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THE VIRTUAL WORLD – CONVERGENCE AND GLOBALISATION: THE CHALLENGES OF INFORMATION TECHNOLOGY FOR DISTANCE EDUCATION

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ABSTRACT

The Federal Government of Nigeria's effort towards "Education for All" is saddled with problems of equity and accessibility to quality education. The convergence of Information and Communication Technologies (ICT) in the computer have increased its versatility, therefore making it indispensable in breaking these barriers of equity and accessibility to quality education at the most cost-effective rate. Distance Education (DE), though not a new concept to us is yet to gain a rightful place in the Nigerian society, as a bulk of educationally deprived people still abound in our society (women, some ethnic groups, prisoners, nomads, the disabled, terminally-ill patients, etc). This paper thus discusses the place of ICT in meeting the challenges of an information age, specifically the Federal Government of Nigeria (FGN) recent efforts in distance education. The challenge is to provide educational opportunities to all regardless of space, place, and time, at the most cost-effective manner with cognizance to quality. Towards realizing this FGN must come up with a comprehensive master plan of an ICT based Educational system.

INTRODUCTION

Since the era of the abacus, learning resources in education have grown according to global technological trends. Computer technology is thus synonymous with the information age, which re-affirm knowledge as the basis for superiority among races and ultimately an instrument for development. The computer system is thus the symbol and media of the information age. In recognition of this, countries are reaching out to their people with opportunities for life-long educational opportunities at all levels, location and interest. For education has been identified as a veritable tool for national development (NPE, 1998) not only in Nigeria but also across the globe. The globalization drive calls for an enlightened citizenry. This would in no way have been possible without New Information Technologies (NIT) of which computer technology readily comes to mind. The computer has found relevance in all human activities and it continues to advance at a geometric rate in its capabilities and miniaturization. It has practically served as a magic wand in the hands of its users, given the available array of application software coupled with possibilities of communication across space and time. For these reasons distance education (DE), which depends largely on the use of media, has at its disposal, this one media that can serve as a stand-alone or in combination with other media bringing 'messages'

that are capable of stimulating all the senses.

It is note worthy that experts have identified that for the success of UBE programme: distance education must compliment the UBE programme. The basic literacy level in Nigeria is low at a time when other countries are talking about computer literacy. The idea is that computer literacy would emerge as a basic area of knowledge next to literacy and numeracy.

This paper is thus asserting the importance of computer technology in distance education at a time when FGN has declared the years 2001 – 2010 as a decade of distance education. Since computer software, network technology, Internet resources are replacing or adding quality to traditional teaching and learning tasks. Other areas where computer have made in-road in education include word processing and spread sheets, communication (virtual classroom, on-line lecture notes), on-line literature research, computer-based homework and computer-assisted learning software. It is important to note that historically distance education is influenced by development in technology.

CONCEPT AND GOALS OF DISTANCE EDUCATION IN NIGERIA

In line with the National Policy on Education (NPE) (1998) in which one of its objectives is the promotion of the educational, physical and psychological health of all citizens, this crave for mass education, re-instate the need for distance education. Jegede (2000) defined DE as a provision of education by a mode other than the conventional face-to-face method but whose goals are similar to, and just as noble and practical as those of face-to-face education. An important point in the concept of distance education is the separation of the teacher and student in space and time as reflected in the definition given by the Federal Government of Nigeria (FGN) (2000) in the draft working plan for DE, where it described DE as the various methods by which a variety of available media and technologies are used to provide and / or improve access to quality education by a large number of people either because they missed the opportunity earlier in life or their present socio-economic and family circumstances would not permit them to acquire education through the formal school system.

Chandler (1991) in the same vein identified the place of space and media in defining DE as the teaching-learning process in which students are separated from the teachers by a physical distance that is often bridged by modern communication media. Also, section 10:12-13 of NPE (1998) emphasize government encouragement of "correspondence education" which will apply modern educational techniques in encouraging individuals to combine work with study. But in the declaration of participants at the National Workshop on DE, this provision was described as skeletal (FGN, 2000).

Another important aspect of Distance Education is the provision of equity in education (FGN, 2000) especially as it relates to girl and women education socio-economic and national equity. The United Nations Population Fund (UNFPA) year 2000 world population report gave startling revelations on the state of women in developing countries. It reveals that in 22 African and nine Asian countries, enrolment

of girls at the tertiary level is less than 80 percent than for boys. Also, female literacy in 1998 was 39.5 percent as against that of males estimate of 62.3 percent (UNESCO, 1998). Thus, along with breaking the barrier of space and time in education, the DE initiatives worldwide have ensured equity in education (Okwudishu, 2000).

It is in this light that FGN (2000) in its draft action plan for a decade of distance education in Nigeria outlined the following objectives:

- Provision of access to educational opportunities for those who otherwise would have been denied access in a cost-effective manner.
- Provision of a second chance for those who left school for one reason or the other but who having matured further would want to make re-entry into the knowledge arena.
- Provision of a chance for those who did not avail themselves the opportunities to go to school but who are still within the age range for UBE, to make up for their shortcomings or to become literate and get on with life.
- Enriching the knowledge base of students in regular school programmes as well as others who cannot afford to attend full-time schooling, and
- Delivering educational services in a manner that would be more learners friendly and would motivate learners to realize is a life-long affair.

Thus, the challenge of the distance education for the Nigeria teeming population of illiterates (out of 114 million people there are 43 million young and adult Nigerian illiterate and a dismal national average for functional literacy of 51 percent (FGN, 1997)) is to reach out at all locations, period and endeavour with opportunities for education by taking advantage of modern technology communication.

GLOBAL AND LOCAL SYNOPSIS OF DISTANCE EDUCATION PRACTICE

In the words of Emeagwali (1990) "the Nigerian 'flight plan' into the information age should be the adoption of a long range developmental plan that emphasize education and technology. The challenge according to him is that 60% of the wealth of many countries is presently derived from knowledge – based goods and services. he thus concluded that Nigeria must follow suit so as not to become the 'hewers of woods' and 'fetchers of water' for those who have arrived in the information age. The flurry of activities in Nigeria and world over in education is an attestation of this. Thus, to get the widest outreach in mass education efforts are towards the development of national and regional distance education initiatives. According to Dhanarajan (1999) a global problem is in educating 960 million total illiterate adults and over 365 million children worldwide who could not get access to primary education.

A model of Open University is seen amongst the Asian region where two-thirds of the world's population resides and a resultant growth in the need for education has made Distance Education a viable option, as it has the largest number of students using this mode of education (Murphy and Yuen, 1997).

The Indian experiences is evident in the success of the National Open School (NOS), which was established way back in 1979 and has since then become an autonomous registered society since 1989 (NOS, 1994).

Outline initiatives in this line includes:

- Institute National de Co-operation Educative (INCE) Venezuela 1959.
- Institute African in Pour le Development Economique et Scoiale (INADES) 1962 (West African Francophone Countries).
- United Kingdom Open University (UKOU) 1969.
- Liaoning Provincial Television University, North Eastern China.
- National Open University of Nigeria
- Countries, such as Spain Tanzania, defunct Soviet Union, Botswana, Australia, European Union, and United State of America all have embraced concept of distance education (Fagbamiye, 2000; Jegede 2000).

All the above have come from a distant past, when in 1728, Caleb Phillips of Boston, USA decided to teach shorthand by post and in 1843 Isaac Pitman also began teaching through the post in the United Kingdom (Battenbeg, 1971; Holmberg, 1989).

The Scenario in Nigeria started with such names as Westley hall, the Rapid Result College and the University of London in the first half of the 20th century. Thereafter, the Ahmadu Bello University (ABU) distance teaching unit emerged in 1967, followed by the University of Lagos Correspondence and Open Studies Institute (COSIT) in 1974, the National Teachers Institute thereafter came on stream in 1976 for training grade II teachers (TC II) and have since 1990 introduced NCE programmes. Other institutions that have embraced on distance education include the Abia State University of Nigeria, Obafemi Awolowo University (OAU) amongst others. It is note worthy that except for the O.A.U and Michigan State University collaboration the practice of DE in Nigeria is yet to avail itself of the opportunities of computer technology (Ojo, 2000). And now, the National Open University of Nigeria and the various initiatives from the National University Commission is yielding positive results in the use of new Information and Communication Technology for their distant education efforts.

THE INTERNET: TOOL FOR GLOBALISATION

The Internet is a computer network with an array of information and resources for those connected to it. Connecting computers together such that communication can occur between them forms computer network. A large number of organizations are connected together collectively to form the Internet. The Internet has facilities for communication, resources sharing, data exchange between those connected. Undoubtedly, it is the largest and wholesome learning tool available to education, which allows access to vast knowledge and information through various websites such as Journals, news magazines, newspaper, magazines, radio stations and as such virtually all disciplines can be studied.

Important telecommunications services on the Internet include:

- e-mail: electronic mail exchange between users.
- Usernet: Post messages on bulletin board systems formed by several special interest discussion groups.
- Interest relay chat: hold real time conversations with Internet users around the world on hundreds of discussion channels.
- File transfer protocol (FTP): download data files, programs, reports, articles, sound and other types of file from thousands of sources to your computer system.
- Telenet: Log onto and use thousands of Internet computer system around the world.
- Worldwide web: point and click your way to thousands of hyperlinked Internet sites and resources using graphical browser software e.g. Mosaic and Netscape.

The Internet particularly can enhance pedagogic and professional use by providing access to a wide range of information at no cost from an equally almost limitless range of sources. Where latest research findings from researchers around the world in all disciplines, as well as museums, galleries, journals, radio stations, libraries and different interesting web sites can be accessed. Further, such facilities as e-mail, video conferencing and on-line chat/discussion enable resource persons to share experiences. The term 'expert on-line' is used to describe these resources. Internet users can undertake common projects and virtual field trips and publish their activities and projects on web sites. Some interesting websites addresses for educational purpose include:

- Teacher Net UK on http:// www.teachernetuk/org.uk
- Virtual field trips on http:// www.field-guides.com
- Virtual University on http://www.viheaf.net
- Virtual University on http:// www.nucvihep.net

SYNOPSIS ON INFOTECH KITS

Information Technology is a concept that involves the understanding of major concepts, development and management issues in computer hardware and software, telecommunications, database management and other information processing technologies.

COMPUTER HARDWARE AND SOFTWARE

The 'system' definition of computer seems to be appropriate as the computer is defined as an interrelated combination of components that performs the basic system functions of input, processing, output, storage, and control. Computer inputs is possible through devices such as keyboards, touch screens, pens, electronic mice, optical scanner and so on, they basically count data into electronic machine readable form for direct entry or through telecommunications links into the computer system. The Central Processing Unit (CPU) is the main processor of a computer and performs all the arithmetic and logic functions in computer processing. The output device of a computer system includes the video display units, printers, and audio response units, converting electronic information produced by the computer system into recognizable forms. Storage functions take place in the hard disk, read only memory (ROM), Random Access Memory (RAM), CD ROMS, Floppy disk and so on. These devices store data and program instructions needed for processing. Controls takes place also in the CPU, it interprets computer program instructions and transmit

directions to the other components of the computer system. Talking about computer categories we have microcomputers, midrange computers, and mainframe computers and their variations includes minicomputers, supermini computer and super computers. These differ in processing speed, memory capacity, number and capabilities of peripheral devices for input, output and storage they can support. The software resources help end users use computer hardware to transform data resources into a variety of information product. Thus computer software is needed to accomplish the input, processing, output, storage and control activities of information system. We have system software (e.g. operating systems, operating environments, database management systems, telecommunications monitors, system support programs, system development programs) and application software (word processing, electronic spreadsheet, database managers, telecommunications, graphics, integrated package and application specific programs).

TELECOMMUNICATIONS

This is the sending of information in a form (e.g. voice, data, text, and images) from one place to another using electronic or high – emitting media. The terms teleprocessing, telematics and telephony all reflect the integration of computer-based information processing with telecommunication and telephone technologies.

It must be noted that all forms of telecommunications now depend heavily on computers and computerized devices. Telecommunications does provide invaluable capabilities for educational institutions. Since it enables work groups to communicate electronically and share hardware, software and data resources. Other networks led educational institutions process admission and carry instruction to many remote locations, or remotely monitor and control instructional processes.

Telecommunications networks can also interconnect the computer systems of an institution so end users through the institutions can share their computing power. And, of course, telecommunications network enhance collaboration and communication among individuals both inside and outside an institution.

Telecommunication can take any of the following forms:

* Electronic mail
* Voice mail
* Bulletin board systems
* Videotext
* Facsimile
* Public information services
* Desktop video conferencing
* Decision room conferencing
* Teleconferencing
* On-line admission processing
* Inquiry/response
* Electronic data interchange
* Electronic funds transfer
* Activity monitoring

* Process control
* Telecommuting

All these technologies tend toward interconnected local and global digital network for voice, data and video with heavy use of high-speed fiber optic lines and satellite channels to form a global information superhighway system. There are five basic components in a telecommunications network namely terminals (input/out devices), telecommunication processor (e.g. modems), telecommunication channels and media (e.g. copper wire, coaxial, cables, fiberophe cables, microwave systems, and communication satellites), computer and telecommunication control software (e.g. telecommunication monitors, network operating system and communicating packages).

COMPUTER TECHNOLOGY AS A UNIFICATION OF MEDIA

The computer technology has achieved a wondrous feat unifying all communication media available to man. With the advent of the multimedia systems the array of peripherals that can work with the computer system is almost limitless. We now have electronic boards akin to the white boards with special pens, capable of transferring data written on it to the system (Pen Based Computer). But the simples' use of the Personal Computer (PC) based training technology is the electronic transparency capable of a mix of images, sounds animations and video at appropriate time.

Multimedia PC's are equipped with a sound blaster and speakers, high-resolution colour display screen, CD-ROM player / DVD-ROM Player (on which audio, images and video files are recorded), videodisk player and a video tape player (controlled by the PC). We now have the technological classroom courtesy of computer technology which contain all possible training technology controlled by the PC's which are used by the students and teacher (Conway, 1990). PC's could be linked to form Local Wide Area Networks (WAN) and / or training centers, the Internet is thus a network or these Networks. The PC-to-PC conferencing mode has also emerged with the concept of computer. Also, installing an FM/TV adapter card turns your computer system into a TV and Radio (which will soon be a standard as other multimedia cards are not fried onto mother-boards). The touch screen and voice recognition / communication advances are also catching on and makes quality education available for the special education students.

The digital camera is already in vogue and combines very well with computer where the image can be manipulated, which is the digital equivalent of darkroom retouching. The images are then displayed or printed. Pictures of locations can be sent almost on line as processing take less than 3 minutes on digital cameras. Its older precursor the scanner also is still much around and as expected costing less and becoming better. The printers also send output and come in varying sizes and capabilities and produce true to type almost original copies of materials.

Advances in virtual reality have dispelled a lot of fears in practical situation education where skills development is essential. This is important in the area of 3D simulation, enabling the learners to not only change parameters with the key board,

mouse or joystick but will really walk into systems or rooms, turning knobs, touching objects which offers an almost perfect realism. Accompanying this soft technology are hypermedia and intelligence tutoring. Virtual reality also grouped among the soft technologies has great implications for training in the distance education with the possibility via networks to have several persons working remotely but simultaneously at a virtual reality application, thus generating a 3D group work in real time.

COMPUTER TECHNOLOGY IN DISTANCE EDUCATION

The quest for excellence in quality of learning materials, support services, academic and administrative system is an important issue in distance education. The draft action for distance education in Nigeria has an important component the establishment of a virile ICT-driven distance education delivery system of which computer technology is the central driving force. Commonwealth of learning (COL) (2000) stated that globally in 1990, some 48 million students participated in higher education of these; 17 million were in Asia alone. The figure is expected to rise to 159 million by the year 2025. This anticipated increase is the justification for distance education in Nigeria with her equally skyrocketing population. The COL thus recognizes the emergence of affordable and sophisticated communication technology, as timely innovations in the prosecution of distance education should include the introduction of teleconferencing and computer conferencing. The National Open School of India is reputed to have a channel allocated for audio and another for video transmission twenty-four hours a day and the school also avails itself the use of computer, e-mail, Internet facilities and computer network for its functions (UNESCO, 1992).

The declaration is the national workshop on distance education 2000 called on the FGN to appreciate the glonalisation of information and the inevitable use of information and communication technologies to deliver education to the doorsteps of dedicated media channels for education, cognizant of contemporary developments in information communication.

The African Virtual University (AVU) effort is a pointer towards embracing the computer via Internet for the purpose of education also in line with this is the Nigeria University Network. Thus, Ojo (2000) surmised that "Proprietors and beneficiaries of distance education will have no choice take full advantage of new communication and information technology tools", some institutions have already instituted programmes to the award of degrees over the Internet.

Isiyaku (2000) attested to the pervasive effect of computer above any other technological innovation. He added that students an access relevant and current information, interact with each other and resources persons on the e-mail and computer conferencing can provide can provide viable interaction access to students and teachers in a group learning situation. Already, the Obafemi Awolowo University and Michigan State University collaboration is interested in "electronic publication system" which is envisaged to be of immense benefit in the area of research and academic work to be accessed on Internet. According to Taylor (1995), multi-media have boosted higher distant education and flexible interactive / multimedia / computer

based media. Singhatey (2000) also opined that almost all schools in Gambia are Internet enabled and computer education is mandatory as teachers are incorporating "virtual Education" into their routine duty of using Computer – Aided Teaching (CAT) for their students. As explained by Calude and Malitza (1989) the European Association of Distance set among its primary objectives "the development of new method and techniques for higher education, including new technologies and media". A new initiative in the country is the Shell Open University (SOU) with an on-line based beaming process using computers to access well structured learning materials through the Internet. It is aimed specifically at providing skilled, flexible and global workforce. All courses/programmes would be registered through SOU-website.

The extent of reliance on computer technology in Distance Education is further strengthened by an international study in distance education by the Distance Teaching University of the Federal Republic of Germany and the German Institute for Research into distance education which concluded that Radio, T.V, Films, Slides, Video and audiotapes, the PC and other systems of electronic data processing accounts for some 70% of all teaching media used in distance education (Graff and Holmberg, 1988).

CONCLUSIONS

Computer technology is indispensable in today's educational practices either in the face-to-face mode of the distance education or the out of sight mode for its benefits are numerous. It does satisfy the condition for breaking of barriers to mass-education access to equity.

Thus all efforts must be made towards recognizing such and availing the system of the technology of the time as others world-wide have used it to lift them into the information age notably the Asian-tigers.

High level and low-level interactions must continue on ways of improving the status of education in Nigeria but ultimately the "jaw-jaw" should translate into a better, efficient and effective educational system worthy of emulation worldwide. Distance Education in Nigeria must thus avail itself of the opportunity of computer technology to 'leap frog' Nigeria into the information age.

RECOMMENDATIONS

The Federal Government of Nigeria (FGN), must set-up in collaboration with interested private entrepreneurs a vibrant computer technology industry to make the technology more affordable to all. Also, a feasibility study should be carried out by appropriate agencies on Distance Education modes most suitable to the Nigerian situation and the computer technology to be employed.

Computer technology enhanced Distance Education centers should be installed in every senatorial district, which are networked and connected to the Internet. This will ensure easy accessibility by a large number of Distance Education students. And, the FGN must provide adequate support services (telecommunications and energy) for its proper functioning. The FGN should also enable appropriate agencies to carry out training programmes for skilled personnel to manage, maintain and operate the various technological installations planned for the Distance Education Programme.

Software developers in the country must be encouraged and given incentives, for they hold the key to a sustainable and culturally sensitive ICT revolution in Nigeria. The aforementioned and others would be required towards effectively incorporating ICT into our national life.

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