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Implementing E-learning and the Quest for Quality in Higher Education in sub-Saharan Africa: Conceptualizing the Prospects and Challenges.

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Abstract

This paper explores the impact of implementing e-learning on the quality of higher education in Africa and the possible challenges that such initiatives have to overcome. It is envisaged that among other advantages, e-learning strategies can improve access, create better learning experiences for students, promote collaborations in the curriculum implementation, and provide efficiency in accessing academic information. However, e-learning initiatives in sub-Saharan Africa face challenges of ICT-related infrastructure, poor policy, and lack of requisite skills for Virtual Learning environments (VLEs) among the higher education workforce and other stakeholders. This paper concludes that there is a need for institutional strategies, and local and international collaboration among government agents, e-learning sponsors, educators, policymakers, ICT as well as and LIS professionals if the e-learning paradigm shift to yield benefits.

Keys Words: Virtual Universities, e-Learning, Technology, ICTs,

Introduction

Higher Education in Sub-Saharan Africa faces formidable challenges caused by changing student demographics, severe financial constraints, and lingering institutional rigidities. At the same time, increased demands are being placed on higher education to

provide increased enrolment and student access to higher education, better undergraduate programs, and increased productivity. To address both sets of issues, institutions of higher education or Universities are turning to e-learning that promise to increase access, improve the quality of instruction, and control costs. In this case the Internet is the preferred technology to improve instruction, increase enrolment, and raise productivity in higher education. Through the internet, college and university instructors can now routinely post their syllabi and course readings to the World Wide Web or use the virtual learning environments (VLEs).

E-Learning is instrumental to a fundamental change in the processes and organizational structure of postsecondary teaching and learning. In this regard, the e-learning can transform higher education into student-centered learning rather than institution and faculty-centered instruction. E-learning encourages new collaborative arrangements between academic institutions and for-profit entrepreneurs and permit these partnerships to extend their reach nationally and internationally. It can also accommodate student demand for post-secondary education in new ways that are basically campus-independent. According to Khan (1997) the Web has become a powerful and democratic medium of learning and teaching at a distance. The internet provides an opportunity to develop learning on demand and learner centered instruction and training. The names associated with e-learning include: Online learning, web-based learning(WBL),Web –based training(WBT),Internet Based Training(IBT), Distributed Learning(DL), Advanced Distributed Learning(ADL),Distance Learning, Mobile Learning(or M-Learning),or Nomadic Learning, Remote Learning, Offsite Learning, aLearning (anytime, anyplace, anywhere learning)

Definition of e-learning

A review of literature reveals a number of definitions of e-learning. Generally e-learning is viewed as delivery of individualized, comprehensive, and dynamic learning contents in real time, aiding the development of communities of knowledge, linking learners and practitioners with experts using web technologies. Toth (2003) describes e-learning as a comprehensive term used generally to refer to computer learning although it is often extended to include use of the mobile technologies such as mobile phones, PDA's and other technologies.

practices in e-learning includes use of web-based teaching materials, multimedia, cd roms, websites, discussion boards, collaborative software, email, blogs, wikis, computer aided assessment, educational animations, simulations, games, learning management software among others. In case where mobile technologies are used, the term m-learning has become more common while e-learning is naturally suited to distance learning and flexible learning, it can also be used with face to face teaching hence the term blended learning.

Romiszowski (2004) goes a head to define e-learning in terms of either an individual activity or collaborative group activity employing both synchronous (real time) and

Asynchronous (Flexi-time) communication modes. Table 1 shows Romiszowski's structured definition of e-learning:

Table 1: Romiszowski's Definition of e-Learning

	E-Learning model	**Examples of individual Self Study**	**Examples of group collaboration:**
1	Synchronous model (online study, real time interaction with instructor)	Surfing the internet, accessing websites for Information(following up a web quest)	Chat rooms; with (out) video, Electronic Whiteboards/Smart boards, Video and Audio conferences.
2	Asynchronous model (offline study, no real time interaction with instructor)	Using stand alone courseware/Downloading materials from internet.	Asynchronous communication by email, discussion lists, or Learning Management Software (Blackboard,WebCT and Moodle)

Hall (2004) defines e-learning as educational instructions that are delivered electronically whether through the internet or other platforms such as CD-ROMs. According to Van Romburgh (2005) each technology has limitations but when applied correctly, it can be of tremendous benefit to the institutions that use it especially in enhancing learner experience, improving efficiency and reducing on costs. Moreover, the potential market for e-Learning includes such heterogeneous groups as:

- full-time students temporarily off-campus because of illness, work, or travel
- military service personnel and their dependents
- prisoners
- retirees and others not actively working
- on-campus students who want to take classes from another institution
- people working a full- or part-time employment
- parents at home with small children
- people living far away from educational centers

Advantages and Disadvantages of e-Learning.

Raab et. al. (2002) argues that e-learning enables learners to access courses at times they find convenient and not only during the periods in which traditional learning is scheduled. As compared to the traditional form of learning, e-learning offers more Interactivity, greater flexibility, more functionality, and potentially lower costs: Additionally, it provides the following advantages:

i. Interactivity.

E-learning is inherently a two-way medium that facilitates both one-to-one and group communication, both in real-time and asynchronously. It can foster interactive learning communities in which participants routinely exchange information, debate course topics, and builds relationships through informal discussion and social chats. The interactive capability addresses the chief weakness of other learning media that are either one-way (print materials, radio, and television, or audio- and videotapes.

ii. Flexibility.
E-learning provides on-demand access to course materials and discussions at the student's preferred time, pace, and place and also without over-dependence on the time constraints of the lecturer (Liaw, 2007; Capper, 2001). Information and messages can easily be sent to an individual or shared with the entire members of the class. Course materials or links to other sites can be rapidly updated and made available to all class participants simultaneously. Students and course instructors also can exchange information and communicate using different equipment.

iii. Functionality.
Through e-learning, students can have ready access to images, video, and audio, as well as text materials.

iv. Cost and Access.
For academic institutions, providing instruction and instructional materials on the Internet should be less expensive than delivering the face of same material to face. For students, usage costs are quite low once they have obtained Internet access. However, the initial costs of acquiring a computer, an Internet connection, and (especially) the skills to use them effectively present barriers for many students. These barriers are decreasing over time as more people own computers and become familiar with the Internet.

v. Ease of updating content
E-learning enables the content to be easily and regularly updated and instantly available to all learners.

vi. Collaborative learning
E-learning promotes more collaborative learning resulting in more engaging and richer learning experiences

Quality Implementation of e-Learning: A conceptual framework

Success in e-learning in Higher Education involves a systematic process of planning, designing, evaluating, and implementing online learning where learning is actively fostered and supported (Ndume, 2008; Liaw, 2008)). Over time several models have been proposed to assist in the understanding of the various variables at play in the implementation of e-learning initiatives. The example below adapted from Akhan (2007), depicts how various factors interrelate to create a learning environment

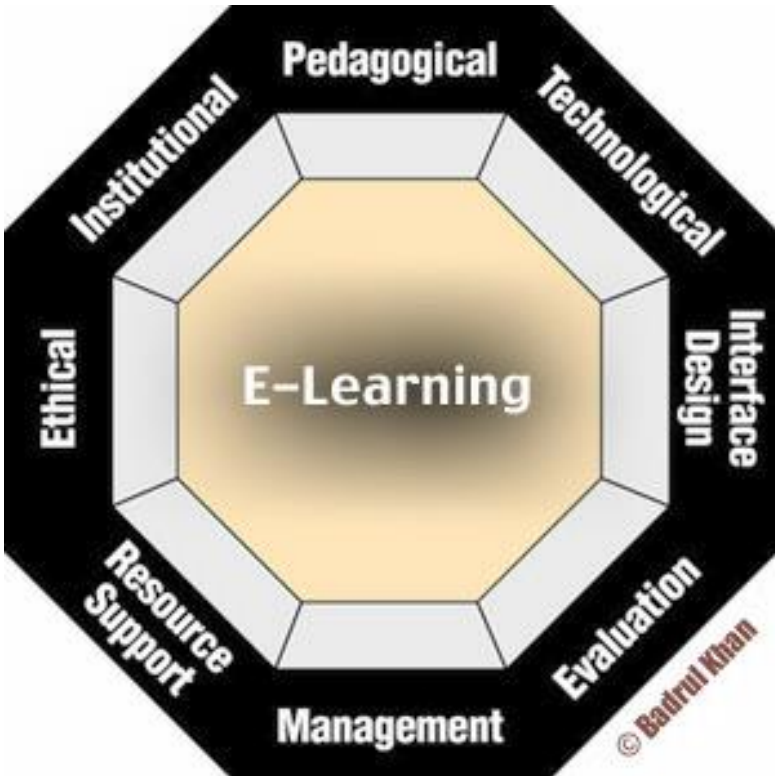

Figure 1: Conceptual framework for e-learning Akhan (2007)

According to Akhan (2001), the seeds for the e-learning framework begin germinating with the question;" what does it take to provide the best and most meaningful learning environments for learners worldwide?" To answer this question he proposes a framework that contains eight sets of dimensions: pedagogical, technological, interface design, evaluation, management, resource support, ethical and institutional dimensions (Table 2).

Table 2: Akhan's e-learning Framework (summary)

Dimensions of E-Learning	**Description**
Institutional	Concerned with issues of administrative affairs, academic affairs, and student services related to e-learning.
Management	The processes and activities are aimed at the maintenance of the learning environment and distribution of information.
Technological	Aggregation of technology infrastructure in e-learning environments. This includes infrastructure planning,

	hardware, and software.
Pedagogical	The pedagogical dimension of e-learning refers to The theoretical underpinnings and practical issues considered in the implementation of an e-learning curriculum. This involves issues concerning content analysis, audience analysis, goal analysis, medium analysis, design approach, organization, and learning strategies.
Ethical	The ethical considerations of e-learning relate to social and political influence, cultural diversity, bias, geographical diversity, learner diversity, digital divide, etiquette, and legal issues.
Interface design	The interface design refers to the overall look and feel of e-learning programs. The interface design dimension encompasses page and site design, content design, navigation, accessibility, and usability testing.
Resource support	The resource support dimension of e-learning examines the online support and resources required to foster meaningful learning.
Evaluation	The evaluation for e-learning includes both assessments of learners and evaluation of the instruction and learning environment

Challenges and success factors in the implementation of e-learning in universities in sub-Saharan Africa

A review of literature reflects the scarcity of research on the development and status of e-learning in Africa. Several regional studies however suggest that different countries are at different levels of development regarding e-learning adoption. According to Unwin (2008), in Africa there is a wide variety of e-learning practices, e-learning is still at the developmental stage but there is a lot of enthusiasm toward e-learning initiatives. Generally, there is a growing perception that e-learning could improve motivation, student attainment, and social development (Hollow, 2009).

A study carried out in Tanzania revealed that 75% of the respondents viewed e-learning as good as traditional learning, 43% indicated that certificates from e-learning programmes are as good as those obtained from traditional courses, and 60% indicated that the e-learning courses they had undertaken yielded useful skills and that 80% indicated that e-learning is good for their future careers (Ndume, 2008).

At the same time, several issues have been identified that present significant challenges to the development of e-learning in sub-Saharan Africa. A study by Hollow (2009) identified the following as the priority areas in the development of e-learning in Africa: change of mindset in favour of e-learning, training, improvement of ICT infrastructure including internet connectivity, creation of organization structure to manage e-learning, and creating appropriate techniques of monitoring, evaluation and assessment. Other challenges to the implementation of e-learning programmes in sub-Saharan Africa include the following.

i. Cost of implementation

Since e-learning is majorly Internet-based, it has not yet brought about major changes in on-campus instruction. It is still too new, too costly, and perhaps too threatening to existing academic structures and traditions. High start-up or initial costs for on-campus networks and Internet-based instruction certainly pose major challenges. Many institutions have been caught unprepared for the heavy Internet usage of students who now come to college experienced in using computers and the Internet at home, in secondary school, or in part-time jobs. These students have very high expectations for improving their computer skills and applying those skills directly in their coursework.

Developing new course materials for e-learning can also involve substantial initial costs, particularly instructors' time. While it is now relatively easy to put documents and other text on the Web, much of the e-learning power as a learning mode lies both in integrating relevant visual, aural, and textual materials and in providing access to these materials in nonlinear ways. Achieving this requires a good deal of instructor time, thought, and effort.

ii. Lack of awareness of value of e-learning

There is a general lack of awareness amongst the population including parents, lecturers of the benefits and effectiveness of e-learning. There is a perception that e-learning provides lower quality education than traditional learning systems (Ndume, 208). This results in low acceptance of e-learning as a viable alternative to traditional learning.

iii. Internet connectivity and access issues

Some elements such as multimedia components have high requirements for bandwidth. Due to bandwidth and connectivity problems, downloading of engaging content to learner is slow which creates frustration and high drop-out rate (Hollow, 2009).

iv. Lack of information literacy

Many students lack skills, confidence and experience in use of computers as other ICT skills such as web browsing to fully succeed in the use of e-learning. There is also different level of access to ICT infrastructure leading to a profound digital gap. This if unchecked can lead to unequal access to e-learning opportunities.

Ensuring quality in the implementation of e-learning programmes: A way forward

Romburgh (2005) reveals that research has shown some of the reasons why technology-based learning or e-learning that is similar to individual tutoring can be more effective than classroom learning:

- The speed at which different learners process content varies enormously. Online technologies are suited to accommodate the variable pace at which learners work their way through the material.
- While learners in the classroom setting ask an average of 0.1 questions per hour, learners with individual tutoring delivered utilizing Online electronic technology may ask (or answer) up to 120 questions per hour.
- Students who receive individual tutoring can perform by as much as two standard deviations better than equivalent learners in a classroom (ADL 2004)

According to a study carried of e-learning in Africa, Unwin (2008) has argued that measures that can be used to improve e-learning implementation include:

- Ensuring adequate availability of requisite hardware
- Improved bandwidth and connectivity
- Acquisition of software
- Creation of policies that facilitate smooth management of e-learning
- Lowering the prices for internet connectivity
- Ensuring availability of electricity
- Raising awareness about the value of e-learning
- Training lecturers in e-learning processes
- Provision of adequate digital library services to e-learning community

The universities in sub-Saharan Africa should embark on extensive programs to make wideband Internet connectivity ubiquitous on campus. This will ensure that the institutions remain competitive in attracting many students and faculty. Embracing e-learning should on the whole lead to improved quality of undergraduate and graduate instruction, and better on-campus administrative services, but it seems unlikely by itself to bring about overall productivity gains. Research universities also will seek to broaden access through increased e-learning courses to degree and non-degree students off-campus.

Higher-education institutions in Sub-Saharan Africa will have to use the Internet/e-Learning incrementally to improve administrative processes, on-campus instruction, and distance learning. It will rather quickly become the preferred means to reach off-campus students. But it will be viewed more as a powerful technical tool than as a catalyst for institutional change. Regulation, bureaucracy, and tradition will remain barriers to more fundamental academic restructuring. A few academic institutions, spurred by vision or crisis, will seek to reorient instruction toward distributed, student-centered learning with heavy use of e-learning courseware, discussion groups, and links to other online resources.

This seems likely to occur first for continuing education, job-related training, and other non-degree courses, as well as for the expansion of current distance learning programs. Diploma and Degree programs will migrate to e-learning more slowly, although most colleges and universities will soon offer at least some courses online for degree credit. The virtual universities will provide the lowest-cost degree options, although face-to-face interaction will still play important role in attracting degree students. Nevertheless, the ready availability of courses over the Internet at the lowest cost to the student will encourage more off-campus learning.

Through e-learning, more students will earn their degrees by taking a mix of on-campus and Internet-based off-campus courses. And as competition increases, students will be able to take more e-learning courses for credit from sources other than their degree-granting institution. Finally, e-learning will complement rather than supplement face-to-face or on-campus traditional higher education. Many young adults still want the face-to-face instruction and social interactions they get on campus, even if it is more expensive than e-learning. For most secondary-school graduates, the issue will not be choosing between full-time, face-to-face/on-campus study and 100-percent e-learning, but selecting a mix that is educationally sound, accessible, and affordable.

Institutions of Higher Education moving from providing infrastructure and publishing courseware to offering e-learning-based courses seems a logical next step. With greater marketing prowess, lower cost structures, and fewer institutional constraints, academic institutions and private firms may be able to use e-learning to compete effectively for students in some areas of non-degree and degree instruction such as:

- remedial courses for entering college/university students
- extension courses for adults
- professional continuing education
- short courses for managers and executives
- Any other adults with busy lives who want to study.

Conclusion and recommendations

E-learning is rapidly developing to become an acceptable complement or alternative to traditional education delivery systems. From the discussion above it is clear that for fruitful implementation of e-learning current courses must be redesigned, and reliable ICT infrastructure, students as well as lecturers must be trained on how to use e-learning technologies. To propel the adoption of e-learning across the region, it is important to research information regarding critical issues such as perceptions towards e-learning, the effect of various success factors on the e-learning implementation process, penetration rates, groups with special needs, as well policy requirements as well as assessment techniques.

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