

Optimizing E-Learning in Nigerian Universities for Sustainable Development

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Abstract

A dialectical nexus exists between education and development. With Nigeria's paradoxical ashamedly poverty and underdevelopment profile amidst abundant potential wealth, effective educational service delivery especially at the higher education level which is critical to human and national development is imperative. Thus, education in the 21st century global knowledge economy requires a paradigm shift in the delivery system to match the emergent new knowledge, attitudes, skills and technologies. Since curriculum is a vehicle for attainment of educational goals and methods of delivery are a component of the curriculum, there is need for employment of effective delivery systems which will produce functional citizens locally relevant and globally competent. E-learning which means electronic learning is an ICTs – driven new face of education service delivery superior to the traditional brick wall classroom learning. But there are challenges and gaps for an effective e-learning in the universities. This paper, therefore, using a library research method, attempts to demystify all this and articulates twelve nuggets strategies to optimize e-learning in Nigerian universities for Nigeria's sustainable development and global competitiveness.

Introduction

Education is a veritable tool for human and national development. For development to be sustainable, it has to meet the needs of the present without compromising the ability of future generations to meet their own needs (WCED 1987). To attain the objective(s) of sustainable development, therefore, education for sustainable development (ESD) is imperative. This implies that the educational programmes or curriculum have to be efficiently and effectively implemented to meet the needs of the present and future generations in the three interrelated areas of economy, human development and environment.

Effective education programmes within the purview of curriculum delivery deals with the implementation of the curriculum document. In other words, curriculum delivery is concerned with the strategies, techniques, approaches and methods employed in facilitation of learning. Curriculum delivery has to be aligned with education in the 21st century which calls for a paradigm shift in the delivery system to match the new knowledge, attitudes, skills and technologies that are emergent to meet the demands of the knowledge economy and global competitiveness.

According to World Council for Curriculum and Instruction (WCCI, 2012), since curriculum is a vehicle through which educational goals are attained and methods of delivery are a component of the curriculum, there is need for employment of effective delivery systems so as to produce functional citizens who are locally and globally competent, effective and relevant. E-learning which is electronic learning is one of such effective curriculum delivery systems. E-learning is the adoption and use of information communication technologies (ICTs) to extend and enhance learning in and out of schools. E-learning is the digital new face of learning. For Wikipedia (2011), e-learning is the computer and network – enabled transfer of knowledge and skills. E-learning processes and applications include web-based learning, computer – based training, virtual classroom opportunities and digital collaborations. Content is delivered via the internet, intranet /extranet, audio or video tape, satellite TV, CD Rom. It can be self-paced or instructor–led and includes media in the forum of text, image, animation, streaming video and audio. The implication is that e-learning is superior to the traditional classroom method of teaching and learning. But it is not a substitute but a supplement to the traditional classroom teaching and learning. E-learning in Nigeria universities is grappling with huge challenges and constraints. This paper therefore looks at how e-learning can be optimized in Nigerian universities for sustainable development.

Conceptual Underpinnings

ICTs and E-learning

E-learning which is electronic learning is subsumed under information communication technologies (ICTs). By definition, ICTs include electronic networks embodying complex hardware and software technical protocols and services which affect local and global communication, (Eze, 2007). Simply put, ICTs which are a combination of three concepts – information, communication, and technologies – are electronic devices used to store and speed up information and communication to a mass audience. According to the United Nations Economic Commission for Africa (cited in Eze, 2007), ICTs cover internet service provision, telecommunication equipment and services,

information technology (IT) equipment and services, media and broadcasting, libraries and documentation centres, commercial information providers, network-based information services and other related information and communication activities.

ICTs are catalyst to globalization and development. ICTs have revolutionized all spheres of human endeavour including education so much so that the present age has been described as a “knowledge economy” or information economy”. Thus, we have e-commerce, e-banking, e-mail, e-government, e-learning, and so on.

Various concepts of e-learning have been given. E-learning refers to the use of information and communication technologies (ICTs) to enhance and/or support learning in tertiary education (OECD, 2005). Akubuilu (2011), views e-learning as comprising all forms of electronically supported teaching and learning. He contends that e-learning is to brick wall classroom learning, what mobile phone is to analog fixed telephone line. To him, whereas the block wall classroom is situated at a place where teachers and students physically meet and interact, e-learning is diffused, capable of taking place anywhere and anytime, without face-to-face interaction between the teacher and students.

Nwokike (2010) opines that e-learning is the use of computers as a key component of the education environment. In this wise, the computer can be used for localized or distant or digital learning, which involves changing from analogue system of education delivery to a digital system of education delivery. E-learning is essentially the computer and network enabled transfer of knowledge and skills with reference individual experience and practice (Nwokike 2011). The following acronyms like CBT (Computer-Based Training); IBT (Internet-Based Training); WBT (Web-Based Training) have been used as synonymous with e-learning (Otuka, 2010).

The Internet is central to e-learning but it is not by any means the only technology for it (Okigbo and Ndolo, 2011). As Govindasamy (cited in Okigbo Ndolo, 2011:3) explains, “essentially e-learning is another way of teaching and learning which includes instruction delivered via all electronic media including the internet, intranets, extranets, satellite broad costs, audio/video tape, interactive TV and CD Rom”. Obtaining and delivering knowledge anytime and anywhere, asynchronously or synchronously is the hallmark of e-learning. Asynchronous is pre-recorded and available to students anytime and anywhere. Asynchronous e-learning activities use technologies such as blogs, wikis, e-mails and discussion boards to exchange ideas and information (Nwagwu, 2011).

A major advantage of asynchronous e-learning is that it allows for self-paced learning or individualized learning and flexible learning. Synchronous or “live” e-learning requires that learners be with their computers at the same time or learners are available at a place at the same time for electronic mediated teaching. Both formats present countless opportunities for effective education service delivery, especially in under-serviced countries such as Nigeria (Okigbo and Ndolo, 2011). Synchronous activities use on-line technologies such as chat, instant messenger/messaging, video conferencing and other kinds of virtual meetings for real time live interactions.

Advantages of E-Learning

The advantages of e-learning stems from the defects in the traditional brick wall classroom system. Compass (2011) notes that the defects in the traditional education system include lack of adequate provision of visual and audio-visual materials, microphones that are in most times epileptic, classrooms that are poorly ventilated and overcrowding of lecture halls. Thus, the advantages of e-learning have been articulated by Alu (2011:295-297):

- **Time and Location Flexibility:** It eliminates the barrier of time and place, therefore, has the capacity to reach a global audience whether part time or full time.
- **Cost and Time Saving:** Learners do not need to travel to any location thus saving indirect costs. According to Zang (cited in Alu, 2011) companies using on-line training can save an average of 50% on time and 40-60% on costs when compared with face to face learning. Learners stay in their homes and take lectures and also take examinations.
- **Moving at Learners Pace:** In e-learning, learners choose activities that best fit his/her interest, background and career and works at their own pace and time. Beam & Cameron and Burgstahler (cited in Alu, 2011) agree that e-learning can be as effective as traditional instruction methods and allows active participation of students.
- **Collaborative Learning Environment:** E-learning links distant learners and experts together to form an on-line collaborative learning community (Hiltz and Benbunan-Fich, cited in Alu, 2011). Learners are bold to ask questions and express their opinion without fear of reprisal from the instruction. There is also learner-learner uninhibited interaction.
- **Better Access to the Instructors:** Learners receive on-line guidance and help from their instructors. They see it as a greater opportunity for communication than those in a traditional setting (Hiltz & Wellman cited in Alu, 2011).
- **Unlimited Use of Learning Material:** E-learning provides ultimate access to electronic learning materials. Information and knowledge are available to learners 24 hrs a day, for 7 days in the week.

People can review current or past knowledge many times over while the quality of materials remains intact (Zhang, cited in Alu, 2011).

- **Improved Learning Skills:** Researchers found out that on-line learning could be better than classroom learning under certain circumstances (Thompson, Zhang, cited in Alu, 2011). Thompson (cited in Alu, 2011) found out that on-line education helped student to acquire technology skills and have increased familiarity with technology. In order words, students who spend a lot of time benefits more as this agrees with repetition in learning and consolidation.
- **High Quality Internet Courses:** Infrastructure and networking will help to deliver high quality courses. CD ROM training now offers movie quality lectures by famous professors that include a variety of quizzes and exercises. Those who cannot afford to go to schools can utilize e-learning to improve their studies wherever they are through distant learning. They can access knowledge anywhere in the world.

Advantages and Benefits of E-Learning in the University System

According to Ogboji(2011:340):

1. E-learning makes teaching and learning easy and reduces stress for both lecturers and students.
2. It is convenient for students to review their course materials anytime and get result faster than it used to be with the traditional system.
3. It provides opportunity for a course designer to present to students through a single interface all the requirements and components of a course of training.
4. It provides additional resources including reading materials and links to outside resources in internet and libraries.
5. It provides examination and self assessment quizzes which can be scored automatically.
6. It provides electronic communication such as e-mail and threaded discussions for both lecturers and students

For Nzeako (2004) the benefits of e-learning are:

- On-line handouts, textbooks, journals and other information resources which can be read on-line (directly on the screen) or downloaded and printed as hard copies for off-screen reading.
- On-line lecturers – virtual lecturers; these are video files of recorded lecturs that are always there for viewing as long as the web master leaves them there, and students can learn at their own pace and time.
- Opportunities for students to play, pause, rewind and fast-forward lectures to ascertain extents/aspects they may need to make clarifications on.

Mole (2011) adds that e-learning has a capacity to address the scarcity of teaching and reserch materials in the libraries of institutions of higher learning. It would allow students, lecturers and researchers to share their own research outputs with the global community and improve the provision of current e-books, e-journals and other library resources, enhance access of academic libraries to global library and information resources; enhance scholarship, research and life-long learning through the establishment of permanent access to shared virtual archival collections.

We can also that e-learning equips students with the digital skills for the job market. Furthermore, e-learning makes the learner to be dependent and accessible to learning experiences locally and globally through the internet by the best universities and research institutions in the world. Administratively, e-learning project offers the university opportunity to publish information on the internet, such as latest events on campus, list of newly admitted students, online registration of students and course and payment of fees. The e-learning project offers, also opportunities for computerized data storage and retrieval and use which is superior to and safer than the manual filing system. The recent and ongoing online admission upgrade and validation exercise of postgraduate students of the University of Nigeria, Nsukka is meant to achieve these lofty objectives.

The Nexus between Educations, E-Learning, And Sustainable Development

Education is the process by which every society attempts to preserve, transmit and upgrade the accumulated knowledge, values, attitudes and skills in its cultural heritage in order to foster continually the wellbeing of mankind and society. Thus, education is the pivot of social stability, social change, social progress, national transformation and development, human development, and sustainable development. Since finance is the facilitator of development and mankind is the animator and beneficiary of development, it follows that mankind (men and women, boys and girls) is the fulcrum of development. Development is therefore, of the people, for the people and by the people which focuses on social change aimed at improving the standard and quality of life of the people especially that of the underprivileged and vulnerable majority of the population.

Development scholars and institutions such as Seers (1969); Goulet (1971); Rodney (1972); WCED (1987); Sen (1999); Nwosu and Uffoh (2005); Nwosu (2007); Nwodu (2007); Jhingan (2011); Todaro and Smith (2011); UNDP (2000, 2009); World Bank (2010) all agree that for development to be meaningful, beneficial and

impactful, it has to be sustainable. In this paper, sustainable development has two interrelated meanings and applications. The first one refers to development “that meets the need of the present without compromising the ability of future generations to meet their own needs” (WCED, 1987:4). The second refers to the ability of local people to continue development programmes even after external financial and logistics support has been withdrawn. In both instances, the lynchpin of the concept of sustainable development is the improvement in the quality of human life while avoiding damage to the physical environment.

Under the concept of development defined as the “expansion of capabilities of persons to lead to kind of lives they value and have reason to value” (Sen, 2001:14) education is a key component of a country’s development strategy. For instance, Nigeria’s National Economic Empowerment and Development Strategy (NEEDS) document recognizes education as the vital transformational tool and formidable instrument for socio-economic empowerment. It states that the goals of wealth creation, employment generation, poverty reduction and value reorientation can be effectively pursued, attained and sustained only through “an efficient, relevant and functional education systems” (NPC, 2004:35). The NEEDS document, however, admits that Nigeria’s education sector is in dire straits and needs reform. E-learning, pivoted and facilitated by ICTs, with its obvious advantages and benefits to education in general and the Nigerian university system in particular, is part of the education reform toward attaining “an efficient, relevant and functional education system” for economic growth, human development and environment conservation, which are the tripod of sustainable development.

In this age and season of globalization which has reduced the wide world to a global village, best practices and global benchmarks in all fields of human endeavour including higher education are accessible on the internet and could be replicated in Nigeria. The University of Nigeria upgrade philosophy and drive of the Vice Chancellor, Professor Bartho Okolo, to make the university globally competitive is a product and outcome of e-learning. A quality of education which is of crucial importance in this paper is the fact that education is dynamic, constantly changing and adapting itself to new demands, new circumstances and new exigencies, within local and global contexts. “Education therefore, has the growing quality of living organism” (Ukaosor, 2007:172). E-learning is the new face of global education which the National Universities Commission should adapt to and optimize in the universities for sustainable development. Thus, e-learning is to enhance and support higher education for economic growth, human development and environmental conservation which are the three pillars of sustainable development. This means that clean technologies should be used to produce ICTs and electronic wastes need to be recycled to avoid environmental pollution and degradation.

Status And Imperatives For E-Learning In Nigerian Universities

E-learning is a technology whose time has come in the contemporary knowledge – driven economy and globalization empowered by ICTs. This is very imperative for higher education because tertiary education plays key role in the ability of a developing country like Nigeria to absorb modern technology and to develop the capacity for self-sustainable growth and development. E-learning is now in use in Nigeria tertiary education including universities. For instance, according to the Park Manager of AFRIHUB in University of Nigeria, Enugu Campus - Mr Chukwuemerie Nnamdi - AFRIHUB is present in about eighteen (18) tertiary institutions in Nigeria, AFRIHUB “provides the critical combination of infrastructure services and training required to unleash the power of ICTs in Nigeria and other African countries for human capacity building and economic empowerment” (AFRIHUB Mission Statement). These tertiary institutions include the University of Nigeria Nsukka and Enugu Campuses (UNN, UNEC); Nnamdi Azikiwe University Awka; of University of Abuja, University of Benin; Michael Okpara University of Agriculture, Umudike; Federal University of Technology Owerri (FUTO) and Minna (FUTA); Federal College of Education, Technical, Omoku; University of Calabar; Nwafor Orife College of Education Nsugbe and Bell Technology University, Otta. Plans are also afoot to start ICTs operation in more tertiary institutions in the country under a public-private – partnership (PPP) contractual arrangement with the various institutions concerned, notes the AFRIHUB Park Manager.

The emphasis on effective educational service delivery in UNN is evident also in the new Lionex Wireless Internet, the new Galaxy Backbone and the proposed e-black board platforms, to support expanded e-learning in all classrooms by the end of 2012 (Okigbo and Ndolo, 2011). According to Babaloli (cited in Ekesionyes Okolo, 2011), University of Ibadan has moved from having only 25 deal-up links to the internet in year 2000 to a campus-wide system of 1000 networked computers wing, wired and wireless technologies by 2005. the university’s local area network has improved tremendously from the 2004 figure of 15 LAN–Unix to over 65 units in 2007, and 75 units in 2009, with 11 faculties linked by fibre cable ICT network operating centre (NOC). The total number of computer systems on the network grew from about 650 in 2004 to over 2,50 at the end of 2007 and about 4, 000 in 2009. Similarly, Bandwidth increased from 512/2048 Kbps up/down to 1536/7352 kbps up/down for the VSAT at main campus and from 256/1024 to 740/3072 for the VSAT at the College of Medicine (Babalobi, in Ekesionye and Okolo, 2011).

Moreover, in the University of Ibadan (UI), under the library strengthening programme, a computer laboratory has been provided to access the internet with adequate power supply. At the UNN, optical fibre local

network and enterprise software for academic and management information systems have been provided and total digitalization of all classrooms and teaching laboratories have been carried out for e-learning activities (Okolo, 2011). University of Lagos (UNILAG) has introduced virtual learning system which in turn uses virtual learning environment and computer that facilitate learning through learning management system (Compass 2011).

The beneficial advantages of e-learning have been articulated (Onyegegbu and Ezeh (Eds) 2011). These benefits permeate the entire university system, in both academic and non-academic dimensions. The bottom line is that e-learning profoundly enhances the local and global competitiveness of a university, its staff and students by impacting critical knowledge, values and skills, best practices and global benchmarks for optimal relevance and productivity in the economy, society and ecology. Knowledge is wealth, progress and development.

But there are enormous challenges. Ogoji (2011) study reveals low status of e-learning usage in Nigerian universities. Nwaoba (2011) study shows that most teachers do not have adequate access to ICTs facilities needed for effective e-learning in schools; Mole (2011) study found out that the challenges facing library and information professionals (LIPs) in optimizing e-learning opportunities for effective education service delivery in Nigeria include transition challenge, technological challenge, web skill challenge, digital divide challenge and acquisition challenge. Other challenges include erratic and epileptic power supply, poor funding; weak and inadequate infrastructure, high cost of bandwidth and other hardwares and softwares; low computer literacy and skills among staff and students and management, low level of professionals and corruption (Asogwa, 2011; Eze and Nnaji for cited in Ogonna, 2011). More challenges will include change resisters and low level of technology and literacy in the country.

Indeed, the 2007 Education for All (EFA) Global Monitoring Report indicates that Nigeria has 63% illiteracy rate and among the 12 countries which house three-quarters of the world's illiterate population (Akubilo, 2011). Chukwulaka (2009) notes that in 2008, UNESCO classified Nigeria as one of the countries at a serious risk of not attaining education for all (EFA) goal in 2015. Majority of Nigerians who desire higher education are deprived because of limited offer in the physical brick wall institutions of higher learning. Some who succeed in gaining admission drop out as a result of difficulty in combining work with schooling due to the traditional classroom – based higher institutions (Akubilo, 2011). Other factors include physical disabilities making it difficult for such physically challenged people to move about and the high cost of running brick wall educational institutions which makes it difficult to establish new ones. (Akubilo, 2011).

Academic and non-academic staffs in Nigerian tertiary institutions for the past two-decades have experienced sharp increases in students' enrolment while working with inadequate resources, outdated course materials and old instructional facilities (Okebukola, 2010). This may have resulted in the poor output of students and the enterprise and employment unworthiness of most Nigerian graduates. Akunyili (2010) regrets that Nigerian higher education system has degenerated in infrastructure, teaching facilities, qualities of both academic and non-academic staff and leadership.

Similarly, Imagie (2010) reported that the existing higher educational system in Nigeria has failed to provide quality education to its beneficiaries. It then means that higher education in Nigeria including universities need to be rebranded, repositioned and improved upon for added value. Against this background, optimizing e-learning which will enhance the quality of teaching and learning, promote research, scholarship and skills and upgrade the marketability of university graduates to contribute profoundly to growth and development and global competitiveness of Nigerian universities becomes a critical mass.

Twelve Nuggets Strategies for Optimizing E-Learning

E-learning is now in operation in Nigeria universities. But the question remains: How much of e-learning is in use? How can the adoption and use of e-learning be optimized for effective teaching and learning? How can it be optimized for effective cutting –edge administration and management? We make these recommendations, therefore, toward answering these begging questions with a view to optimization and optimality of e-learning in Nigerian universities:

1. Prioritization and optimal investment in science and technology, research and development (R & D), and education to promote and enhance technological competencies. In this wise, Universities of Technology and Faculties of Engineering need to be reengineered and re-branded to fast track technological knowledge, acquisition, innovation and practice.
2. E-learning has to be mainstreamed into the university curriculum, from fresh year to final year. It should not be an elective or a basic GS course.
3. Continuous programme of retooling academic and non-academic staff in e-learning skills and practice.
4. A deliberate robust and dynamic policy and programme of university upgrade by the Nigerian University Commission (NUC) pivoted on e-learning.
5. Optimal university funding and provision of conducive learning environment including critical e-learning infrastructure through public–private partnership (PPP).

6. The provision of adequate and stable power generation and transmission to the universities.
7. An optimal maintenance and sustainability culture is to be entrenched.
8. Integration of online and offline e-learning and blended or hybrid learning. Offline e-learning describes education with the use of computers that are not connected to the internet using CD–Rom. This is called Computer Based Training (CBT). Blended learning or hybrid learning is a combination of face and online approaches to education delivery. Bates and Poole (2003) state that blended learning can cover classroom aids such as power point slides, lap tops brought into the classroom by students as part of face-to-face class to hybrid learning where classroom time is reduced but not eliminated, with more time devoted to full online learning. Thus, blended or hybrid learning involves integration of brick wall classroom learning and e-learning to promote publishing, digitalization, and high impact factor publications.
9. Integration of mobile computing devices such as iPods, MP3 players, personal, digital assistants, e-book readers, tablet PCs and modules into e-learning platforms to make courses of instructions more accessible and portable.
10. Effective collaboration and partnership among all stakeholders in the public and private sector. These include teachers who must package the instructional modules, the university that provides the administrative and management mechanism, students or learners who are the most critical public; IT experts who must provide the channels for transmission, policy makers who approve that e-learning should take place, telecommunication companies, financial institutions such as banks, and platform providers such as Blackboard.
11. E-learning technologies can best be realized by using it to expand the university educational offerings to people who might otherwise be excluded by the regular university programmes. This will reinforce and optimize the distance education programme of Nigerian universities to address the high illiteracy rate in the country.
12. The Federal Ministry of Information Technology, Federal Ministry of National Planning and National Planning Commission should be more proactive in making digitalization a cardinal national development policy, plan, programme and project of all national institutions including education

Conclusion

The twelve nuggets strategies for optimizing e-learning in Nigeria universities are highly recommended. Exploring and exploiting optimally e-learning opportunities in Nigerian university system provide possibilities for Nigeria's sustainable development. By closing the knowledge, literacy, attitude and skills gap between Nigeria and the more advanced and developed countries and enhancing educational effectiveness through good governance, e-learning will help to address the brain drain syndrome and set Nigeria on the path of global competitiveness and sustainable growth and development. This is because of the dialectics and synergy between education and development. Investment in education, human capital, research and development (R & D), science and technology are the critical mass in achieving self-sustaining growth and development. This is the secret of Western Europe and North America's development. The university education should pioneer and embody excellence and innovations, best practices, growth and development. The university system should also form a bulwark against poverty, illiteracy and underdeveloped. E-learning is it!

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