

E-Learning in Tertiary Education in Nigeria: Where Do We Stand?

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Abstract

This paper presents an over view of e-learning and its preconditions for learner to benefit from it. The status of e-learning in developing countries, the adoption and readiness of learners, some theoretical models and the place of e-learning in some institutions. The paper also presents challenges of e-learning implementation in our tertiary institutions of learning and the way forward.

Introduction

Advancement in science and technology has given rise to upsurge in information hunt. Students of tertiary education are in great pursuit of information; they are keen to learn new things, ideas, technologies and new ways of acquiring information. This obviously occurs now that the world is fast turning into a global village. This is the world of information and communication technology (ICT).

In education, computer has made tremendous impact in enhancing learning. Information and communication technology and its use have impacted on the way learners and educators acquire and deliver information (Eke, 2009). These technologies have been applied in so many ways in the learning pursuit thus giving rise to the concept of e-learning.

An Overview of E-Learning

Electronic-learning or e-learning as popularly called has been variously defined by different authors. Like the name sounds, electronic learning is learning via electronic means. E-learning (electronic learning) involves use of electronic media (the Internet, DVD, CD-ROM, Videotape, television, cell phones, etc.) for teaching and learning at a distance (Engelbrecht, 2005). It is also a web-based kind of learning. Web here entails learning online; learning via the World Wide Web. This is actually another side of e-learning. Once synonymous with distance learning, e-learning has quickly evolved to include not only courses that are taught online and over a distance, but also to include traditional “brick and mortar” courses that have been enhanced with electronic elements (McLean, N. and Sander, 2003). E-learning is simply a kind of learning that is enabled by electronic technology. It could be web-based learning, computer-based learning, or virtual classrooms and content delivery is done via e-networks, audio or video tape, satellite TV, video conferencing, CD-ROM, i-pods, e-mails, wireless and mobile technology.

Electronic learning is considered to be adequate method for the training of human resources of contemporary organizations and enterprises; due to the advantages it offers (Cantoni et.al; 2004; Driscoll, 2002; Kruse, 2004; Rosenberg, 2000a). E-learning is learner-controlled, in which case the individual has authority over the learning environment; it is self-faced giving chance for students to work with their own time-table and learners can access training when it is convenient for them, at home or in the office. As added by Horton (2001), e-learning gives learners an opportunity to broaden their knowledge because they can learn on their own and

that increases learners' level of confidence and independence. Moses (2001) noted that: "E-learning offers a powerful alternative to traditional form of learning that has worked for many centuries. Perhaps as importantly, it has forced us to rethink our working environments, what we need to learn, why do we need that learning and how we go about measuring success. In some ways, that process may be as important as the new form of learning implementation. Just as changes in Commerce have forced corporations to evaluate how they convey and add to their core capabilities to produce goods and services, so e-learning now offers a chance to rethink learning in many other sectors of society".

It is important to distinguish e-learning from distance learning or blended learning. While e-learning refers to the use of information and communication technology to deliver education to students without geographical limitation, distance learning may not necessarily entail the use of electronic media for course delivery in all cases. It is also instructive that blended learning, which entails a combination of face to face learning and the use of electronic media for course delivery, is gaining ground and ascendancy.

Despite the benefits that e-learning can offer, there are some preconditions for learners to benefit from technology-based learning, especially in developing countries. E-learning can only build on a set of basic computer literacy skills. Gunawardana (2005) built on this by stating that learners should go through an introductory session for each programme that focuses on professional development in the use of technology in the classroom. In developing countries, e-learning has been on a shaky ground.

E-Learning in Developing Countries

The Japan International Corporation Agency (JICA) sponsored a study on distance learning in Africa and found an abundance of distance learning programmes being initiated and managed, even in some of the world's most destitute countries (Fillip, 2002). Some devices used for distance education are TV, Internet/CD-ROM, Radio, though Abdel-Wahab (2005) remarked that radio sometimes is cumbersome to use in distance education without adequate recording systems. Most African countries, for example have several hundred radio receivers per 1000 inhabitants but less than a third of that for TV (UNESCO). According to Ruth and Shi (2001), CD-ROM has the advantage of combining the best of WWW and radio, but the disadvantage of requiring computers and computer skills. Table 1 reveals the severe difficulty that is encountered by attempting to implement an Internet-based distance learning approach in a developing nation.

Table 1: Internet Hosts and Users by Region

Region	Internet Users (2007)
Africa	44,361,940(3.4%)
Asia	510,478,743 (38.7%)
Europe	348,125,847(26.4%)
Oceania/Australia	19,175,836(1.5%)
North America	238,015,529(18%)
Latin America/Caribbean	126,203,714(9.6%)
Middle East	33,510,500(2.5%)
World Total:	1,319,872,109(100%)

Source: <http://www.internetworldstats.com/stats.htm>

Table 1 vividly reveals that Internet connectivity is a problem in developing countries like

Africa, Middle East, Oceania/Australia. To investigate the state of e-learning in Africa, a survey was carried out by Unwin (2008) on forty-five (45) countries. The countries that had the greatest number of respondents were: Kenya (46 respondents), South Africa (38), Nigeria (35), Ethiopia (28), Uganda (25), Ghana (12), and Cameroon (10).

According to Unwin (2008), typical responses included the following:

- Our institutions e-learning developments are still at an infancy stage in that we are still working on trying to identify a suitable e-learning platform to adopt for our content development and learner management (Botswana).
- The Ethiopia Federal conjunction with the State 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), addressing the issues of e-module development, development of distance education in TVET, necessary human resource development and other factors influencing the availability of ICT in the TVET sector (Ethiopia)
- We don't use any eLearning even though we are a distance learning centre. Only distance training in VC and the satellite-based ones were thought about from the beginning. But when people call us, they always hope to be able to follow courses without having to move. At the time we have a lot of demands for distance learning, particularly for the ones with a diploma, but we don't have any platform for this (Senegal).

E-learning in Africa is therefore at its infancy stage. Unwin (2008) in his survey of e-learning in Africa, concluded that:

This snap shot of e-learning in Africa is based on a relatively small sample of Africans who, by their very presence on the e-Learning Africa database, are already actively interested in e-learning. Relatively few of these are based on comprehensive Learning Management Systems, and most rely primarily on the use of the Web for gaining access to information, and on e-mail for communicating with colleagues and students. This confirms that e-learning is in its infancy in Africa, but the evidence from those consulted in this survey is that there is nevertheless considerable enthusiasm for the potential that it offers across the educational spectrum (p.9).

Infrastructure like the availability of electricity, computers and the Internet is not yet fully in place to enhance the e-learning project. For instance, on the issue of availability of computers in their places of work, 96 respondents which constituted 30% of the population in the survey, indicated that there was more than one computer lab in their place of work, and as many as 30 people (9%) claimed that there was one laptop available per student or worker. At the other extreme, only 6% (20) of respondents said that there were no computers available where they worked, and only 4% (14) commented that there was only one computer per class available.

E-Learning Adoption - Readiness of Learners

Despite the wide use of information and communication technology in university teaching, research on e-learning adoption suggests that it has not reached its full potential (Zemsky et al., 2004). This implies that a lot more need to be done in order for university teaching to be improved via ICT. E-learning adoption is hampered when there is absence of improved technology in any university system. As noted by Psycharis (2005), the successful implementation of e-learning by an educational system should fulfil certain criteria such as the acquisition of adequate technological infrastructure and adequate educational content of persons with university skills and a developed culture which encourages learning and sharing

of knowledge. These factors can affect learners' readiness and adoption of e-learning. Adoption of e-learning by students in an educational system is a function of their readiness for it, especially if they are satisfied with the terms of service of the e-learning programme/platform. This will, in turn, determine the extent to which e-learning reaches its full potential.

The UK-based observatory on Borderless Higher Education (OBHE) carried out a survey of online learning in commonwealth universities. The results (OECD, 2005) revealed that:

- Students taking part in e-learning is growing in general;
- Fully online whole programmes account for fewer than 5% of total enrolments;
- The number of student enrolled in at least one course with a high online presence would be much higher, and sometimes from 30% to 50% of total enrolments;
- In most institutions, cross-border enrolments (overseas students' enrolments) for e-learning are on a small scale - peripheral activity;
- Whole award programmes with relevant online presence were more common at postgraduate level and
- IT and business/management emerged as the most commonly cited disciplines making significant use of some form of e-learning, particularly in the mixed mode and fully online categories.

The results of the observatory support the claim that e-learning has not reached its full potential. The e-learning providers might, as a result, be faced with a host of challenges in predicting the degree of acceptability of their e-learning programme among potential users. Some models guide the adoption and readiness of e-learning and, or ICT/other technologies by learners and organizations, but before then, a brief summary of theories of innovation adoption will be considered.

Theoretical Models of Innovation Adoption

A number of models have been developed to investigate and understand the factors affecting the acceptance of computer technology in organizations. The theoretical models employed to study user acceptance, adoption, and usage behaviour include:

- Theory of Reasoned Action – TRA (eg. Ajzen and Fishbein, 1980; Fishbein and Ajzen, 1975),
- Technology Acceptance Model – TAM (eg. Davis, 1989; Davis et al; 1989),
- Theory of Planned Behaviour – TBP (eg., Ajzen, 1991; Mathieson, (1991),
- Decomposed Theory of Planned Behaviour (Taylor and Todd, 1995),
- Innovation Diffusion Theory (eg., Agarwal and Prasad, 1997; Rogers 1995),
- Integrated Technology Adoption and Diffusion Model (Sherry, 1998), and recently, the
- Moguls Model of Computing (Ndubisi, et al., 2004).

The current effort focuses on the Technology Adoption Model (TAM). TAM was the first model to mention psychological factors affecting computer acceptance. TAM deviated from TRA from the start by excluding subjective norm out of the model (Raiij and Schepers, 2006). TRA model hypothesizes that a person's behavioural intention to perform (or not to perform) a behaviour is determined by that person's attitude and subjective norms.

Assumption of TAM (Technology Acceptance Model)

TAM assumes that both perceived usefulness (U) and perceived ease of use (EOU) of the new technology are central in influencing the individual's attitude towards using that technology. An individual's attitude is hypothesized to influence the behavioural intention to

use a technology, finally relating to actual use. Perceived usefulness (U) as described by Davis (1989) is the belief that ICT adoption leads to augmented workplace activity. The perception of ease of use (EOU) is described as a belief that an IS system is effortless in use.

In various studies (Mathieson, 1991; Pavri, 1998), it was discovered that technology acceptance model (TAM) yields high explained variance for why users choose to utilize systems (Abdel-Waha, 2008). In the follow-up model TAM2 (Venkatesh and Davis, 2000), the attitude component was not included anymore, and the perceived technology characteristics directly influenced the individual's intention to use the new technology under consideration. Additionally, social influences (operationalized norm) re-entered the model (Abdel-Waha, 2008).

Both TAM and TAM2 have been applied in different forms to explain technology adoption model in a wide variety of contexts ranging from consumer to intra-organizational technology acceptance (Raaij and Schepers, 2006).

In the present study, two more independent variables are added to the original technology adoption model, namely, the pressure to use and resources availability. The strategy was adapted from the method applied by Raaij and Schepers (2006) stating that the rationale behind the use of these two factors is that, in addition to usefulness and ease of use, there must be some pressure on the decision maker to use a particular innovation (accelerated product innovation by all competitors is an example of such a pressure), and decision maker must have the resources to adopt such an innovation.

In relation to the models of adoption of innovations described, what then is the current state of adoption of e-learning by LIS students in UNN? Some factors have been perceived to influence the adoption of e-learning by students such as:

- Attitude towards e-learning: Attitude is defined as an individual's positive or negative feeling (evaluative effect) about performing the target behaviour (Fishbein and Ajzen, 1975). This, as noted by Ndubuisi (2004) is related to behavioural intention because people form intentions to perform behaviours towards which they have positive feeling. The attitude-behavioural relationship is fundamental to TRA, TAM and related models presented by other researchers such as, Triandis (1977) and Bagozzi (1981). With regards to e-learning, attitude towards this learning model will be positively influenced by its perceived system's usefulness, ease of use, and security.
- Perceived Usefulness of e-learning: This is defined as the extent to which a person believes that using a particular technology will enhance his/her job performance.
- Perceived Ease of Use: Is the degree to which using IT is free of effort for the user (Davis et al; 1989). A significant body of studies has shown that perceived usefulness and perceived ease of use are determinants of usage (e.g. Igbnaria et al, 1997; Szanja, 1994).
- Pressure to Use e-Learning: Pressure could come from stress, living in remote areas, distance from home to school.
- Availability of resources needed to use e-learning: This is related to infrastructure availability – their readiness.

Where We Stand

It is pertinent that e-learning is just being adopted as a mode of delivery in the Nigerian University System. The situation is even worse in the polytechnic and colleges of Education sectors. Efforts need to be intensified in enhancing its adoption having become the global trend.

Nigeria ranks 62 among nations in terms of institutional e-readiness which is defined as the

ability of a nation's institutions to use ICT to achieve their mission and vision. The most populous country on the African continent, Nigeria ranks below South Africa and Egypt – which rank 39 and 57 respectively. Nigeria's e-readiness ranking highlights the need to seek innovative solutions to improve ICT usage. Liverpool, L.S.O et al in their article titled Towards a Model for E-Learning in Nigerian HEIs: Lessons from the University of Jos ICT Maths Initiative cited the 2008 Economist Intelligence Unit report as saying that “Innovation is complex and challenging within large organisations such as universities that are part of a mass system of higher education”. Efforts to introduce technologies in higher education must extend beyond technology transfer to consider what is known as effective innovation. Specifically, existing products need to be embedded into teaching and learning structures for students. ICT initiatives must address critical factors which include cultural change, time for academics to transit from traditional teaching to teaching with technology, as well as staff development and training needs. Fundamental change in the role of teachers in higher education institutions can result in culture shock. It is critical to assess the current environment from various perspectives in order to implement an integrated strategy to facilitate successful diffusion of innovation. (B. Somekh, 1998).

The Umbrella Perspective for examining ICT recommends examining new technology for various levels of analysis: the social system in which the technologies are introduced; the organizational infrastructure in which the technology operates; the hardware and software available to users; and the individual users utilizing the software. Factors within each level of analysis may be identified as enabling, limiting, motivating, or inhibiting. Enabling factors are those that make an application possible. All four types of factors – enabling, limiting, motivating, and inhibiting – can be identified at the system, organizational, software, and individual user levels. However, hardware can only be enabling and limiting; by itself hardware does not provide any motivating factors. The motivating factors must always come from the human dimension, the messages transmitted (software) or one of the other levels of analysis. This perspective reinforces the importance of taking a socio-cultural approach when examining ICT. Successful technological initiatives are based largely on the motivated users who use technology in context to meet specific needs. For educational institutions which are focused on facilitating learning, a primary goal for technology usage is to facilitate teaching and learning. Training efforts designed to diffuse innovative teaching strategies should address enabling, limiting, motivating and inhibiting factors at all levels of analysis. For example, policy decision at the system level can ensure appropriate technologies are utilized effectively. The organization provides an enabling environment for technology usage by ensuring the effective implementation of ICT policies. Even with all systems and organizational structures in place and working effectively, sufficient emphasis must be placed on motivating individuals to actively use technologies (A. Grant & J. Meadows, 2002).

Students with the highest level of ICT skills acquire many of these skills as a result of course requirements. While students may develop information technologies skills from recreational use, their academic preparation provides the structure and competence necessary for them to compete effectively in the global marketplace. Six areas in which institutions should pay particular attention when implementing an ICT strategy in higher education are as follows: 1) integration of ICT into the curriculum; 2) definition of ICT skills; 3) training of students and academic staff; 4) common learning environments and consistent instructional approaches; 5) accessible and effective ICT service and support; and 6) monitoring and benchmarking. (R. Kvavik & J Caruso,) 2005.

E-Learning Initiatives

The National Universities Commission as part of her regulatory responsibilities hosted a three-day stakeholders' workshop for experts in the field of e-learning from the Nigerian University System (NUS) in collaboration with the African Virtual University, Nairobi – Kenya from 16th – 18th September, 2013 in Abuja.

The Workshop was attended by 40 participants comprising academics and e-learning experts from Nigerian universities, representatives from African Virtual University (AVU) and Messrs Schulportal.

The workshop objectives centered on the following:

- Provision of a forum for stakeholders in the NUS to deliberate on the challenges in the deployment of e-learning tools in teaching and learning;
- Strategies for taking forward, the optimization of these tools in teaching and learning in Nigerian universities;
- Providing an opportunity for brain-storming on quality issues pertinent to the deployment of e-learning tools and Open Educational Resources (OER) and
- Dialogue on issues on importance in the formulation of institutional and national policy frameworks for OER in Nigeria.

4.2 Pilot Take-Off of B.Sc Economics by E-Learning in Four Universities

The real e-learning programme in the NUS began with the pilot take-off of B.Sc Economics via e-learning in four universities, namely:

- UNIUYO
- NOUN
- UDUS
- UNIMAID

Earlier on there were the

- National Virtual Library Project- 2002 and
- Virtual Institute for Higher Education in Africa (VIHEAF)-2006

Challenges to E-Learning Implementation in Higher Education

- Lack of qualified ICT personnel;
- Cost of equipment;
- Management's attitudes;
- Erratic electric power supply in most parts of the country;
- Inadequate telephone lines particularly in the rural areas and
- Non inclusion of ICT programmes in teachers' training curricula and/or at basic levels of education.

Way Forward/Conclusion

E-learning is the best alternative to solve the problem of access to tertiary education in Nigeria. As a starting point, there is a need to deliberately articulate a policy to integrate information and communication technology into the mainstream of education and training in Nigeria. That done, massive investment in ICT infrastructure to provide the needed technology support becomes imperative. The absence of inadequacy of ICT infrastructure will totally hamper enhancement of access through e-learning adoption in tertiary institutions. There should be provision of computers and high bandwidth to enable the easy flow of classes online. This goes in line with the recommendation given by Abdel-Wahab (2008) that 'if the high ICT infrastructure for e-learning is unavailable, the sequential use of predecessor

distance learning technologies from correspondence courses to radio, TV, CD-ROM, Internet and World Wide Web is recommended. Such a sequential use of predecessor distance learning technologies is poised to leverage the experience into a significant use of learning.

Innovative strategies have to be adopted to remove the resistance of staff to change. Stimulants such as e-learning fellowships with attractive incentives can increase participation in digital local content creation. The comparatively poor status accorded to good teaching against the status accorded to research is a big threat to local content creation. Young staff want to do research and get doctorates in their disciplines while older staff are resistant to change if inertia has set in. Increased opportunities for younger staff to enter the realms of “technology for teaching and learning” through overseas training must be realised through an aggressive campaign and special programmes.

Continuous training and retraining is critical. The use of discipline specific on-line course materials for training faculty on the LMS can bring real life problems to the fore. Sharing of resources and experiences can maximise the output in quality and quantity. Mentoring is an imperative.

Nigerian Institutions all want to start their own initiatives from the scratch. There is a dire need to advertise the advantages of networking and collaboration; the need to leverage on the successes of leading institutions. The role of a national research and education network in this venture is critical. Skills development and training are better done through such a network. Consortia for bandwidth and computer peripherals can reap big gains for the Forum.

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