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By Sekiwu Denis & Naluwemba Frances
Muteesa I Royal University, Uganda

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E-learning for University Effectiveness in the Developing World

Sekiwu Denis [α] & Naluwemba Frances [σ]

Abstract- The globalisation trends of society have taken centre stage meaning that people around the world are required to develop high level but low cost technologies and innovative competencies in order to enhance social development. In the field of higher education, university managers need to join the technological revolution by adopting low cost ICT and E-learning facilities. This paper examines the role of E-learning in university effectiveness. With the impact of globalisation, universities have become competitive in terms of providing quality and flexible educational services. Creating an enduring vision and a strategic implementation framework to implement technological innovations and E-learning seems critical. The demand for skilled workforce, with technological to cope with the ever-changing responsibilities at the work place, warrants universities to adjust their teaching strategies beyond face-to-face instruction in class.

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I. Introduction

Globalisation is breaking through cultural, economic, political and social barriers of nations (Mugimu, 2006). Globalisation represents the international system that is shaping most societies today including university programs. It is a process that is "super charging" the interaction and integration of cultures (Welsh et al, 2003). People around the world are thus required to develop high level of creativity and imaginative skills as well as innovative competencies needed to become competitive in the global economy (Lewin, 2000; Wende, 2002). Through the adoption of low cost ICT and E-learning technologies and approaches being promoted in universities education will become more competitive globally. Universities are therefore challenged to become more innovative in preparing and producing individuals that are adequately and sufficiently equipped to function in the rapidly changing demands of the global job market. Globalisation means bringing the vast world so near. It implies that communication systems become so simplified and advanced to foster rapid development. There is, for instance, a lot of Internet learning around the global across one university with another.

This paper examines the role of E-learning in university effectiveness so as to deal with the challenges of global competitiveness in developing countries. Higher education of quality could be brought to many more people if only universities in the developing world could get on the bandwagon of advancing ICTs and creatively tap into the current E-learning possibilities and innovations (Mugimu, 2006). The pursuit of technological transformation in higher education has become widespread in Sub-Saharan Africa with the extensive pervasiveness of global networks like the Internet and Intranet as institutions struggle to prepare students for effective participation in the emerging global knowledge economy. Technologically based university education is further seen as a way to address the increase in the world demandfor tertiary education.Daniel (1998) states that one new university per week is required to keep pace with world population growth but the resources necessary are not available. Forinstance, since the time of the overwhelmingly increased student enrolments in many public universities in Uganda from the 1990s and onwards, existing resources and infrastructure have not increased commensurate to the same increase in the student capacity. Lecture theatres and libraries are flooding and infrastructure and instructional materials and staff are all constrained with the alarmingly increased student populations. Higher education must develop more cost-effective methods so that public resources can be increased and effectively utilized. A lecture theatre in a public university that sits over 300 students attending an economics class will not be effective if more public address systems are not installed to enable each and every learner benefit from the lecture.

Likewise, if a university lacks internet facility to serve its ever increasing student population then it would be quite hard to ensure quality learning and research. By using technology for teaching, universities can serve the public more cost-effectively and in particular can prepare students better for a technologically based society. In view of the growing globalisation and transnational exchanges in many fields, scholars like Evans and Nation (1993) indicate that in these circumstances politicians, policy-makers, and citizens should make demands upon education systems to reform. Open learning and distance education are at the forefront of educational responses to the changes that are taking place locally, regionally, nationally and internationally.

Author α : Lecturer, Muteesa I Royal University.
e-mail: dsekiwu1@yahoo.co.uk
Author σ : e-mail: estherfrances3428@gmail.com

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II. What is E-learning?

E-learning may mean different things to different people. According to Welsh, Wanberg, Brown and Simmering (2003:246), "E-learning can be defined as the use of computer networktechnology, primarily over an intranet or through the Internet to deliver information and instruction to individuals". Halkett (2002:46) pointed out that E-learning offers a number of new tools to teaching-e-lectures, message boards, chartrooms, interactive assessment marked by computers, and prospects of unlimited access to electronic resources. However, E-learning is more than computer and Internet. E-learning may include all electronic devices such as CD ROMs, DVDs, Radios, Television, satellites, mobile phones, etc that could be used to enhance learning through multimedia capabilities and network technologies. Network technologies have the potential to deliver timely and appropriate knowledge and skills to the right people, at a suitable time, in a convenient place, which is what E-learning/ E training is all about. It allows for personalized, just-in-time, up-to date, and user-centered educational activities(Haddard & Draxler, 2002: 12).

Thus, E-learning should and ought to permit adequate execution of flexibleeducational programs to meet the diverse needs of students opting for higher education. For instance, Flood (2002) contends, "E-learning can offer a rich choice of learning experiences that fit in with specific needs, aspirations and learningstyles, and so it can…facilitate personal growth and professional development". Furthermore, the E-learning approach could be a powerful tool or means to facilitate collaboration between different learners across the globe (MacDonald &Thompson, 2005). However, E-learning could be more than just using technology to deliver the instructional materials but rather in using technology to build learners' capacity to learn on their own and at their own pace (Flood, 2002). Unfortunately, universities in developing countries may not have the capacity and necessary infrastructure and human resources to support and embrace E-learning capabilities. An important arching question is that; how could universities in developing countries take advantage of E-learning innovations inorder to make their services easily accessible to more people, regardless of the existing obstacles?

III. Justification of E-learning Innovation in Universities in Developing Countries

Information technological transformation in universities, however, has major systemic implications and needs to be carefully managed as Drucker (1998) points out that as soon as an organization takes the first tentative steps from data to information, its decision processes, management structure, and even the way it gets its work done begin to be transformed. Attempts to introduce any significant reform will impact on all of its sub-systems. The advent of information technology in any big university will wholly impact tremendously on the internal and external operations of that university. It implies that with information technological advancement, universities have to prepare themselves to welcome such crucial developments. It systematically relates to the fact that university management has to train or hire manpower to operate the technology; and the same universities should change the teaching approaches to cope with the demands of the new information technology.

As indicated also by Haddard and Draxler (2002), the benefits associated with E-learning could be many. If only stakeholders become more creative and innovative. Welsh et al (2003) highlighted six benefits of E-learning. They say that E-learning could: a) provide consistent, worldwide training; b) reduce delivery cycle time; c) increase learner convenience; d) reduce information overload; e) improve tracking learners' activities, and f) lower expenses of educational provision (Low-cost technologies). Furthermore, E-learning could also motivate students to do independent work, hence promoting students' ability to develop self-learning skills. E-learning could also act as a leverage to improve the day-today administrative and management operations of universities in the Third world. For instance, by making dissemination of information about students' admissions, registration, assessment, schedules and timetables etc…much easier and in a timely manner.

Universities in developing countries could bring knowledge closer to many students even those off-campuses and could not otherwise afford to physically attend normal educational programs. Isolated students and professionals in the civil service or private sector could be able to work and study at their own pace, any time, and anywhere via the Internet or intranet (Haddard &Draxler, 2002). E-learning could also cultivate online interactions among participants, even when may be many miles apart. Students' social construction of knowledge in terms of facilitating sharing of ideas in the online discussion groups could be an immense possibility. There are many students today who are pursuing studies in many universities overseas but do not need to leave their mother country to be fulltime students in foreign countries. Instead, the E-learning methodology has made it easy for such interaction to be possible because academic promoters canshare smoothly with students via emails and with the aid of the online library. Research (MacDonald &Thompson, 2005) shows that E-learning combined with instructional strategies and multimedia tend to create positive attitudes of students as well as promoting decent learning outcomes. Thus, stakeholders of universities in the developing world should and ought to become

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creative and imaginative for their success in embracing E-learning.

IV. Obstacles and Challenges of Embracing E-learning Innovation

Some of the obstacles and challenges that could undermine/hinder universities in the developing world to implement and embrace E-learning capabilities include:

a) Majority of university administrators, teachers and students tend tolack awareness of E-learning innovations and its capabilities. Stakeholdersare therefore not willing to pay the cost necessary to embrace E-learning.
b) Most universities in developing countries are ill equipped in terms oftechnical support and administrative staff required to facilitate theintegration of E-learning with existing programs.
c) Most students and instructors do not have access to personalcomputers and ICTs, besides being incompetent in E-learning.
d) Poor/ insufficient connectivity to Internet or intranet, telephone lines,etc is a serious problem.
e) Inconsistent electric power supply is a critical stumbling block to E-learning growth in third world universities given the fact that E-learningequipments run on electricity. To compound this challenge even further,sources of alternative options for electric power are difficult to find.

In addition, given that universities in developing countries are well known for their classroom/lecture room face-to-face delivery strategies such as tutoring, lectures, conferences, etc., E-learning may thus be perceived by many as being inferior in terms of academic integrity/rigor (MacDonald &Thompson, 2005). It is not surprising that many stakeholders tend to be reluctant to introduce and accept E-learning because of the fear to undermine the reputations of their institutions. E-learning demands that teachers in higher education must learn and develop unfamiliar innovative teaching strategies far beyond their normal routines. For instance, teachers' roles are shifting from being sole providers of knowledge to facilitators of knowledge (Haddard & Draxler, 2002). Students' roles also are changing from being passive recipients of knowledge to becoming active collaborators of knowledge. Inevitably, the resistance to E-learning innovations by stakeholders in many universities in the developing countries is and will remain of serious concern. The practicability of establishing and embracing E-learning within the universities in developing countries is questionable. It is not surprising that E-learning innovations have not yet taken deep-roots, as it should be in many universities.

With the existing inadequate infrastructure, human resources and financialresources, exploiting technological innovations in ICTs and E-learning is still a challenge in most of the mushrooming and traditional universities in the Third World (Naidoo, 2001:34). It is likely that the existing infrastructure may be too old and therefore incompatible to the rapidly changing technology. Universities may therefore be required to carry out expensive/costly major renovations to upgrade or replace existing infrastructures to accommodate the advancing technologies in ICTs and E-learning. The dynamics involved in implementing and embracing E-learning are somewhat complex and paradoxical

V. Involving Academics in E-learning Reform in Universities

Educational institutions exist to open minds and challenge established doctrine, but at the same time, the manpower that occupies these institutions is extremely resistant to change (Robbins and Barnwell, 1998). Higher education can be described as largely bureaucratic and bureaucracies, by definition, resist change (Tapscott, 1996). I recall an incidence during my university life when my old professor hated something called a computer and a projector used in teaching. Whenever I told him that my research analysis was based on computer packages he retorted negatively" you are bound to fail research, please use the formulas I gave you in class". Such an expression and reaction depicts an "old fashioned academic" who is not ready to accept recent global changes in the area of academics in universities, the Internet or even E-learning in that matter. Manyother students, in recent times, face the same wrath of such unsighted professors.

Because of the wide resistance to change in most higher education institutions, E-learning innovation has often been implemented as an isolated, top-down initiative of university managers for efficiency purposes. In this scenario, the wider systems within tertiary education are often not considered and neither affected by the innovation. Technological innovations have also experienced difficulty-taking precedence in top offices in university education (Pastore, 2005). Higher education, similar to other sectors of society, has often responded to new E-learning and ICT applications on the basis of efficiencies rather than the use of more strategic considerations. Some staff have resisted IT advocating remaining in use of the old systems of processing student papers. They type writer and old record keeping methods are still in use creating managerial inefficiencies in the "transcript office" and at the departmental examinations office. This traditional criterion of record management tends to stifle operational effectiveness. Most changes in education in the twentieth and twenty first centuries respectively had been first order changes, which aimed at improving efficiency and effectiveness of current practices. One of such first order changes is the introduction of the

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Internet and the computer in management work and teaching methodology.

Therefore, attempts to oppose such lucrative developments in any globalinstitution are a *path* in the wrong direction because technology is here to stay. To ensure ownership of sound educational quality in ICT and E-Learning, it is important that educators and educational policy drive and direct technological transformation of higher education. Therefore, the structures supporting technology-based education have to ensure an educational focus and preeminence of educational principles and policy grounded on administrative desires and attitudinal change. Caladine (2003), who reviewed the literature on non-traditional modes of delivery in higher education using state-of-the-art technologies, indicates that the extensive use of E-learning in education poses previously un-encountered problems in pedagogy and andragogy, which are attitudinal. In addition, these problems are primarily to do with conservativeness of those who fear technological change. Technological decisions need to be preceded by policy and educational decisions and highlighting the importance of bottom-up and more organic approaches during technological transformation in higher education in the developing world.

Engaging academics to appreciate E-learning is a significant management issuein higher educational reform and such reform has to be based on the development of 'learning communities'. That means that the actual process of reform must engage academics in actual learning of how to use the new technologies and seeing that this technology is further promoted creating self-initiative so as to build self-confidence and sharing. In most cases, E-learning training should be made compulsory to every academic and don. This requires serious bottom-up approaches to encourage and implement the reforms. Top down attempts to achieve educational reforms in technological outlook have failed and will be doomed to failure until they confront the cultural and pedagogical traditions and beliefs that underlie current practices and organizational arrangements (Goodman, 1995). In technological transformation in higher education, it seems necessary to address the concerns and perceptions of academic staff in the light of the need for changing their attitudes and to ensure ownership by academic staff (Evans and Franz, 2008 April; Taylor, Lopez and Quadrelli, 2006).

Ownership of the technological transformation by academic staff is critical, as itrequires major changes in professional roles. This points to the need for specialised roles and the need for academics to gain the skills and knowledge for effective use of the new technologies, and the requirement for extensive training. University staff needs to change attitude towards technological advancementand need a more complex training session in how to use such technologies and come to appreciate them. Mason (1998) asserts that the new technologies in global education point to a new role for the teacher, for the student and for course material. It centres on the construction of knowledge by the student. A lecturer becomes a facilitator and promoter and information becomes something to work with, think with, discuss, negotiate and debate with partners. The specialized skills needed to develop technology based learning materials further point to the rationale for using development teams. Bates (1993) asserts that producing good quality technology based learning materials will require people who can combine good pedagogic practice with an understanding of the strengths and weaknesses of different media and technologies. Garrison (1989) points to course design teams as the accepted model in distance education and that the Open University uses course development teams extensively. The predominant course-team model in distance education and the main advantage of this model is that it operates on high professional standards.

VI. Implementing E-learning Technologies and Innovation in Universities

Technological transformation in higher education is based on new approaches to organizational processes. An innovation can be described as an idea or behavior that is new to the organization adopting it (Swanson, 2004). Implementing and adopting something new to a culture requires commitment, patience and acceptance of change. In this way, a bottom-up innovation process in the development of ICT and E-learning is important because it fosters the development of the will among members and generates collective participation of lower cadres in decision making leading to consensus building. It is difficult to resist change that comes from the bottom from among the users. The importance of a bottom-up process for a successful innovation aims at spreading leadership. If it does not aim at shared leadership right from the outset, therefore such technology is unlikely to be capable of establishing itself in the university system. In addition, there is need to ensure strong innovation diffusion into higher education systems. The innovation diffusion theory (Rogers, 1983) provides a general explanation for the manner in which new entities and ideas like IT and technology based education over time, disseminate through social systems, in higher education.

The innovation diffusion theory is essentially a bottom-upapproach based on individual responses that can be used as a starting point to depict technological transformation in higher education. Initially, there is a takeoff stage during which an innovation is introduced into a social system. An entrepreneurial group called the innovators often then adopts it. During the next phase of maturation the "early adopters", who are change agents

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or opinion leaders among the social system, will enter the process thereby legitimizing the innovation and opening the potential for adoption to all members of the system. The final saturation stage in an innovation's adoption is characterized by widespread adoption. The innovation saturates the social system and growth tapers off. This process can be plotted as an S-shaped growth curve

VII. Remedies for Ensuring Successful E-learning in Universities in Developing Countries

We have seen that technology cannot be separated from development of the university because it is transient with globalisation and its intentions. Hence, there is need to overcome any resistance from staff and management that hinder technology to take root especially where the computer and internet age is resisted in most main stream teaching, planning and record keeping. In order to cause a vibrant attempt to allowing E-learning to take root, there are several policy directions that should be taken first hand and these are:

1. To identify the objectives that justifies the need for E-learning innovation. Haddard et al (2002: 13) rightly puts it that technology is only a tool: No technology can fix a bad educational philosophy or compensate for bad practice…educational choices have to be made first in terms of objectives, methodologies, and roles of teachers and students before decisions can be made about appropriate technologies. This is extremely important because if E-learning innovations do not make any significant difference in terms of improving quality, access etc. then, and their cost is not worth it. Subsequently, the objectives for introducing E-learning should focus on improving quality and access of educational provision. In other words, E-learning must be made cost effective.
2. The question of what educational provision/ programs could be improvedis critical. Conducting a needs assessment analysis may be appropriate toinform the stakeholders in terms of identifying potential educationprograms that could be complemented by the E-learning innovationsgiven the current available resources. But of critical importance aretargeting areas like registration of students; assessment, research,teaching, and general administration are areas that need criticalinnovations with E-learning technologies in Universities in the developingworld.
3. It is recommended that the change towards E-learning must be gradualbecause if it is made quick it might be too expensive and unworkable. Thismeans that Universities need also to seek for donor funding in the area ofE-learning so as to quickly make changes that will bring universityeffectiveness.
4. Naidoo (2001) suggests that four vital steps that stakeholders should takeespecially in developingcountries during the process of implementingICTs and E-learning. The four steps include: planning, management,education application, and support. Planning entails putting intoconsideration of the how the innovation could be organized, decidingwhat types of programs to be offered etc. Strategic planning is crucial.

Proper planning is a good basis for the final implementation of E-learninginnovation (Naidoo, 2001). Management entails administrative and governance of the programs. Management involves planning how to create awareness to stakeholders, etc. Educational application entails focusing on teaching strategies that could facilitate lifelong learning to students to enable them to meet the changing demands of the diverse needs of global job market. Support to the learners entails provisions aimed at giving students help to enable them learn how to manage their own learning, as they get exposed to various educational programs via E-learning.

5. The better way to start E-learning innovations is by starting with currentavailable resources. Given the fact that establishing new systems isextremely costly, it is a smart idea to use and draw on the already existinginfrastructure and human resources. Then, upgrade and introduce newsystems as you go along. For instance, it could be much easier trainingstaff and students in basic ways to utilize E-learning capabilities andinnovations such as [accessing Internet, using email based web browsing,downloading materials from the web, etc] rather than expecting them tobe able to design fancy Web Pages, multimedia, etc. This kind of trainingcould be carried out through tutoring courses to suit a variety ofeducational needs and aspirations of stakeholders (O'Neill et al, 2004).
6. To promote top-down and bottom-up strategies that promotes E-learningdevelopment and utilization in universities through innovation diffusion.The level of resources made available to promote ICT usage would nothave been possible without senior management and staff support. Whentypical political problems like irrational resistance to change areencountered, senior management is able to step in and direct matters.Middle management and staff, that is, heads of academic andadministrative departments and lecturers, play an important role incontrolling resources and running the support.
7. Try to grow the Internet technology literacy of the staff in phases that isprimitive phase, medium phase, and advanced phase (Al-Khanjari et

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al,2005). According to Al-Khanjari et al (2005) primitive phase-refers to asituation where instructors could use the email facilities reinforce theircommunication with their students. Medium phase refers to a situationwhere instructors could use web pages to deliver online course-relatedinformation. And advanced phase refers to the situation where instructorscould implement more sophisticated pedagogical materials via the net whileutilizing computer aided delivery tools (multimedia, etc).

8. Identify visionary staff that could act as catalysts in the process ofimplementing E-learning (Schonwald, 2003). Starting with faculties thatare more comfortable with technology, and then extend it to otherfaculties that are less exposed to computers. For example, lecturersteaching computer science and information technology should becomfortable with technology and therefore could be introduced toinnovative strategies via E-learning capabilities to improve quality andaccess of educational opportunities.
9. The diffusion can be sustained through the use of a distributed implementation structure. A centre for E-Learning, for example, shouldbe established to provide central support and to coordinate the progress ofthe technological promotion project in the universities. Even learningshould strictly adapt to these technologies where teaching methodolo-giesshould acquire ICT strategies and course work should be conducted usingICT facility.
10. Universities should take time to ensure staff ownership of technologieseven the most rigid type and conservative staff should see the benefits ofE-learning and ICT in higher education development. Ensuring ownershipby academic staff is essential in the diffusion of E-Learning strategies thatpromote effective teaching and learning.
11. In order to ensure ownership of E-learning in universities by academicstaff, it is important for educators and educational policies to drive thetechnological transformation. Staff development can be used as animportant strategy to advance the transformation of higher education.
12. The implementation of educational technology into the curriculumrequires the introduction of a very robust technology infrastructure. Everystaff should have a Pentium computer, printer or access to a printer,access to the Internet and e-mail with power failures and networkshutdowns minimal. The library should also create a technology richlearning environment.

VIII. Conclusion

With the impact of globalisation, universities in the developing world have become competitive in terms of providing quality and flexible educational services to the diverse students' communities (Wende, 2002). Therefore, creating an enduring vision and a strategic implementation framework for the effective implementation of technological innovations and E-learning seems critical. The demand for skilled workforce equipped with technological skills and competencies to cope with the ever-changing responsibilities at the work place (Lewin, 2000) warrants universities to adjust their teaching strategies beyondface-to-face instruction in the classroom. However, it requires institutional leadership in order to promote technology use in university education. Berge and Schrum (2008) contends that the most important function of institutional leadership may be to create a shared vision that includes widespread input and support from the faculty and administration, articulates a clear educational purpose, has validity for stakeholders, and reflects the broader mission of the institution. If African universities cannot take advantage of the information revolution and surf this great wave of technological change, they may be crushed by it. Catching this wave will require visionary leadership in most universities on the continent.

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