, Valiathan (2002) describes blended learning as a method that mixes various learning events including traditional face-to-face classroom activities, live e-learning and self-paced learning. This learning method includes a variety of tools that create flexible rich learning environments that simulate and maximize the learner’s potential to learn.

Research has indicated that providing a learning process with a variety of methods through which learners can acquire knowledge improves their learning potentials (Dean et. al., 2001; Lubega and Williams, 2003; DeLacey and Leonard, 2002). This is the reason why this learning method has been adopted in many institutions of learning all over the world. Many researchers have experimented on single learning approaches and made conclusions to reflect that there is no difference in the learning output between the methods.

Blended learning in the developing countries has been carried out in several ways. These include use of the traditional classroom teaching, CD-ROMs, TV, Radio, and Managed Learning Environments (MLE). The blend has often been done by combining any of the above learning methods depending on their availability.

According to Singh and Reed (2001), blended learning focuses on optimizing achievement of learning objectives by applying the “right” learning technologies to match the “right” personal learning style to transfer the “right” skills to the “right” person at the “right” time. Embedded in this definition are the following principles:

i) We are focusing on the learning objective rather than the method of delivery

ii) Many different personal learning styles need to be supported to reach broad audiences

iii) Each of us brings different knowledge into the learning experience

iv) In many cases, the most effective learning strategy is “just-what-I-need, just-in-time”
The experience of pioneers in blended learning shows that putting these principles into practice can result in radical improvements in the effectiveness, reach and cost-effectiveness of learning programmes relative to traditional approaches (Singh and Reed, 2001).

4. Situation in Uganda

Worldwide, classroom training has served as the primary means for delivering behavioral skills training for years. Nevertheless, its effectiveness at delivering lasting instruction on its own is now being questioned (Snipes, 2005). In Uganda, like in many of Africa countries, higher education is being challenged by new opportunities relating to technologies that are improving the ways in which knowledge is produced, managed, disseminated, accessed and controlled. In order to open up and widen access to education to the public, a number of education institutions in Uganda are currently establishing a distance education (DE) component in their programmes.

The education system in Uganda covers eight years of primary (basic) education, four years of ordinary level secondary education, two years of advanced level secondary education, and two-to-five years of tertiary education. Alternative tracks branch off from ordinary level secondary to technical colleges and primary teachers colleges. Tertiary education covers post-advanced level secondary education, which includes universities and other institutions of higher learning such as polytechnics.

Uganda, as a partner of the Education for All (EFA) coalition, launched Universal Primary Education (UPE) in 1997. This resulted in the increase of primary school enrolment figures from 2.7 million pupils in 1996 to 5.3 million in 1997, and to 7.1 million in 2005 (Ministry of Education and Sports, 2005). On the other hand, most of the growth in tertiary education in the last decade in Uganda has been in the universities sub-sector, accounting for 65% of total tertiary enrolment (Ministry of Education and Sports, 2005). The remaining 35% are shared by other tertiary institutions.

By 1995, Uganda’s gross enrolment ratio at tertiary level was 2%, way below the 3.2% sub-Saharan average. However, between 1995 and 2003 tertiary enrolment increased by 230% (Balihuta, 2001). The annual average rate of increase in tertiary enrolments has been 46% per annum in the last decade (World Bank, 2000). This raised the gross enrolment ratio to an estimated 2.8%. The projected demand for higher education with improved access to secondary education is expected to reach 126,396; making up only 3.1% gross enrolment ratio (Ministry of Education and Sports, 2003).

Of the four public universities – Makerere University, Kyambogo University, Mbarara University of Science and Technology, and Gulu University – only the first two offer distance education programs. Both Makerere University and Kyambogo University are dual-mode institutions. Although the Uganda Management Institute (UMI) is not ranked as a university, it is a degree-awarding
higher institution of learning that also has a DE component. Nsamizi Training Institute for Social Development (NTI) is yet another tertiary institution offering at least one program through DE.

Of the twelve private universities in Uganda, only Uganda Martyrs University (UMU), and Uganda Christian University (UCU) are known to run distance education programmes. Kampala International University too has mooted plans to start computer-based DE programs in the near future.

Because nearly all the DE programs in Uganda are within dual mode institutions, the main focus when introducing ICTs in these institutions has not been directed at ICTs for enhancing DE delivery; rather the emphasis has been on ICTs for enhancing face-to-face delivery. For instance, Makerere University and Kyambogo University have made evident strides in introducing ICTs in the management and teaching/learning processes but no infrastructure developed or policy formulated puts a primary emphasis on DE. The proposed single-mode Open University of Uganda is the only institution of higher learning in Uganda whose policy documents and proposed structures put primary emphasis on ICTs for DE. The Open University of Uganda proposes to use radio, video conferencing, satellite-based and computer-mediated instructional technologies as the main media of instruction.

In order to implement technology-enhanced learning, the question of existing ICT infrastructure becomes important. Prior to 1996, Uganda’s communication infrastructure was among the least developed, not only in the World, but also in Africa (Wasukira and Naigambi, 2002). Further more, 70% of the communication services were concentrated in urban areas, leaving the rural areas with the least access to communication services. However, as a result of the liberalization policies adopted by the Uganda Government during the 1990s, the infrastructure situation has now changed drastically. As a result of the liberalization, the telecommunications sector has experienced tremendous growth, which is typified by:

i) New market entrants have brought in a whole range of satellite-based technology

ii) Two national operators have been licensed

iii) Four mobile phone operators have been licensed

iv) Cellular mobile phone services marked a turning point in business trends

There is growing evidence of success in infrastructure development and growing consensus that new initiatives that build on these successes are needed, and this bode well for the future (UNCST, 2002). New opportunities exist to strengthen infrastructure and to allow delivery of services in society. For instance, the laying of an optic fibre cable network is ongoing connecting the main towns, and infrastructure rollout programmes to cover the rest of the country with fibre-optic broadband bandwidth is now being extended to the major business districts outside the capital.
A comprehensive National IT Policy is in place and being implemented. There is a rural communications development policy to cater for bridging the digital-divide with the rural communities. The vision is to provide “bandwidth-for-all by 2010” and improve the infrastructure to extend to the rural communities. A national ICT master plan to cover e-education and e-health is also underway.

In spite of this, however, the level of infrastructure and services are still way below the average compared with other economies in the World (Wasukira and Naigambi, 2002). Moreover, most of the developments are still concentrated in urban areas, benefiting a small percentage of Ugandans.

5. Strategies to Enhance Blended Learning in Uganda

In order to successfully mainstream blended learning into the culture of higher education institutions in Uganda, some strategies can be recommended.

5.1. Culture

In order to make available and put to use the potential of the technology, there are two major obstacles: infrastructure and culture (Detecon, 2002). There are certain cultural traits that further or hinder a country’s participation in the global village life. The culture needs to be open or, better still, positive towards learning and knowledge as well as the delivery technology (Detecon, 2002). People need to have access to the system and the freedom to use it (regarding information and communication). The following questions need to be answered: What is the cultural attitude towards learning in the target population? Does it differ by the learner’s age or gender? Are there taboos regarding learning? What is the cultural attitude towards the technological aspects of e-learning? What are the socially/culturally accepted/preferred learning styles?

5.2. Communications Infrastructure

For e-learning to succeed in the developing world, it needs to build on another important pillar: the existence of infrastructure, along with some degree of connectivity (Sehrt, 2005). One must put in place, or make available, electrical power, the network, hardware and software to deliver e-learning, and the content and services ready for use (Detecon, 2002).

Uganda is one of the nations falling on the other side of the digital divide (i.e. the have-nots), with telecommunications infrastructure among the least developed. No countrywide telecommunications network has been established in Uganda, and given the current low level of infrastructure development for ICTs, it is obvious that the majority of Ugandans will not be able to have access to DE through these technologies. In Uganda, up to 80% of the digital telephone lines and modern switching equipment is located in the capital city, Kampala, with other areas having largely old and unsuitable lines. Resulting problems include high usage costs due to the low rates at which data can be transmitted or received, high percentage of failure due to poor quality of the lines, and limitations on the
applications that can be used (in some areas, for instance, it is not possible to access the web).

In order to support and deliver blended solutions, it is crucial to address the following issues from a technical perspective:

i) What learning delivery infrastructure is currently in place?
ii) What is the desired technical environment given the stated goals?
iii) What access does the target audience have to technology?
iv) What information (if any) should be recorded/tracked to address the agreed goals?
v) What authoring environment/features (if any) are required to address the agreed goals?
vi) What technical standards should be defined for training design and development?

5.3. Human Infrastructure

The introduction of the new technologies has to be combined with the building of the skills necessary to operate and maintain them. Consequently, to succeed, blended learning initiatives require a supportive human infrastructure. Computer literacy is an imperative precondition for learners to benefit from technology-based learning (Sehrt, 2005). e-Learning can only build on a set of basic computer literacy skills. Hence one of the first tasks is to assess the existing capability to implement and support blended learning. The following issues must be considered:

i) What skill-sets are required to address the learning goals?
ii) What new skills will be required? How will these skills be developed?
iii) Who will design, develop and deliver the solutions?

5.4. Personal Prerequisites

On the personal level, e-learning needs “connectivity” in terms of language and literacy to succeed: either the learners are able to understand the language the content is presented in or the content has to be produced in the learners’ native language. The same holds true for literacy: either the learners are able to read and write and use the computer or the computer’s interface has to be adjusted according to the literacy level.

The lack of content in native languages is a serious impediment to Internet use in many countries. Even in the developed world, the preponderance of English online poses a serious obstacle to universal access.

5.5. Content

When we are considering e-learning we are of course talking about technology. However the best technology in e-learning is irrelevant if the content is not available (Detecon, 2002). The content needs to be in the adequate formats in order to enable success. Strategies must be in place to develop learning content
that address the specific needs of the learners depending on the individual learning contexts.

5.6. Quality Assurance (QA) Processes and Procedures

Naturally, one must ensure that the blended learning solutions adhere to best practice both in terms of development methodologies and delivery techniques. The following questions may guide this review:

i) How are learning materials currently designed and developed?
ii) What QA processes are in place?
iii) Are any formal quality procedures, such as ISO 9001 in place?
iv) What guidelines and methodologies are in place for designing and developing learning?
v) Are materials used for accreditation/certification against professional standards/qualifications?
vi) What is your policy for accessibility and usability?
vii) How are materials maintained and updated?

5.7. Regulatory Situation

There is need to establish the policies that are in place to guide the use of various technologies for learning. The following questions need to be answered:

i) What is the regulatory situation regarding information, communication and technology?
ii) How complicated (if possible) is it to set up/obtain access to electronic services?
iii) Is there censorship in place regarding information and communication?

5.8. Evaluation

Before implementing blended solutions, it is crucial that you determine how success will be measured. Such measures should be built into the plan and a process established for continual evaluation. How should the solution be evaluated in order to learn lessons for the future? There is need to determine:

i) How are learning initiatives currently evaluated? How often?
ii) Who is involved/consulted in the evaluation process?
iii) How are plans revised in light of new developments?

6. Conclusion

The continuous advances in technology enable the realization of a more distributed structure of knowledge transfer (Iahad, 2004). This becomes critically important for developing countries that lack the resources and infrastructure for implementing cutting-edge education practices. The two main themes of technology in education for developing countries focus either on aspects of technological support for
traditional methods and localized processes, or on the investigation of how such technologies may assist distance learning. Commonly such efforts are threefold, relating to content delivery, assessment and provision of feedback. As noted by Nashua (2003) blended learning has too often been viewed as some kind of hastily mixed ‘learning stew,’ where learning institutions create a potluck combination of instructor-led classes, self-study courses, library resources, and various seminars and expect it to work. The successes of such models are never as great as they could be if these institutions used a more methodological approach to developing blended learning programs.

Learning institutions with greatest success in blended learning are those that take a structured, methodical approach to creating defined curricula (Nashua, 2003). These institutions analyze the strengths and weaknesses of various learning activities in the context of a blended learning environment and build the curricula accordingly. They also know in advance how results and associated value will be measured. This paper has attempted to establish the opportunities that exist for proper implementation of blended learning in a developing country, taking the case of Uganda. Obstacles that hamper use of technology to enhance learning have been identified, and strategies to overcome these have been suggested.

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