

DEVELOPING A NETWORK OF ELECTRONIC INFORMATION IN LIBRARIES IN NIGERIA: IMPLICATIONS FOR NIGERIAN COLLEGES OF EDUCATION

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Abstract

This paper looked at the incursion of information technology in the educational system and examined the importance of electronic information to the academia. The paper examined a number of network development efforts in Africa, Nigeria and the need for cooperative sharing in the libraries of Nigerian colleges of education. Some technical and social problems which inhibit the use of the informational technology in the Nigerian colleges of education libraries were considered and the educational implication for the networking of the "Nigerian colleges of education libraries was also examined. The paper concludes that despite the bottlenecks encountered in networking, Nigerian colleges of education libraries has the challenge to develop a network of electronic information.

Introduction

Ever since the problem of literature explosion became noticeable in the 1970s, the developed world has devised various systems to facilitate the flow of information both within and across the countries. Developing countries though invited to take advantage of these devices have not readily accepted it because of some mitigating factors including the cost of computers, the high cost of computer training, human factors, fear, and the level of development-Gum infrastructure of the nation and so on. However, the case of the application of modern technology in the library should start with the acceptance of the new technology as vital to the effective performance of the functions of the library.

The computer has become such a household word in the developed world that Nigerian libraries should see it as a great opportunity which should be taken up as soon as possible. For the library, several systems have been developed for their various house-keeping chores and more still are being designed and refined, thanks to the technology of large-scale integration. These are known as mini or microcomputers designed to handle any of the library process, be it acquisitions, cataloguing, serials, or circulation control. Librarians must take an active part in this development and offer new services in order to fulfill their role as information providers. This movement can already be seen in the case of collection development in research libraries where electronic documents offer significant advantages to the library in four ways. Firstly, some documents are more useful in an electronic form due to enhanced search and manipulative ability, e.g. in allowing statistical calculations to be effected. Secondly, electronic form is sometimes the only alternative, so it represents a net increase in the information base. Thirdly, the volume of printed material is continuously increasing at great speed and the library can only afford to acquire a diminishing part of it. The great volume also makes it advantageous to use electronic tools to locate the material. The fourth advantage is economy in storage; the increase in cost for keeping printed material makes electronic forms more attractive from an economic viewpoint (Getz, 1991).

Before proceeding to the next section, there is the need to clarify some of the terminologies employed by information technology as follows:

Information Communications Technology (ICT) refers to the Technology in which the computer is central and this embraces computer assisted Instruction (CAI), Internet and other areas of computer applications (ICT4LT Module 1.1-15:12).

Computer Assisted Instruction (CAI) refers to computer programmes designed for teaching in general (Mirescu, 1997:13).

The Internet refers to a computer network connecting millions of computers all over the world and providing communication to governments, businesses, universities, schools and homes (Davies, 1999).

World Wide Web (WWW) is only a part of the Internet but many people treat the two terms as synonyms.

Importance of Information Technology

The information technologies found in libraries at present can be divided into three categories: computers, storage media and telecommunications. These three aspects working together

have brought about great improvement in the quantity and quality of library services to users and an amazing reduction in the delivery time. The use of the computer and the Internet has revolutionized access to information for the business world, libraries, education, and individuals. A few of the most popular include e-mail, World Wide Web, FTP (File Transfer Protocol), Usenet, and Telnet. The Internet and its technology continues to have a profound effect in promoting the sharing of information especially in academic world, making possible rapid transactions among businesses and supporting global collaboration among individuals and organizations. Many students and lecturers can gain experience of communications through e-mail and electronic conferencing systems that run over the telephone network.

The Internet can be conceived as a rich, multi-layered, complex, ever-changing textual environment. The Internet provides several opportunities for the academic. It is a mechanism for information dissemination and a medium for collaborative interaction between individuals and their computers without regard for geographic limitation of space (Leiner et al, 1999; Singh, 2002). Content created on the Internet ranges from simple e-mail messages to sophisticated sites incorporating sounds, images and words (Evans, 1996). The Internet is a 'live', constantly 'moving', theoretically borderless, potentially infinite space for the production and circulation of information. The Internet is arguably one of the most significant technological developments of the late 20¹ century. With texts no longer housed between library or bookshop walls, it becomes impossible to 'pin down' all or even most of the available materials in given subject areas for archival and classification purposes. The Internet might thus be described as a 'sea of information', subject to the ebb and flow of various forces (political, corporate, institutional, etc), creating an ever-shifting shoreline. The Internet's appearance in higher education is a tool for researchers to communicate and share project data. With the numerous advantages of information technology widely discussed, libraries are computerizing their services all over the world. To take advantage of the immense benefits in information management offered by Information technology, a library must first computerize its services. Despite this naked reality, the pace of library automation in Nigerian educational system is still slow and this should be a cause for serious concern.

Electronic technologies have the potentials to develop "virtual campuses" and "virtual libraries" and thus increase students' access and participation. According to Daniel (2000), Nancy Schiller was one of the first writers to use the expression "virtual library" which she defined in 1992, simply as "libraries in which computer and telecommunications technologies make access to a wide range of information resources possible". Today this same concept is referred to variously as 'digital library', 'electronic library', 'community network', or simply as 'library without walls'. It is called 'virtual' because in a good electronic wide area networked library, the user enjoys the euphoria of being in distant libraries and yet he has not physically moved. It is an experience of 'virtual reality'. One of its features is that its emphasis is access over ownership of collections. This stems from assumption that the whole universe of the global information superhighway is a human resource and heritage, which all that have the necessary infrastructure capabilities can tap for their own development. The Virtual library is a child of necessity arising from the need to use technologies in accessing the world information overload or information explosion for human survival and development. The need for a virtual library system has therefore become a most urgent necessity in the Nigerian colleges of education.

Nigerian College Libraries and Computer Networking

College libraries have long been recognized as the "hearts" of their institutions. To fulfill their mission of supporting the educational objectives of their parent bodies, which include teaching, learning, research and cultural development, the libraries had to develop and maintain standard books, journals, audio-visual collections and services. During the "oil boom" era, libraries flourished. They were busy filling their shelves with learning materials in order to sustain the main academic disciplines established by their parent institutions. Today, the story is very different as college libraries have problems even in maintaining core collections which represent their college's curricula and activities because of lack of money and high inflation. As revealed by Aguolu (1996), since the onset of the current recession, the governments have been giving the colleges grants that are not commensurate with their rapid growth in numbers, departments, staff and students. The resultant under funding of the libraries has become perennial and may remain so if the national economy does not improve significantly.

Nigerian college libraries are now gradually being computerized. Online catalogues provide additional searching possibilities. Such systems can communicate with one another about which

books are held in the libraries and use the computer to borrow various materials from many other libraries through interlibrary loan systems. The global information technology has been called "the world's largest machine", complex and difficult to visualize and understand in its difficult hardware and software subsystems. The moves toward a global knowledge society require a fundamental shift in thinking about the methodology of education- Information communication technologies have already begun to exert massive transformation of education systems in developed countries; the best teachers in the world are becoming available anywhere at the click of a button. But it must be realized that many college libraries in Nigeria are yet to take advantages of modern information communication technologies because of some inherent problems within the educational system. College libraries can be transformed into a new information services unit, providing electronic cataloguing, electronic on-line public access catalogue, electronic acquisition, serials control, electronic inter-library loan and electronic circulation functions.

Sanni (1999) discussed a number of network development efforts in Nigeria. These include *PADISNET* (PAN African Documentation Centre Network) which interconnect centres performing research on planning of development in some African countries into a network for data and information exchange; *WEDNET*- A project to link researchers working on women projects for the management of national resources in Senegal, Ghana, Burkina Faso, Nigeria, Sudan, Kenya, Zimbabwe and Canada; *CABECA* (Capacity Building for Electronic Communication in Africa) -This is a project to promote computer networking throughout Africa. It is sponsored by the Pan African Development Information System (PADIS) of the United Economic Commission for Africa (UNECA). CABECA is funded by the IDRC, Canada to achieve low cost electronic connectivity in some countries in Africa; *RINAF* (Regional Information Network for Africa), was conceived by the Intergovernmental Information Programme (IPP) of UNESCO, financed by the Italian Government and with a contribution from Korea. The project is aimed at bringing basic Internet Services to several African countries. RINAF has co-coordinating centres in Nigeria, Algeria, Senegal, Kenya and Gambia; *OAUNET* (*Qbafenu* Awolowo University Network). This is a joint research project between Obafemi Awolowo University, Ife and the Abdus Salaam International Centre for Theoretical Physics-OAU/ICTP Project. A very laudable initiative at networking and cooperation in Africa, the African Virtual University (AVU) has been discussed by Aguti (1999). Hosted by Kenya University, Kenya and Makerere University, Uganda, the AVU provides satellite-based distance education network for students, faculties and professionals involved in distance education. A major criticism of the information network in Africa is that they have been initiated and entirely funded by bodies outside Africa. The implication of this is that whenever such sponsoring bodies withdraw their support the systems are likely to fail.

Nigerian college libraries can therefore benefit tremendously from the facilities provided by the ICT through network development efforts within libraries and outside the country.

Some Technical and Social Issues

In managing the library's information resources, the librarian has to contend with both internal and external difficulties. For many Nigerian college libraries that are poorly funded, the high cost of acquiring computer hardware and software could be a restraint to many which are thinking of automating their libraries. Apart from the problem of funding, there is the twin problem of shortage of electricity supply and poor telephone facilities which constitute a clog in the efforts to introduce modern information techniques in Nigerian college libraries. Computer engineers and technologists are still few in Nigeria relative to the demand. The result is that the cost of maintenance of automated library systems becomes prohibitive as libraries compete for the service of the few maintenance personnel available in their localities.

Electronic information again creates both legal and economic problems for libraries and librarians. The legal issues relate to copyright, ownership of information and regulations about availability and use. The economic issues relate to the financing of access to information as opposed to acquisition of material (Read-Scott, 1989). Traditionally, libraries have had an acquisition budget for books and one for journals; to an increasing degree, the term 'information resources budget' is being used, which reflects the view that information should be made available regardless of media and form. Factors that have accelerated development towards new forms of information and knowledge distribution are the rapid advances in computer and telecommunications technology. One effect of this development is that researchers potentially can access information resources from all over the world without even entering the library. This could be devastating for the library in its role as information provider unless it actively takes part in the changing reality. Scientific communication can take place

in network outside the library and the increased offering of databases can make the library a small and marginal part of the whole network. Ferryman (1991) gave some guidelines on how libraries can work to prevent this from happening:

- strengthen and expand the traditional library values of co-operation and resource sharing.
- offer flexible, multi-faceted services
- provide access to new and developing formats
- foster new approaches to information access
- tap into the developing telecommunications infrastructure
- pursue and develop new funding source
- develop a common vision of the future of information technology.

Another author who has commented on the long-term effects of the increase in electronic information on libraries' collection development is Atkinson (1989). According to Atkinson's analysis, the most revolutionary change that arises from the electronic form is that the user can easily access the text and make additions and deletions, or change it so that the text becomes personalized and adapted to individual needs. A text is not only a string of words but also the contained ideas and the interpretation of a text is subjective and a function of the reader's experience. Because of this, a text will have a different meaning for different readers. Scientific communication depends on a stable, objective text to which different persons can refer and relate their respective subjective interpretations. This stability is at risk in an electronic environment and information integrity will be a major concern in the online age.

Electronic material will change the manner in which librarians work in many ways. The concept of 'access' instead of 'ownership' is not so different in terms of practical functionality but to control 'access' does raise a series of questions both of bibliographic control and or physical control: how should 'access' be catalogued? How can the access mechanism be secured? Then there is the question of controlling the existence of catalogues in a consistent and secure manner? •

The foreseen growth in electronic information will force some problems to be addressed. The one about refereeing and merit value has been mentioned. Then there are some conceptual problems of how to handle electronic journals from a library standpoint: how should the flow of electronic papers be mapped to the concepts of 'journal issue' and 'journal volume?' How can the 'publisher' and 'place' be identified in a consistent manner? How can 'back issues' be traced? How can they be secured for future access? Will all electronic publications be considered 'occasional'? Will the concept 'periodical' still have a meaning? These questions will all affect library work and in particular cataloguing (on a technical level) and collection development (on a fundamental level).

In addition to these issues, which are within the realm of library and information science, the new information environment also poses some questions of an economic and political nature such as:

- i. The authority of information: who will take the role that the traditional publisher has today with regard to stability and authenticity of materials?
- ii. The cost of information: who will pay for maintaining the collection? This includes archiving, - long-term storage and access. While electronic publishing can save costs in some aspects of publishing, the consequential costs are still significant.
- iii. The access to information: who will grant equal access to information? A higher technological level in publishing will require more sophisticated equipment to use the information, but whose responsibility is it to make sure that this equipment is available?

Yet information on new media and databases will grow; research will be more multi-form. The demands on the library will increase and must be met. with increased information availability, research might be more information-based as opposed to experiment-based (Lest, 1993). This increases the demands on the library even more, and it makes the role of the library more important, particularly with regard to the development of collections (with a new meaning), including both access and ownership.

Educational Implication for Nigerian Colleges of Education

It is arguable that the potential advantages of moving toward electronic networking for scholarly work far outweigh any possible disadvantages associated with such a move. With growing specialization and continuing pressure to publish, academics have been producing ever-greater numbers of articles and books every decade of the twentieth century. Yet the costs associated with

publishing, purchasing and storing them, if they are produced in print form, are exceptionally high. Brabazon (2001) contended that publication in scholarly journals allows academics to communicate, in a disciplined and rigorous manner, with their national and international colleagues. Scholarly articles usually only find audiences beyond the academy when their subject matter is especially controversial or noteworthy. Through undergraduate and postgraduate education, academics build long-term knowledge, skills and research expertise. The network of peer review reinforces these processes. Brabazon also asserted that "over the years, I've learned far more online about how things really work than I learned about how things should work in theory in six years of higher education as an undergraduate and graduate student". Internet-based learning is a response to consumer demand and the reduction in government funding.

The educational implication is that there is the need for all Nigerian colleges of education to be interconnected by a network to facilitate cross breeding of research efforts. Also, all Nigerian colleges of education must be connected by a network to all national laboratories and to the universities in order to harness the potentials of information and communication technologies for national development. It is important for Nigerian college libraries to take the initiative on information networks and to be committed to funding them, at least jointly with donor agencies and nations. It is only then that whatever networks established can serve the best interest of the college libraries in terms of priority and sustainability.

Recommendations

Based on what has been presented in this paper, the following recommendations are made: There is the need for college libraries to be connected to Internet facilities and continue to make increasing use of the Internet. They should be using the Internet both the access materials, people, and resources and to display their own Web pages created by teachers and students. These developments are not only giving learners' access to vast libraries and multimedia resources, but give access to tutors and natural phenomena throughout the world; hence the whole world is regarded as global village. Crucially, technology will remove the barriers between school and home.

There is the need for all colleges to be interconnected by network to facilitate cross breeding of research efforts. Also all Nigerian colleges of education must be connected by a network to all national laboratories and to the National Commission for Colleges of Education. But it must be realized that those who will benefit from this IT globalization revolutions first are those who will master them first. From this perspective, Nigerian college libraries which have started late must seek to understand the stakes in order to make up for lagging behind. To do this, one needs, first, after a strong political will, to have equipment that should facilitate the significant and irreversible introduction of these new technologies in the educational system.

Conclusion

Nigerian educational institutions face the challenges of globalization and the information age for the transformation of the academic system from the traditional role of teaching, learning, research and development technologies to those driven by the information technology. The poor telecommunication infrastructure, inadequate funding and fear of the unknown constitute a major problem to ICT development in many Nigerian colleges of education. One is happy to note that in the past five years thing have been changing for the better as far as information technology in library

operations in Nigeria is concerned. Some university libraries are now either computerizing their activities through their respective university's Computer Centres or installing these computers in their own libraries. One is also happy to note that both the Federal Government of Nigeria and International funding agencies are now interested in the general development of ICT in Nigerian universities. For example, the Federal Ministry of Education has embarked on the establishment of the National Virtual (Digital) Library Project. One of the objectives of this is to provide, in an equitable and cost effective manner, enhanced access to national and international library and information resources and to share locally available resources with libraries all over the world using digital technology. A Model Virtual (Digital Library at National Universities Commission (NUC) will be the hub of the university-based libraries. The delivery of the Virtual Library will be through the Internet, CD-ROM, and Wide Area Network (WAN). When this is finally materialized, it will definitely be a boost to the development of ICT in Nigerian educational system.

This same interest by the Federal ministry of Education on the establishment of National Virtual (Digital) Library Project for university libraries should be extended to Nigerian colleges of education. The issue of a realistic National Information and Communication Infrastructure Policy is one that should no

longer be allowed to linger unresolved. Nigeria needs a goal-oriented policy as well as well-thought-out plans and strategies to harness the potential of information and communication technologies for national development. The truth is that no country, small or big, can afford to be isolated in the information and knowledge-based society of the 21st century.

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