VIRTUAL LIBRARY IN NIGERIAN UNIVERSITIES: A NECESSITY FOR ACADEMIC EXCELLENCE

Chinwe M. T. Nwezeh

Hezekiah Oluwasanmi Library, Obafemi Awolowo University, Nigeria

Abstract

This paper states that virtual library is a child of necessity arising from the need to use technologies in accessing the information overload, or information explosion for human survival and development. Therefore Nigeria should embrace it. However, the main problem facing government policy makers, university management, academic staff, employees, students and families, is that the quality of education in the country has declined significantly, due to inadequate funding in the face of acute inflation and depreciation in the value of the Nigerian currency. Nigerian university libraries have very few current books, journals, and other reading resources. There are staff shortages and deterioration of facilities, equipment and even library buildings. Most of the libraries stand isolated from the global information system -- the internet. Yet these libraries are expected to serve as information delivery centers to enable universities make development impact on research, teaching, learning and public service. This paper discusses virtual library and argues that it will improve the quality of education in Nigeria.

Introduction

Information and communication technologies have generated many benefits but their distribution around the globe has not been even. Information is power, and how a nation possesses and uses this power will soon become more important than how it uses its coal, oil and gas and other physical resources. The need for vital library system has therefore become a most urgent necessity in the Nigerian university system.

A survey of all the university libraries in Nigeria shows the deplorable condition all of them are in. Due to their inadequate funding in the face of acute inflation and depreciation in the value of the Naira, these libraries have very few current books, journals and other reading resources. There is wide scale duplication of the few reading material that are available. Many of them have no e-mail, fax, telephone and computer based services. Records of in-house operations are not available. Processing of acquired material are extremely slow, there are no effective information services to

users, and many libraries find it difficult to embark on bibliographic and awareness services. There are shortage of staff, deteriorating facilities, equipments and even library buildings, most of which do not provide conducive environment for reading. The libraries stand isolated from the global information system – the Internet.

Yet these libraries are expected to serve as information delivery centers to enable their universities make impact on research, teaching, learning and public service. A university is as good as its library. There is therefore the need to transform these conventional libraries into virtual libraries, which are, cost effective and can empower the universities for effective teaching, research, learning and solving national problems, as well as preparing the nation adequately for the competitive world of the 21st century.

Capacity Statement

The Nigerian government has realized and admitted the fact that libraries at all levels of the Nigerian educational system are in a deplorable state. The deficiency is more pronounced in terms of books and other relevant library materials, which form the core essentials of a library. It is sad to note that only 1% of higher institutions stock current journals and books. The local book trade is still not fully developed, compounded by the high cost of printing materials and other inputs. In order to correct and alleviate the situation, the government has decided that the Ministry of Education will:

- Seek inter sector collaboration to get a fairer concession for books and other library materials.
- Establish a virtual library, which will be used on database information on library resources. This will be operated on through the use of Internet facilities and other electronic devices.

What is a Virtual Library?

The virtual library is the library of tomorrow. Nancy Schuller (1992) defined it as the libraries in which computers and telecommunications technology make access to a wide range of information resources possible. It is often referred to as "electronic library" or "digital library", "community network" or "library without walls." It is called virtual library because in a good electronic wide area networked library, the user euphoria of being in distance libraries, and yet he has not physically moved. It is an experience of virtual reality. One of its features is that it emphasizes access over ownership of collections, believing that the whole global information universe is a human heritage which those who have the necessary capabilities can tap for their own development. Virtual library is

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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.

While some people equate virtual library to electronic library, others see an electronic library as a physical identifiable library, but with no print and which is part of a virtual library. It is argued however that the difference between the electronic and virtual library is that the electronic library can still maintain a physical presence, whereas, the virtual library since it is regarded as transparent, will have transparent facilities and transparent librarians. Some regard the Internet as a virtual library, although it may be argued that it does not meet some of the other criteria for a library such as, defined user population and sufficiently sophisticated aids. Others argue that the real electronic library is not a library at all, but a data warehouse.

The virtual library concept embraces more than the provision of information electronically such as electronic journals, course texts/images, reference databases etc. If students or staff can search for and use these resources from their PCs, they may not use the physical library building at all. They could work from home or their place of work if they possessed all the necessary equipment. There are some people who take the virtual library to be a computerized library system, which provides multiple access to the entire collections of a library by means of electronic media. It harnesses digital technology and internet technologies as infrastructure to search, store, collect, organize and distribute cultural, historical, and scientific information be it text, visual images or sound digital libraries, making it possible for electronic books and journals to be accessible to an unlimited audience at the same time, anytime and any where. This requires that all operations of the library are computerized. Such operations include selection and acquisition, cataloguing and classification, storage and dissemination. This unified access system is necessary because of the desire of the libraries to provide maximum library and information services.

The word 'virtual library' would sound strange to many even within the academic community, those with the knowledge of what the virtual library is all about, may differ in their definitions, but they would all agree that it is a concept or system that is heavily reliant on the medium of cyberspace, enabled via modern computing, and communications technologies across conventional structures and boundaries. It brings together initiatives, such as tele-working (networking), out sourcing and strategic partnerships which libraries are now exploring to make themselves responsive to the changes in the modern academic world.

The virtual library will have flexibility as its defining characteristic. Services would be received everywhere via tele-working without necessarily having people in one place to deliver services. It would allow for unfettered access to information world wide, share of skills and costs.

Rationale

Virtual Library should exist in Nigeria to advance library services for all. It would enhance:
- Sharing group purchasing power for licensing digital resources.
- Sharing commitment to provide the framework for strengthening resources and expertise.
- Sharing library resources
- Sharing staff expertise

The mission of virtual library in Nigeria should be to provide, in an equitable, cooperative and cost effective manner, enhance access to national and international library and information resources and for sharing locally available resources with libraries all over the world using digital technology.

Education and the Internet

The Association of African Universities (AAU) along with the World Bank, acknowledges the 'Revitalizing Universities in Africa (1997)' that the quality of tertiary education is declining as a result of dwindling resources, while enrollments keep growing. The report cites poor economic performance, inappropriate governing structures, feeble national policies, weak internal management systems, political interferences in university functions, and campus instability as contributing factors. During the period of growing enrollment, classrooms are filled beyond capacity and libraries have a scarcity of textbooks (World Bank, 2000). Teaching and learning are improved by the use of technology, but when compared to the rest of the world, access to the basic telecommunication in Africa is just gaining grounds.

Factors that have isolated Africa from international networking are well documented (Jensen, 2003; Saint, 2001, World Bank, 1999). These interrelated factors include: policies, regulatory framework on telecommunications that constrain infrastructure development; and a scarcity of African specialists in telecommunications to create adequate capacity for economic and social growth. Given the trends shaping higher education globally, and how technology products and services are redefining education, there is a need to look at the relationship between the

regulatory frameworks in the telecommunications and education sector so that they are in harmony. There is the need to transform Nigerian higher education to make sure that higher education will contribute to economic development within a global economy. Knowledge has become the primary resource in advanced economies. Scott (2000) maintains that in recent years the national purposes served by higher education have been concerned with economic development, and that international rivalry is no longer about fleets and missiles, but, "international property."

Spread of the Internet in Nigeria

Internet technology was introduced to Nigeria through the triad of academic, government and the private sector efforts. The government effort was through the Cooperative Information Network (COPINE) project in the Federal Ministry of Science and Technology. The impact of these initiatives has been the creation of information exchange networks, the formulation of a national IT policy and the establishment of an IT implementation agency.

The State of Higher Education in Nigeria

The regulatory body for Nigerian Universities is the National Universities Commission (NUC). A central body called the Joint Admissions and Matriculations Board (JAMB), conducts the admission. The establishment of Nigerian Universities took place in three generations. The Universities in the first generation were established in the 1960s, and were federally funded; these include: the University of Nigeria, Nsukka, University of Lagos, University of Ife (now Obafemi Awolowo University (O.A.U) and Ahmadu Bello University, Zaria. The second-generation universities, in the 1970s were mostly established in the state capitals; such as: Universities of Benin, Port-Harcourt, Jos, Calabar, Sokoto and Maiduguri. In the 1980s, every state in the federation established a university. Today there are 36 states in the federation, and there is at least one university in every state. Most of these third generation universities are state owned and funded. A few universities are also established as universities of technology or agriculture to reflect government policy thrust on technology and agricultural development in the past two decades. Ninety nine percent of the universities are public schools. The government has only recently granted licenses for private universities, however, even though the number of universities grew drastically in just two decades after the country gained independence, ninety percent of the institutions ran similar academic programmes and structures. There was little specialization in disciplines and each university struggled to offer all or a broad range of the traditional courses, thus, sources was spread wide and thin.

With poor funding from government decay set in. Today the university system is characterized by frequent shut downs due to all manners of student unrest, and industrial action by trade unions within the academic system. In 2001, the federal government sought to stem the tide by proscribing the distance education and satellite campus programmes. As an alternative and in recognition of demand, the government mooted the possibility of an ICT based open university. Around this time, the internet began to penetrate the country. It provided a welcome window for educational institutions to reinvent themselves.

Methodology

This study examines the use of internet resources and the evaluation of their usefulness from the perspective of Nigerian students and academics. The questionnaires were distributed in some Nigerian universities. Some of the questionnaires were distributed in Federal Universities, some in state universities while the others were distributed in some private universities.

In order to have a comprehensive understanding of Nigerian academic Internet users, the questionnaire was divided into three parts. A section of the questionnaire was for the lecturers; a second section for the graduate students while the last section was for the undergraduates. Questions were asked on the scholarly use of the Internet based resources, the searching of scientific information on the Internet and lastly, Internet use by faculty members. Questions were also asked on the Internet use and competence, the most frequent locations for accessing the internet, information seeking behaviour in using the internet, channels of obtaining information, motivation and purpose of using the internet, and the kind of information often got from the internet. Seven hundred (700) valid samples were collected. The analysis was carried out in the following parts:
- background of the internet users including student situation, education, discipline and profession.
- the skill levels of using the internet, including the history of its use.
- information seeking behaviour and the internet; and
- the users expectation of internet resources.

The analysis give descriptive statistics and percentages.

User Population Analysis

Nearly 80% of the responses were from students, faculty and researchers. Since more and more Nigerian users are becoming familiar with internet resources, it is important to know more about their opinions and suggestions of accessing information from the internet in order to improve
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the quality of internet services. The author pays more attention to the users evaluations of internet resources and their expectations regarding internet services. The terms and phrases in their responses. The aim of the survey was to learn the perceived needs for internet resources and the qualities that mattered the most to users.

Of the 700 responses, men comprise 60.55% while females comprise 39.45%. In academic circles, young people are the largest group of internet users, mirroring trends among the general public.

Among 700 responses, students comprise 51.35%. Among these, 14% are doctoral students including those who had the degree or are still candidates; graduate students comprise 51.62%; and undergraduate students comprise 34%.

Among the questionnaires, the biggest population came from those respondents in the Sciences (66.31%); Social Sciences comprised (21%) and the Humanities (12.69%) (see Fig.1).
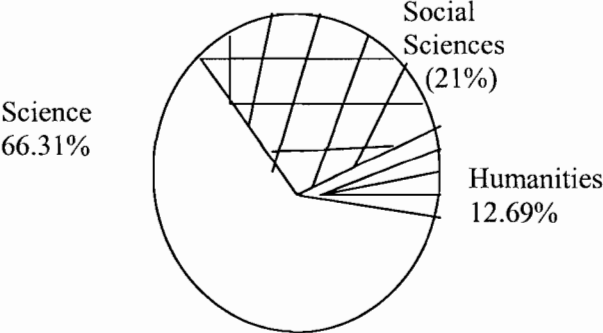

Fig. 1 User distribution in Sciences, Social Sciences and Humanities

Findings

The people with higher academic degrees and lower ages spend more time on the internet. About 52.50% of doctoral students spend more than 7 hours on the internet every week, only 29.50% of undergraduates reach this level. The study found that 320 (45.20%) respondents regularly browse e-journals. Among these people, 61.25% read two or four kinds of e-journals, 24.85% read more than four journals, and 12.55% regularly browse one e-journal. The data shows that most users of e-journal are students, faculty and researchers.

The research investigated the kind of information users get from the Internet, and the respondents pointed out as follows:

Table 1: What kind of information do you often get from the Internet?

Information obtained from Internet	Number	Percentage
Research Paper	406	58.7
Latest developments	337	48.8
Software	265	38.1
Statistical data	120	17.5
Conference activity	87	12.6
College discussion	82	11.8
International or government document	65	9.2
Teaching syllabus	37	5.2
Others	37	5.2
Valid sample	697	100

The survey shows that most of the information obtained is from Research papers which had 406 respondents, equivalent to 58.7%. Others are latest developments (48.8%), software (38.1%) and the rest are as indicated in the table above.

Internet Usage by Nigerian Lecturers

The usage of Internet by Nigerian lecturers is as presented in Table 2 below:

Table 2: Data on Internet Usage by University Lecturers

CATEGORY	USAGE (%)
E-mail	50.8
Academic Research	57.7
Teaching Materials	19.2
Current Affairs	14.6
Networking on Papers	36.2
Publish work in progress	18.5
Entertainment	13.8
E-Commerce	6.2
Others	3.8

Source: UNU/INTECH Discussion Papers Series, May 2002

In Table 2, 50.8% of the lecturers use the internet to send and receive information. Among the internet services, e-mail has been regarded as a very popular service, 57.7% of the respondents use the internet for their academic research. They agree that the internet is a supplement to current information resources and that it helps them to narrow the knowledge gap

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with developed countries. The more advanced their degrees the more positive their attitudes toward the value of the internet. Table 2 further shows the percentage of the responses when they were asked which kind of information do you often get from the internet.

Most research is still done using traditional print, periodicals and, lecturers/researchers still publish their work through the traditional print process. Only 19.2% use the internet for collecting teaching materials, 36.2% on networking on papers, 14.6% on current affairs, 13.8% on entertainment.

Constraints in the use of Internet Services in Nigeria

Internet services is not widely used in the university. Table 3 shows constraints to the usage if Internet in Nigeria:

Table 3: Constraints to Internet Usage in Nigerian Universities

CONSTRAINTS	PERCENTAGE
Lack of access	10.5
Lack of knowledge and skill	4.7
High Internet access fees	2.3

Source: UNU/INTECH Discussion Papers Series, May 2002

Table 3 shows that 10.5% of the respondents indicated that they do not have access to the internet, 4.7% show that they lack the knowledge and skill to use the computers as well as accessing the internet while 2.3% complained about high internet access fees.

Benefits of Virtual Library

If the library has its own unique strengths, which is prepared to contribute and if it is prepared to take risks, the virtual library can:
- Benefit from expertise and information in different countries, operating across the time zones.
- Lead to opportunities for libraries to transfigure themselves without having to restructure or shed jobs.
- Enable each library to retain its agility but harness the sources for academic, scientific and technological development and economies of scale of much larger and much better equipped libraries across the world.
- Reduce the burden of capital sourcing, by sharing resources.
- Take advantage of complementary partner skills to focus on user opportunities.

- Lead to excellence, as each library would be in a position to provide information on new inventions, researches and other academic contributions worldwide to the benefit of the academic community.

Virtual Vs. Traditional Libraries

A comparison of Library Services provision between traditional and Virtual library systems:

LIBRARY SERVICES	TRADITIONAL LIBRARY	VIRTUAL LIBRARY
Opening hours	Limited	Round the clock, all year round
Student remote access	Not possible	Possible
Access to resources	Limited to shelf search in physical locations	Instant and electronic
Search engines	Manual and tedious	Electronic, easy and extensive
Time factor	Does not save time, in fact wastes time	Significant saving, no travel time required
Seating, space and shelf space	No saving	No seating, no space required
Manpower requirements	High	Low
Multiple access	Not flexible	Easy and cheap
Resource sharing migration	Inconvenient, slow turn around time, limited	Convenient, fast turn around using the internet access other libraries and materials.

Capabilities of Virtual (Digital) Library System

Virtual library is capable of facilitating the following library operations:
- Fast and efficient pre-ordering and checking
- Acquisition, record keeping and correspondence
- Efficient vendor monitoring
- Pre cataloguing, checking and processing
- Speedy and reliable serial tracking and control process
- High fidelity indexing of documents
- Consistent organization of library materials through controlled descriptions.

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- Production of shelf lists, bibliographies, serial lists, and appropriate collection guide.
- Adequate, easy and fast access to the library information resources for library and information services and interlibrary cooperation.
- Current awareness services including Selective Dissemination of Information (SDI), indexing and abstracting services, lending services.
- On line and public network access within and outside the library setting.

Problems of Implementing Virtual Libraries in Nigerian Universities

The problems are too common and well known. They encompass:
- Poor and inadequate telecommunications facilities
- Low level of computer literacy, even among staff and students in the university communities.
- Poor computer facilities
- Weak and sometimes inefficient ICT infrastructures
- Low level of awareness of internet facilities and possibilities in the academic communities.
- Poor level of awareness of internet facilities and possibilities among policy makers, government officials and the ruling class generally.

Opening up Opportunities for Nigerians to Gain Higher Education

It is estimated that over 6% of the applicants who qualify cannot gain admission into any of the universities in Nigeria. In this situation virtual libraries should be designed to support distance learning and off campus studies.

Computer Technical Information Literacy

The level of computer technical information literacy is still low among students, university teachers, administrators and even librarians. There is the need to raise the level of this literacy in order to prepare and sustain virtual libraries in Nigeria.

Absence of Library Cooperation and Online Networking

Internet, local, and wider area networks are lacking in most universities. The spirit of most library cooperation even at manual and personal levels is also lacking.

Internet and Higher Education

The web offers many possibilities and opportunities, which before were not possible. The internet offers the largest reservoir of all types of information including research results, scholarly publications in all fields plus other multimedia capabilities such as video conferencing. Higher education now relies very much on the internet. Our universities and libraries in fact, must be connected to the internet and then to one another.

Internet Network and Connectivity

There are various levels of connectivity to the Internet. We can have full or partial connectivity. In full connectivity we can receive most or all the services on the internet (those you have subscribed or paid for). When one is partially connected, one can only receive some of the services for example e-mail. The e-mail connectivity is by far the easiest.

Copyright

Technologies play an important role in the evolution of education. Digital technologies have transformed the way education is accomplished, as well as affecting its potential impact on markets for copyrighted works. The relevant technologies can be broken down into three major categories, with some overlap:
- Technologies that facilitate licensing;
- Technologies that deliver the content of the course; and
- Technologies that protect the delivered content.

One area that facilitates licensing is the ability to attach licensing-related information to a work in a digital format. This information can be linked to or embedded in the work and accessed by the user. In some instances, the user will need special software to read information imperceptibly embedded in the work, and in others he/she can click on an external link to the information. Information so accessed can identify the copyright owner, point the user to the appropriate licensing site, or list licensing terms and conditions. There are also on line rights and permissions services that can support a range of license and delivery functions.

The online permission process allows a high degree of specialization. Menus for these online requests can divide users into different categories and subject them to different licensing terms, including grants of permission without a fee. Users could be asked to identify themselves as non-profit or for-profit, accredited or non accredited, or any other characteristics that are significant to the copyright owner. The use can

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respond to standard queries on the method of delivery, or the security of the website.

The information relevant to the discussion whether to license and how much to charge can be obtained. This information can be used to generate an automatic response based on pre-established agreement between the service and the copyright owner, or to query the copyright owner directly for permission. In addition, some services may accept payment for the license and deliver the content to the user digitally.

Depending on the particular service, the material can be delivered with technological protections the copyright owner specifies. Technology can also facilitate access to licensors by the direct linking of works in a digital form to rights and permissions databases. This may be done with a link such as an icon, at the end of the text or an image that a user may click on to go straight to an online licensing database. An important development in licensing for digital uses is the convergence of permissions systems with other systems designer to identify and protect material.

Technology protects copyrighted works in many ways. It can restrict access to the work, restrict uses of the work and identify the terms and conditions of using the work. In some circumstances it can find copies of the work on the World Wide Web and report their existence to the copyright owner, who can determine whether the copy is authorised. There are technologies that limit access to work and technologies that prevent or detect uses of work after access. Each method of technological protection varies in its cost of deployment and degree of security. The more expensive and complex the mechanism, the more inviolate the material, the stronger protections are used to protect only the high market value works.

Copyright Licensing and Right to Use

Verzhbitsky et al (2000) stated that the concept of copyright exists to protect intellectual property from exploitation. Although copyright laws are in place to protect educational software publishers in the United Kingdom, this is not the same in many countries particularly in the developing world. Pirating and illegal copying of software (and of course, music) is widespread with the internet and low cost CD-ROM copying systems readily available. Computer viruses spread in this climate and the quality of production is often poor.

Most of the educational software publishers accept the inevitability of illegal copying in many of the markets and look for one or two possible solutions. The first is to distribute through an agent in the field, one who

knows the network and has a self interest in protecting the publishing rights and receiving a profit on sales. The second is to license a country or regions schools via the Educational Ministry or similar body. This may take the form of a limited license for a specific project.

Software and Documentation Acquisition

The user of CD-ROM technology requires an appreciable capital to cover costs to be incurred for installing and maintaining the systems. There are both human and material resources cost. The material resources include the initial capital for acquiring computer hardware and for establishing a CD-ROM workstation. There are additional material costs for acquiring consumables such as compact disc, diskettes, papers, ink/turner, ribbon etc. for the operation of the work station(s) and for maintaining regular CD-ROM database subscriptions.

Other consumable costs include cost for staff training; maintaining staff; training of CD-ROM user population; the size of staff required to attend to CD-ROM oriented requests within and outside the establishment.

Impediments

Sustainability

The financial sustainability of digital libraries is under constant threat due to recurrent technical and infrastructure problems. These problems include power failures or interruptions; poor connectivity; computer failures; printer breakdowns; non functioning software; obsolete or unusable equipment; complex management arrangements; security failure e.g. import duties or policies on equipments.

Cost of Equipment, Maintenance and Supplies

The high cost of equipment, supplies and maintenance; e.g. cost of computers, computer failures, software licenses and cartridges for Inkjet printers, printer breakdowns, electricity, telephones (and the charges). The practice of getting technicians for either routine maintenance or repairs is a constant heavy burden to carry.

Power Supply

One of the greatest threat to information and communication technology in Nigeria today is sustainable electric power supply. Unreliable electric power supply in Nigeria continues to be a source of great concern.

Bibliographic Control in the Digital Library

The remote access of digital information has also created a whole new set of problems that either invalidates or makes irrelevant many of the established rules of bibliographic control.

Illiteracy
Another disadvantage of digital library is illiteracy. Many people cannot operate computer coupled with this, the cost of the equipment and lack of adequate manpower and infrastructure. In addition there is the problem of virus attack on the system. Online and electronic commerce is very susceptible to virus damage because of the complexity of Internet connections network.

Network Problems

It is expensive to install. Although a network will generally save money overtime, the initial costs of installation can be prohibitive. Cables, network cards and softwares are expensive, and the installation requires the services of a technician.

It requires administrative time. Proper maintenance of a network requires considerable time and expertise. The file server may fail. When a file server "goes down", the entire network may come to a halt, when this happens, the entire organization may lose access to necessary programmes and files; cable may break in the network and with some configurations, one broken cable can stop the entire network.

Security

As the network expands into every sphere and part of the globe, the greatest concern is security. Robot programmes can search the web and automatically download untested and dangerous software. The security system is further exacerbated by two technology trends: more power computer and faster networks. A network system that would have been impervious to attacks a few years back can now be under serious threat. Also faster and good guessing programmes have began to pose serious threats today.

Hacker

In most parts of the world people are keenly attempting to lack into networks to prove to their peers that they are also computer wizards. This wizardry has led to the breakdown of many networks.

Viruses

Computer viruses are programmes written for particular assignments. These programmes have evolved from the desire to control computers on the network from remote locations. These otherwise interesting developments have been capitalized for monetary interests. Today, viruses are causing huge financial losses to various institutions and governments

Conclusion

The virtual or digital library has many familiar library features but there is a change in the way in which the library acquires and provides access to collections. The internet technology deployed in education can help remove inequities between the schools of developed and developing nations. The rapid changes taking place in the field of education is the consequences of various types of internet-based information handling technologies. Virtual spaces generate hybrid environments for the interaction of people and computers.

ICT helps to transcend the boundaries of traditional face-to-face education and development and can promote faster human capital formation (Rumajogee, 2002). Increased effort by the World Bank and United Nations Economic Commission for Africa are improving internet access to countries in Africa. In fact, all African countries now have access to the Internet (Shrestha, 2000). Internet tools can expose African scholars, researchers, governments, the private sector, students and civil society to new ideas and knowledge. Thus, they enhance potential for education and human capital development at local, regional and continental levels. In education, Information and Communication Technology (ICT) holds the promise of transforming learning in new and powerful ways.

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