

THE ROLE OF COMPUTER-BASED EDUCATION IN HIGHER INSTITUTION IN NIGERIA

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Abstract

This paper focuses on (he concepts of Computer and Technology, which are gradually becoming household words in Nigeria. However, not many higher institutions in Nigeria have imbibed (his (rend in (heir educational system; that is, the need for computer to enhance teaching in our educational development. The paper deals with different methods of teaching with the aid of computer through on-line (on-line education) and its advantages. It concludes by providing some recommendations that would improve the development of computer-based education in Nigerian higher institutions.

Introduction

Education is the process of developing knowledge and ability in learners for personnel and societal enhancement (NOUN, 2004). This is true, though globalization has made education a crucial element of socio-economic development. Learning is no longer an initial activity preparing one for a productive life, but rather a continuous necessity to cope with society's changing demands. In modern Education System ICT is the bedrock, which can make modern education system to function effectively. We are in a new world of globalization. Whatever happens in one part of the globe is transmitted very quickly to other parts through the mass media and Internet. This is made possible by new technologies known as ICT, which is an acronym for Information Communication Technology through the linkage of telecommunication, computers and electronics.

Technology is a vital backbone of the development of any country. Technology is the gradual change of one technique to a new innovation to accelerate development of any nation. The national goal for education is to ensure national development in the areas of science and research for better living conditions; good health, improved transportation, communication system and enlightenment among others.

A computer can be regarded as a machine for executing precisely stated instructions with accuracy, versatility, speed and great reliability (Atajeromavwo, 2001). Litvin and Litvin, (2001), defined Computer as a universal programme device. It can model nearly any task that involves logical and arithmetic operations. Teachers and media specialists all over the world are aware that classroom activities for teaching and learning of science can be programmed and presented on computers.

The purpose of this paper is to draw attention to the importance and the need for computer education in Nigerian schools, especially our higher institutions of learning. In Nigeria today, all higher institutions of learning do not wholly accept the introduction of Computer Education. This is because computers are expensive to purchase and maintain, and government patronage of computer education is low. For a number of years, educators and employers have been talking about the enormous potentials for Computer-based education and training, but changes have been very gradual.

The reason for the gradual change is that it is capital intensive. Computers in schools and offices that have been installed without an understanding of the educational processes required to take advantage of the new technology. In many cases, information technology investments have been geared towards automating old learning processes instead of designing, discovering, or learning new techniques. Although, technology-based education is impressive, knowing how to use it effectively is still an art that few people understand clearly or possess the necessary skills for.

Kalakota and Whinston of the University of Rochester, New York and University of Texas, Austin, explained that explosive growth of technology is fueling a new wave of teaching -tools: computer-aided video, CD ROMs, LANs, internet connections and collaborative software environments. Because we do not know how to use the emerging technology, there is an ever-widening disparity between technology and its proper use in the educational context. On the bright side, this new generation of technology promises more than just an improvement. It may finally deliver a qualitative change in the nature of learning itself.

Computer Usage to Enhance Teaching and Learning

Frankly speaking, fundamental change in computer-assisted teaching is a new way of thinking in education theory. Instead of one-way information flow, typified by a teacher addressing a group of passive students (broadcast), new teaching techniques involve more student-teacher interaction (two way) collaboration between students, and inter disciplinary approaches. There are two broad types of teacher-student interactions according to Kalakola (1996). They are:

- a. Synchronous face-to-face instruction student interaction, either classroom based (traditional) or distance -based via tele-conferencing.
- b. Asynchronous interaction between faculty and students via e-mail, bulletin boards, and electronic publishing e.g. CD ROM, Gopher, World Wide Web).

In the light of the above, it is clear that computer enhances the speed of availability of data and information; provide immediate feedback and process of identifying areas of learning strength and weakness, assist less qualified teachers' improve learners' academic progress and reporting and increasing teachers' effectiveness and efficiency.

According to the report of the Committee on National policy on Computer education, computer training should be introduced in schools that can afford to provide requisite facilities and resources.

Need for Computer Based Education

Assessment of students is one of the ways to reveal how students have adapted to any concept in the sciences especially in integrated science. In Nigeria, instead of using traditional methods of assessment computer is dedicated to this task; a concern program, which is designed to provide instructional sequence on a given topic.

Essentially, the computer program issues pieces of information and then raises questions about them. The student supplies an answer and if this is correct, the program moves to the next step. If the answer is not correct the information is presented again and re-tested.

In addition, the role of the teacher in the new-education process is also changing. A student needs a "guru" or guide to maneuver and explain the wealth of information available on-line. Teachers are becoming more like coaches, leaving students free to discover knowledge on their own. In case of the traditional model, the teacher is thought to know all but in modern learning systems; the on-line education being advocated, students get all information from the Network and USENET. With this technology, the role of the teacher is more of that of a facilitator, guide and resource broker.

Computer-based training is one area of electronic commerce that is slowly getting the recognition it deserves. The outcomes are far from clear, but the potential impact on the future of the information economy is enormous. On-line education is the most recent form of what is generally termed distance learning (Kakakota 1996), which includes satellite course, computer based programs, video instruction, educational television, correspondence, or home-study courses. These methods attempt to move educational opportunities out from a traditional, centralized classroom to students unable to attend classes at a central site because of schedule or physical problems or because a university or institution offers such classes. Early implementation of on-line education focused on creating costly high-tech classrooms with a PC on every student's desk. This philosophy assumed that placing computer at the student's fingertips would have a big impact on the quality of education.

In general, computer based education (on-line education) will empower students to have greater control over the learning process with all the benefits associated with active learning and personal responsibility. Not only will students decide when to learn and how to learn, they will also decide what to learn and how that learning is to be certified. In this sense, on-line education "unbundled the learning enterprise from the teaching enterprise". The On-line education encourages crosscutting of knowledge in all higher institutions of learning. Schools and faculties are architects, as they design learning programs, navigations as they help advise students in their courses of study; instructors when they lecture, mentors when they help students form a sense of connectedness to the world and evaluators and certifiers as they decide to grant students grades or degrees. Computer-based education will allow educational providers to separate some key functions traditionally bundled together. For example not all faculties will be architects and instructors once the best lecturers become available across campus boundaries. But perhaps more faculties will be involved in navigating, mentoring and certifying.

According to the NOUN {National Open University of Nigeria) Orientation and Information Guide for Students (2004), the conventional system will not be able to cope with the demand for places. It is thus most likely that the University of the Future for the larger majority of Nigerians is the Open University. One thing, which is clear globally, is that the Open University anywhere in the world is not established to compete

with conventional universities. The National Open University of Nigeria therefore is not established to compete with but to complement the conventional, public as well as private universities. It carries out the business of providing university education in a non-conventional manner; non-conventional in the sense that there will be no continuous face-to-face lectures as are the case in conventional universities. The students are free to carry on their full-time employment. They can carry their academic load in small bits as their capacity allows. However, and this must be made clear from the beginning, open and distance learning requires you to do more reading on your own, to be more independent in learning, to be able to utilize at a higher level the various "learning to Learn" strategies, and to be more self-disciplined than the younger students in conventional universities.

The Orientation and information Guide, also has it that; in the developed nations of the world, it is becoming increasingly clear that distance learning appeals to anyone who wants to work and learn at the same time, and thus in a fast-moving environment, distance learning is becoming the vogue. The approach to distance learning at the National Open University of Nigeria is composite and comprehensive. It includes a combination of resources such as:

- Regular contacts with your tutor;
- Availability of course materials in print, (study materials, text books, work-books etc)
- Course materials on CD-ROM
- Computer conferencing facilities
- Audio and video cassettes
- Networking opportunities with your class mates and peers
- Websites for courses
- Television Instruction using the NTA Educational Unit, State and Private broadcasting stations
- Radio Broadcasts using the FRCN, State and private broadcasting units
- Feedback regularly on Tutor Marked Assignments and
- Periodic face-to-face contact sessions; using tutorial facilities.

You can thus organize your studies around your life with unparalleled flexibility without compromising the quality of the education and training you receive. NOUN, is specially set up to give everyone a chance to study at the university level without giving up his job, pleasures, family or any other commitments. In fact, at NOUN you develop the self-discipline to successfully juggle all your other commitments and combine them effectively with high quality education and study. Flexibility is the cornerstone of our endeavours; flexibility in terms of time and timing, programs and programming; and all these without compromising quality.

Medium / Technologies for Delivery and Educational Application

The mode of delivering online education (Computer-based education) is through the aid of communication, or connectivity, which gives us all instant, around the clock information from all over the globe. All the various media of technologies for delivery and their applications is elucidated below; On-line education (computer-based education) support video conferencing and videophones; workgroup computing and groupware, telecommunicating and virtual offices, Internet appliance and smart television. The various ways in which Computer Technology can be applied in On-line Education is shown below:

Medium	Technologies for Delivery	Educational Application
Face to face	Overhead Projector (manual or electronic)	<ul style="list-style-type: none"> • Seminars, tutorials, classes, workshops and lectures. • Learner study groups or self help groups • Conference • One-to-one interacting, either between educator and learner, learner and learner and mentor (especially in workplace). • Drama-in-education or theatre- in education sessions. • Practical demonstration and activities.
Text (including graphics)	Print	<ul style="list-style-type: none"> • Books, booklets and pamphlets, (either already published or written specifically for a course) • Study guides, written as study-alone material or as 'wrap-around' guides to already published material. • Workbooks intended for use in conjunction with other media materials (for example, audio or video cassettes or computer-based learning). • Newspaper, journals, periodicals, newsletters, and magazines. • Printed learner support materials (for example, self-texts, project guides, notes on accreditation requirements or other aspects of courses, bibliographies and hand written/typed materials or comments passing between learners and educators). • Maps, charts, photographs and posters. • Written/printed correspondence.
	Facsimile Computers (including a range of applications such as e-mail, electronic data bases, worldwide web hypertext, documents, CD ROM) etc.	<ul style="list-style-type: none"> • Written/printed correspondence • One-multi point distribution • Electronic publishing • Study guides, written either as stand-alone materials or as wraparound guides to already published materials. • Instructional material intended for use in conjunction with other technologies (for example, audio or video cassettes or printed materials) • Newspaper, journals, periodicals, newsletters, and magazines. • Learner support material (for example, self tests, project guides, notes on accreditation requirements, or other aspects of courses bibliographies and materials or documents passed between learner and educator).
Audio	Audio cassette	<ul style="list-style-type: none"> • Audio programmes (music, talk radio, documentary, literature review, lecture, panel discussion, news, current affairs, debate, drama etc).
	Audio Compact Disc	<ul style="list-style-type: none"> • Audio programmes as above
	Radio Broadcasting	<ul style="list-style-type: none"> • Radio programmes as above
	Telephone	<ul style="list-style-type: none"> • Telephone tutoring • Information or enquiry service • Telephone conferences
Video	Television broadcasting (terrestrial, satellite or cable, digital or analogue transmission, including narrow cast educational television).	<ul style="list-style-type: none"> • Video programmes (music, talk shows, documentary, literature review, lecture, panel discussion, news, current affairs debates, games shows, drama films etc) • Lectures • Simulations of procedures and processes
	Video Cassettes	<ul style="list-style-type: none"> • Video programmes as above • Lecture

Source: William and Sawyer (2001).

Some of the vital Web site for on-line education (Computer-based education) is stated below. They provide information about their organizations, conferences, current issues and events. publications and other matters.

- WebCrawler (HYPERLINK "<http://WWW.Webcrawler.com>") [WWW. Wcbr a>vici .Co](http://WWW.Wcbr.a>vici.Co)). 1994. Began by University of Washington and now owned by Excite.
- Fast Search ([WWW, all the Web. Coin](http://WWW.alltheWeb.Coin))
- Goggle (HYPERLINK "<http://WWW.gooEie.Coni>" WWW.aootie.Corn). 1998. The most popular web site.
- Ask Jeeves ([WWW, ask. Com](http://WWW.ask.Com)). 1996, Allow users to ask questions in natural language.
- National Council of Teachers of Mathematics, [http://HYPERLINK "http://WWW.nct.org" WWW.nct.ore](http://WWW.nct.org).
- Mathematics Archives: K12 Internet Sites [ltn."/ "archives.Math.uk.ed /K12html](http://ltn.)
- Association for Supervision and Curriculum Development. HYPERLINK "<http://WWW.aas.oi-g>" <http://WWW.aas.org>.
- Obafemi Awolowo University, Centre for Distance Learning (C'DL). HYPERLINK "[nttp://WWW.cdloau.online. com](http://WWW.cdloau.online.com)" WWW.ctiloati.onSine, cam

Designing Web Page for On-Line Education

In designing an on-line education (computer-based education), determine the web site by designing a web page and have 24 hour-a-day on a web-server by aid of menu-driven program included with your web browser or web page design software such as Microsoft FrontPage or Adobe Page Mill. After you have designed your web page, you can put in your ISP server.

The Requirements To Implement Computer-Based Education (On-Line Education)

The following should be provided:

- Computers (mini, micro computer and mainframe computer)
- Computer terminals, both dumb and intelligent.
- Personal computer system based on microprocessors.
- Office workstation
- File server
- Photo-copier
- Digital camera and projector
- Process monitoring and control equipment
- Communication channels (this embraces the electromagnetic spectrum; carried communications channel wireless channels, wireless communication, compression and decompression).
- Bridges and gateways to other network.
- Internet card
- Operating system, e.g. Microsoft Net, Microsoft NT/2000, E-Speak, Jin
- Internet service provider bill monthly
- Application software provider bill monthly
- Java, Microsoft Front Page or Adobe PageMaker

Recommendations

Computer-based education is widely accepted in the world and gaining show momentum in Nigeria. The conclusion reached (after a million of naira investment on these high tech-classroom educations by government), is that without integrating technology into the education process, there will be no significant benefits. In other words, throwing the technology bucket at education is not the solution. The emphasis should be in funding the appropriate mix of 'educational content' and 'mode of delivery," that is, the curriculum should include high technology and matched with adequate training and funding.

Nigerian governments at the Federal, State and Local Government levels, should develop positive

attitudes toward computer based education by providing computers in the various higher institutions, post primary and primary schools. There should be orientation for the students and the society in general of the benefits of computer education to the nation.

The Federal Government should embark on awarding scholarships to undergraduates and academics that specialized in computer science to improve the state of computer-education in the country. The inherent users of the ICTs driven education should be sent on training. Generally, the nation needs to be peaceful politically to enhance development educationally, economically and technologically.

Conclusion

Computer based education will enhance student's comprehension, performance with the aid of the computer assisted instruction designed program. This paper also states the roles of the teachers in using on-line education (computer-based education)

Besides being a tutor, the computer can assist the teacher in giving assignment, tests and marking by giving immediate feedback. On-line education provides means for students to study at their leisure time. It also provides a group learning process called computer conferencing to facilitate interactive classroom-based learning. On-line education provides a training on-demand, upgrading employee skills for more complex and challenging jobs. It equally represents incredible strengths in terms of time and place independence and the potential "reach" of educational programming.

In addition, ICT, are powerful tools. Their usage will link schools in the Western World with those in Nigeria. This facilitates the ongoing revitalization of the educational process.

Finally, computer based education would provide means for fast and better method of collecting, processing, compiling and disseminating information in support of students and researchers both insides and outside institutions.

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