Online Education as a Panacea for Higher Education Problems in Nigeria

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ABSTRACT

Online Education encompasses teaching and learning delivered via a computer and the Internet. With components of discussion groups, quizzes, social rooms, online submission of assignments, pair work, group work under the guidance of a professional tutor, it provides one of the best means of education. Nigeria, a major developing country in the African Sub Saharan region has a major problem of access to higher education. Yearly several thousands of candidates pass the University Matriculation Examination out which only a small percentage are able to get a place in the University.

The brick and 'Mortar Universities' or 'conventional University' education has been used to educate thousands of individuals. However the opportunities and advantages offered by online education are so compelling that no Nation can afford to ignore it. Some of these include students ability to 'attend' a course at anytime and from anywhere, accessibility to learning materials 24 hours a day, 7 days a week, increase in students interaction, use of the Internet technology which is critical to the 21st century. Online education therefore will not only provide more access to higher education in Nigeria, it will allow thousands who wants to learn but are not able to attend conventional schools the opportunity to do so. Online education is usually a complete package that makes it easy for students to carry out registration, access the Library, pay fees and obtain help and counseling. The design and implementation is usually very user friendly and easily used by anyone.

Keywords: *Online, Panacea, Higher Education, Tertiary Education and Virtual education*

1.   INTRODUCTION

Online or virtual education is defined as a teaching and learning environment constructed in software, which supports collaborative learning among students who participate at times and places of their choosing, through computer networks. (Wiki Pedia, 2010), other definitions include "distance or correspondence courses that are offered over the Internet." (wisegeek.com, 2011); "a learning experience delivered via a computer and the Internet. Course work is conducted through electronic forums, discussion groups, external resources, quizzes, social rooms, and online submitted assignments. Learning activities also include pair work, small group work and project work and throughout the course you have the guidance of professional online tutors". (British council, 2011)

The history of distance education can be traced to the 19th century when Europe and the United States of America (USA) who are considered as the pioneers of distance education used the postal system to make education open to people who wanted to learn but were not able to attend conventional schools. Most people who fall into this category were those with physical disabilities, women that were not allowed to enroll in educational Institutions open only to men, those with jobs during normal school hours, those with jobs during normal school hours and those that live in remote areas where school did not exist.

Computers were first introduced into schools in the late 1950; however they were only used by large universities for clerical work such as accounting, payroll, and for storing student records at that time. Computers began to emerge more and more in the 1950, but it was still uncommon to see computers in schools. Today, one will find that quite the opposite exists. Since 1977 there has been a rapid growth in the use of computers throughout schools. Today the average public elementary school in the USA has 110 computers and 98% of these schools have access to the Internet. (123helpme.com, 2009)

Computers were initially used to solve mathematical and programming problems and not problems in creative arts, literacy or those in social studies. However, over time teachers discovered more powerful uses for microcomputers in the area of teaching and learning. (IGI Global 2008)

"From 1978 to about 1982, the inclusion of computers in schools was primarily a grass-roots movement, often led by a single teacher. This usually resulted in only one teacher in a building using computers" (Roberts, Carter, Friel, & Miller, 1988). According to CGI Global.

Skinner's theory of behavioral reinforcement and his advocacy of its application to education initiated the programmed instruction movement. This movement can be characterized by clearly stated

behavioral objectives, with small frames of instruction, self pacing, active learner response to questions, and immediate feedback. Moving from programmed texts to programmed instructional media was a natural evolution since computers are infinitely patient and objective, doing these functions best.

According to Niemiec & Walberg, (1989), it was Norman Crowder that took the process of programmed instruction to another level. They observed that Basically Skinner's process was linear—start at the beginning and take incremental steps to reach the end. Crowder's idea was to have the process branching so students would go to those parts of the instruction that they need as demonstrated through their responses to questions. He called his idea "intrinsic programming "since the student determined the path taken accounting for individual differences in past learning and learning abilities. Using Crowder's ideas, Gordon Pask created a link between programmed instruction and computer assisted instruction. The computer was programmed to assess the student's style and rate of learning and then to customize the next steps in the learning process to go forward or remediate. Of course, this decision tree required predetermined options and was still based on the behavioral theory of learning.

The 1960s witnessed the use of computers in education for Computer- Assisted Instruction (CAI) developed for the mainframe computers. To access these programs, schools had to enter into a time-sharing arrangement with a university that had a mainframe computer with the required software. CAI was intended to help students hone skills, not to advance knowledge through higher CAI came into development at the same time as the programmed instruction movement that followed the "Skinnerian teaching machines and reflected a behaviorist orientation" (Saettler, 1990, p. 307).

2. THEORETICAL FRAMEWORK

The use of computers and indeed information technology are based on some educational/ learning paradigms. Woherem (1999), observed that many computer aided learning packages today are based on the behaviorist model of learning.

B .F. Skinner is regarded as the father of the behaviorist school of Learning; He believes that learning occurs when the 'Learner' explores the environment through trial and error; he may change on a particular type of behavior that elicits a reward. An example is of this is the release of food when a lever is pressed, this leads to the 'behaver' learning to continually behave (now predictably) in the same manner (Woherem 1999). Skinner noted that:

1. Each of the steps in the learning process should be and should follow what was learnt previously.
2. Learning should be controlled initially with schedules of reinforcement which could be continuously or intermittently.
3. The learner should have the opportunity to find out different types of stimulus.

Because of these, linear teaching programs ensure that the contents of the subject matter are presented in small bits and in logical sequence and also require immediate response from the learner.

Branching programs give different routes and provides "remedial loops" for the learner. Many Computer Aided Learning (CAL) programs are built on the behaviorist theory which allows only trial and error type of learning. Cognitive learning and insight type of learning is not encouraged. (Woherem 1999).

3. ACCESS TO HIGHER EDUCATION IN NIGERIA

It is common knowledge that access higher education in Nigeria has became very difficult. Out of several thousand that seek admission to Nigerian Universities only very few are admitted. Agboola (2010), has noted that "More than one million Nigeria youngsters wrote qualifying tests conducted by the joint admissions and matriculation Board hoping to clinch a University place, but Universities can accept only 153,000 out of 448,000 successful candidates, meaning that 295,000 qualified would be students will be denied admission to higher education when the 2008 - 2009 academic year begins in October". Reports also show that out of several thousands of candidates that pass the University Matriculation Examination (UME) yearly, only a very small percentage are able to get a place in the University. Table 1 and Figure 1 that there is a major problem in admission into Nigeria Universities.

Table 1: JAMB Statistics from 1999 to 2008

Year	# Applicants	# Admitted	# Rejected	Success Rate (%)	Failure Rate (%)
1999	593,670	64,358	5 29,312	10.8	89.2
2000	467,490	45,681	421,809	9.8	90.2
2001	749,727	90,769	658,958	12.1	87.9
2002	994,381	51,845	942,536	5.2	94.8
2003	1,046,950	105,157	941,793	10.0	90.0
2004	841,878	122,492	719,386	14.5	85.5
2005	916,371	76,984	839,387	8.4	91.6
2006	803,472	88,524	714,948	11.0	89.0
2007	1,028,984	129,445	899,539	12.6	87.4
2008	1,192,050	113,100	1,078,950	9.5	90.5

Source JAMB Annual Report 2009; Key: # - Number

From table 1 and figure 2, it is very glaring that there is no year since 2000 – 2008 that JAMB is able to admit more than 15%. Thus, the failure rate for admission is usually more than 85%.
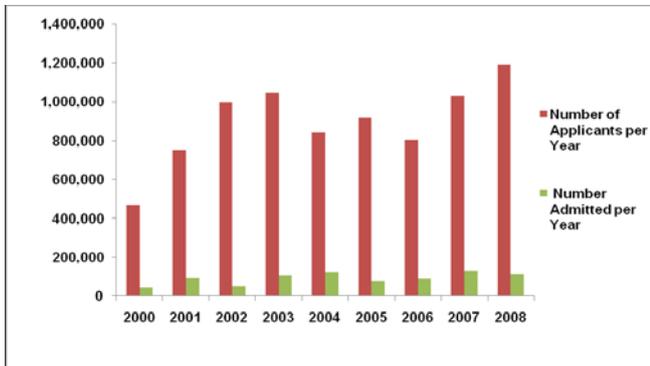
Fig 2: Candidates applications and Access to universities in Nigeria

Education is an important instrument for the development of the individual and the society at large; it is a weapon against poverty, illiteracy and disease. Education remains the heart of development; it is believed that the world as a global village can be a safer and happier if all are educated. A situation where more than 85% of qualified candidates cannot enter the 'four walls' of the university is unacceptable. Therefore there is need to explore the options of online education or virtual education which will open up a bigger opportunity to more qualified people to have access to higher education. This paper attempts to address how online education can be used to address this problem.

Most of the Institutions of higher learning in Nigeria today educate their students through the traditional lecturing method in a typical conventional classroom method. This method has helped the society to achieve a lot in educating the populace. However the current situation whereby more than half of those that are qualified for admission into universities and other tertiary institutions are not admitted makes it mandatory for the government and other stakeholder in the Educational system to address the problem, the current Educational System or the conventional University education involve the following processes.

a. All learners must be physically present in the classroom for learning to take place.
b. Students must attend classes at the scheduled time in a scheduled place.
c. Most of the learning / teaching activities involve lecture methods.
d. Most times the teacher or instructors are not very accessible as the time for classes are very rigid.
e. The current learning within the "four walls" of an institution does not allow for global Interaction among students during learning process.
f. The "brick and wall institutions" as conventional schools are called does not allow for a broad spectrum of content. Unlike online learning that makes it possible for students to have access different type of learning material.

In Nigeria tertiary Education encompasses all organized learning activities at the tertiary level. The National Policy on Education (1998) defines Tertiary Education to include the universities, polytechnic, mono technics and colleges of education in Nigeria Higher Education. The goals of tertiary education, as specified in the Nigerian National Policy on Education (2004 edition) are:

a. To contribute to national development through high-level relevant manpower training;

b. To develop and inculcate proper values for the survival of society.

c. Develop the intellectual capability for individuals to understand and appreciate their local and external environments,

d. Acquire both physical and intellectual skills which will enable individuals to be self-reliant and useful members of the society;

e. Promote and encourage scholarship and community services;

f. Forge and cement national unity; and Promote national and international understanding and institutions.

g. (FEDERAL MINISTRY OF EDUCATION, 2005).

In Nigeria, higher education is available in four main types of institutions

The universities; Polytechnics, which was originally intended for middle and high level technical/professional; Colleges of Education, intended for high-level non-graduate teacher education, but some of which have since become 'degree-granting institutions', with emphasis on bachelors' degrees in Education; and Mono technics: higher institutions that offer courses in specific professional areas like Nursing, Agriculture, Veterinary Studies, etc. (FEDERAL MINISTRY OF EDUCATION (2005).

4. ADVANTAGES OF ONLINE LEARNING

Online learning offers the following opportunities and advantages according to Coleman (2005):

1. Students can "attend" a course at anytime, from anywhere. This means that parents can attend to their children, then sit down to class; working students can attend classes no matter what their work schedule might be, folks that travel for business or pleasure can attend class from anywhere in the world that has internet access.

2. Online learning enables student centered teaching approaches. Every student has their own way of learning that works best for them. Some learn visually others do better when they "learn by doing."

3. Course material is accessible 24 hours a day 7 days a week. Students have the ability to read and re read lectures, discussions, explanations and comments. Often spoken material in the classroom passes students by due to a number of distractions, missed classes, tiredness or boredom.

4. In an online environment, attendance to class is only evident if the student actually participates in classroom discussion. This increases student interaction and the diversity of opinion, because everyone gets a say, not just the most talkative.

5. Online instructors come with practical knowledge and may be from any location across the globe. This allows students to be exposed to knowledge that can't be learned in books and see how class concepts are applied in real business situations.

6. Using the internet to attend class, research information and communication with other students teaches skills in using technologies that will be critical to workers in the 21st century business community that works with colleagues globally and across time zones.

7. Participating online is much less intimidating than "in the classroom." Anonymity provides students a level playing field undisturbed by bias caused by seating arrangement, gender, race and age. Students can also think longer about what they want to say and add their comments when ready. In a traditional class room, the conversation could have gone way past the point where the student wants to comment.

8. Because online institutions often offer "chat rooms" for informal conversation between students, where student bios and non class discussions can take place, there appears to be an increased bonding and camaraderie over traditional class environments.

9. The online environment makes instructors more approachable. Students can talk openly with their teachers through online chats, email and in newsgroup discussions, without waiting for office hours that may not be convenient. This option for communication provides enhanced contact between instructors and students.

10. Online course development allows for a broad spectrum of content. Students can access the school's library from their PC's for research articles, eBook content and other material without worries that the material is already "checked out."

11. Students often feel that they can actually listen to the comments made by other students. Because everyone gets a chance to contribute, students are less irritated with those that "over contribute" and can ask for clarification of any comments that are unclear.

12. Over 75% of colleges and universities in the U.S. offer online degree programs, with online degrees as respected as "on the ground" degrees.

13. Online classrooms also facilitate team learning by providing chartrooms and newsgroups for meetings and joint work. This eliminates the problems of mismatched schedules, finding a meeting location and distributing work for review between meetings.

14. Students often comment that online learning lets them attend class when fully awake and attend in increments of convenient time block, rather than rigid 2 or 4 hour stretches once or twice a week.

15. Because there are no geographic barriers to online learning, students can find diversity of course material that may not be available to them where they live or work. This is especially true for professional training such as medical billing training or purchasing training and for students in remote rural areas that cannot support college or vocational training centers.

5. COMPONENTS OF ONLINE EDUCATION

The home page of an online education system is usually made up of information such as Students Registration, Virtual / Electronic library, Moderator/lecturers page, Public information page, and the Administrative page.

The public information page usually contains the information such as history of the University,

Admissions, Course offered, Charts of fee, Accreditation and News update.

The administration module page makes it possible for staff to process candidates admission, assign matriculation numbers to students, manage students assessment records prepare students academic transcripts. The students page has link to materials to be read by students, My account hyperlink (which makes it possible to link to another page that display username and email), Edit account (hyperlink that makes it possible to edit user name and email), and the logout hyperlink. There is also a discussion area where students can discuss different issues such as academics and social issues. The Virtual Library page is made up of links to Electronic Libraries and Electronic materials. Most online educational Institutions usually have acces to thousands of vitual libraries and online learning materials many of which are free.

6. THE DESIGN AND IMPLEMENTATION OF ONLINE LEARNING SYSTEM

The basic software component of the online learning system infrastructure is as shown in diagram 2.1 development of internet based collaborates and distance education system.
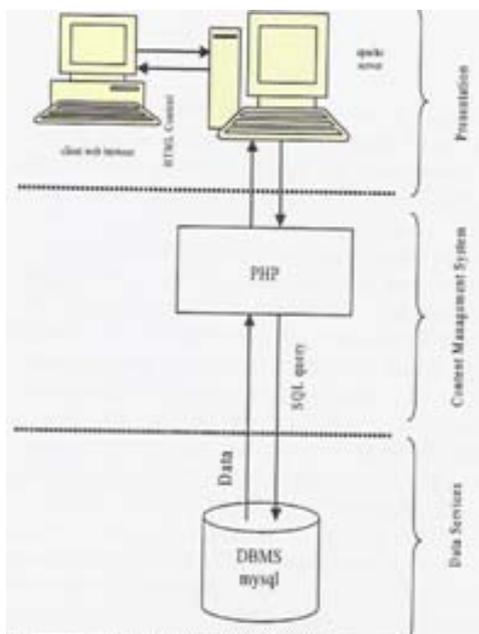
Fig 3: Shows the Conceptual diagram of the online learning system source. NCS Conference proceedings (2006 pg. 256).

The design is made up of the user interface, these includes access devices, at the remote sites the content management gateway and data services. The architecture allows users to have access to the system using the internet web pages through http protocols. By using a PHP common content management gateway, users request is usually transformed into a structure query language. This passes it to the appropriate backend system. By using a uniform resource location (URL) the content management gateway provides a single point of entry to the system.

The technological approach for the implementation is based on Apache web server extended with support for PHP and MYSQL relational dabasace system. Agbonifo & Adewale, (2006). For the purpose of security and since communication is over the public Network the open server socket layer for data encryption and role based authorisation is built into the system to satisfy access right to the database system.

The presentation service is the user service interface to the system and the web server. The user interface utilize Hypertex markup language (HTML) therefore browsers like Internet explorer, net scape and mozilla are used in the client side. The system is accessed through the main homepage of the online learning system. Request by users is usually passed to the content management which represents an interface between the presentation services users request is transformed into structured query language using PHP scripts at the content management services. MYSQL is used to provide the required functionality of data services which is a database management system.

When a user specify a request during an operation, the system dynamically creates and return the HTML page with the result a relational database model is used to conceptualized the database objects.

Online or virtual education makes it possible provide access to education to that part of the population who would not be able to attend a physical campus for reasons like distance and flexibility. Theses coupled with other major advantages make online learning a potent tool for solving the need for higher education in Nigeria.

A proper implementation of online learning by the National open university of Nigeria (NOUN) and other conventional universities both public and private will definitely open up more opportunities for those in need of higher education. This is so considering the fact that students doing online studies are doing 'real' work to get their degrees online while educators and instructors preparing and teaching these courses spent quality time doing so. National University commission should come up with guidelines and standards for all university that desire to run online programs. If schools, colleges and universities in the United States of America, United Kingdom and many European countries have integrated online learning into their educational system despite the fact that higher education is highly accessible, Nigeria cannot shy away from doing the same.

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