

Teaching Technical Courses through Distance Learning in Nigerian Universities: Problems and Prospects

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By

Akin Adejimi

Department of Architecture, College of Engineering and Technology,
OLABISI ONABANJO UNIVERSITY,
Ibogun Campus.
Ogun State, NIGERIA.

E-mail: akinadejimi@yahoo.com, adejimiakin@gmail.com

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ABSTRACT:

This paper addresses the peculiar problem of non-adaptability as distance learning some technical courses like Engineering, Architecture and Urban Planning. This is due to their highly technical and practical nature as well as daily studio and workshop tutelage and interactions needed to master them. While the synchronous traditional teaching can no more cope with the educational needs of the country, e-learning aspect of distance learning could have been a solution. However, candidates for technical courses are at a disadvantage as the courses are not adaptable as distance learning yet. Comparisons between online data on applications and admissions of the “Joint Admission and Matriculation Board” (JAMB, 1998-2005) indicates a high divergence in the applications and admissions for these technical courses. Thus, high percentage of qualified candidates seeking admission into Nigerian universities for such courses are turned back yearly. At the same time, online data from the graduates of few universities running distance learning in the south-western part of the country shows that they are yet to adopt modern teaching techniques/technologies and e-learning to deliver their courses. The paper discusses some of the tools for adapting such technical courses as e-learning and concludes that they can be successfully taught at distance, just like any other course of training. This is however, if appropriate e-learning facilities and skills are made available. It finally recommends at tripartite levels of higher education management, the ways to achieve same.

Key words: asynchronous-learning, collaborative-learning, distance-learning, e-learning, interactive-learning, synchronous-learning.

INTRODUCTION.

Events in the world educational scenes are taking dramatic turns. The age old traditional methods of teaching and learning are fast becoming archaic and outmoded in the world. Educational needs and events are moving faster than what such traditional methods can cope with. The world is looking for ways of educating more people efficiently and effectively at a shorter period than before, but the developing world still battles with the traditional synchronous methods as their yearly educational needs grow geometrically. In most advanced countries, distance education system has become e-education and technologically advanced that students are taught from remote places efficiently as if the teacher and students are together. Apart from this, modern teaching and learning techniques are becoming worldwide that in a short time, any part of the world that does not adopt this system will be left behind.

The communiqué of the World Conference on Education for All (WCEFA) of 1990 states among other things that “Every person – child, youth and adult – shall be able to benefit from educational opportunities designed to meet their basic learning needs....(Article 1).” The assumption of this study is that this declaration is far from being achieved in Nigeria as the current explosion in the students’ intake in most of the country’s higher institutions has become a point of concern to all lovers of educational advancement and mass literacy. Thousands of qualified candidates are struggling to enter colleges that have very little spaces for them. This invariably always result into all forms of complex and dubious admission processes which have led universities to conduct parallel admission examinations and those admitted are congested in large classrooms benefiting little from their lectures. As a result, many universities are now over tasked to perform duties that are unachievable with the meagre resources at their disposal due to such over population in class rooms. The summary of these is that a minimal percent of Nigerian youths now have access to adequate education that can give them careers.

PECULIAR NATURE OF TECHNICAL COURSES.

Technical courses like engineering, architecture, urban planning, cartography, building technology, and fine-arts are peculiarly practically oriented. Their training calls for patience, interaction, feedback and collaboration from lecturers and other students more than in other courses to get the best out of the students. In most of these courses, one needs to be both artistic as well as scientific to develop the necessary skill and the artistic aspect has to be patiently developed in each student at his/her own pace. These courses call for precision, in that, tiny and painstaking detailing is involved in their mastery. Time is needed for both the teacher and the students to transfer and absorb knowledge. Because of their practical nature, the courses require hands-on-tools approach which has to be demonstrated by the teacher. All these have confined the courses to the traditional realm which has become the major impediment to their adaptation as distance learning. There must be interaction between the students and their lecturers on one hand, and between the students themselves on the other for a collaborative learning.

According to (Galusha 1997, 6-14) an area of concern for the distance student is the perceived lack of feedback or contact with the teacher. A frequent criticism of distance learning is that its disembodied nature restricts feedback leaving learners feeling abandoned (Baker, 2003, vol2). Because of this, students may have trouble in self-evaluation. The separation of student and teachers imposed by distance removes a vital link of communication between these two parties. The link must be restored through overt institutional efforts so that the teaching-learning transaction may be “reintegrated.” Citing Tinto, (Keegan 1995, *ED389931*) hypothesized that distance students who did not receive adequate reintegration measures such as electronic or telephone communication, would be less likely to experience complete academic and social integration into institutional life. Consequently, such students would be more likely to drop out (Sheets, 1992, vol1). Because of these impediments, the rate of dropping out of students in distance learning is much high compared to the traditional method. Out of about 450 candidates that participated in the Nigerian University Commission Virtual Higher Education Pedagogy (NUCVIHEP) between 2003 and 2004, less than a dozen completed the nine modules in record time of nine months. Technical courses are however much more demanding when feedback, interaction, supervision and collaboration between students and their lecturers are concerned.

It is suffice to mention it here that while it is possible for candidates in Management and Literary courses to have opportunities of open learning or get admission into universities outreach centers and informal schools or enroll for external professional examinations, candidates in Engineering and Environmental related courses can not do so. It is not particularly impossible for these courses to be studied externally because of this peculiar nature. If they are therefore to be taught through distance learning, the above impediments of interactivity, collaboration, tutelage and feedback have to be adequately addressed. This has never been easy to handle. However, with the modern applications of computing and the new horizon of multimedia projection, teleconferencing, videoconferencing, instructional television, wiki, and many other modern teaching techniques, and tools through internet, in real time; the end to this problem seems appearing. When some or all of the above facilities are combined using computers, the necessary feedback, interactions and collaborations which are not possible with the conventional correspondence courses will be achievable and technical courses will be able to join others as distance learning. In the same vein, teachers in these courses are skeptical and most of them do not believe it is possible.

INADEQUACY OF THE SYNCHRONOUS TEACHING METHOD RESULTING IN OVERPOPULATION IN NIGERIAN UNIVERSITIES.

The problem of overpopulation in most Nigerian higher institutions has become eye sores, especially in the southern part. It is now common seeing students sitting on windows, and many others standing, peeping behind them to see and hear the lecturers with no success especially in literary courses. In most cases, there are no large halls to conveniently accommodate such a number, and where they exist, they are long, narrow, dark, and have low headroom that students from the middle of the class hardly see the lecturers, talk-less of those far behind. This at times is compounded by failure in

electricity that causes black-out. On many occasions the students are unruly, disorderly and uncooperative because of the class size.

Examinations are no longer what they used to be as malpractices are now on rampage, formalised and students no more fear being caught and when caught, resolve into violence, or threaten their lecturers with cultism. The problem has not only resulted in low academic performance in the students, it has turned many lecturers into over-night handout sales-men (especially for the literary courses) and has bred most of the numerous social ills and societal menace bedevilling most of our campuses and cities today. In many schools of engineering, architecture and planning, students do not have drafting tables to themselves, and so, do their works from home, at times contract them out to their so called ‘mercenaries’.

Below in Table 1 is the latest data from JAMB showing the divergence in the number of applications into Nigerian universities compared to the total numbers admitted with reference to applications and admissions of the technical courses. Figure 1 below also shows that from 1998 to 2003 the gap got wider on yearly basis showing a rapid increase in applications and a gentle decrease in the percentage admitted. This must be what created the known rowdiness, bottlenecks and corrupt practices at the JAMB and different universities’ admission offices that resulted in the universities conducting parallel entrance examinations.

TABLE 1: JAMB APPLICATION / ADMISSION STATISTICS, 1998-2005

Academic Sessions (A)	Total Applications (B)	Engineering and Env. Applications (C)	% of Engr/Envr. Applications on Total Application. $D=(C/B)100$	Total No Admitted (E)	% of Total Admitted on Total Applications $F=(E/B)100$	No of Engr/Envr Admitted (G)	% of Engr/Envr. Admitted on Engr/Envr. Applications $H=(G/C)100$
1998/99	417,773	70,940	16.97	78550	18.80	11786	16.60
1999/00	461,548	82,221	17.81	45766	9.90	4769	5.80
2000/01	775,900	129,857	16.73	90769	11.70	15836	12.20
2001/02	994380	162219	16.31	51845	5.20	8311	5.10
2002/03	1046950	175670	16.78	105157	10.0	16352	9.30
2003/04	841878	135980	16.15	122492	14.50	15951	11.70
2004/05	916371	142743	15.57	Not Available	Not Available	Not Available	Not Available

Source: Adapted from (JAMB 1998-2005) Statistics

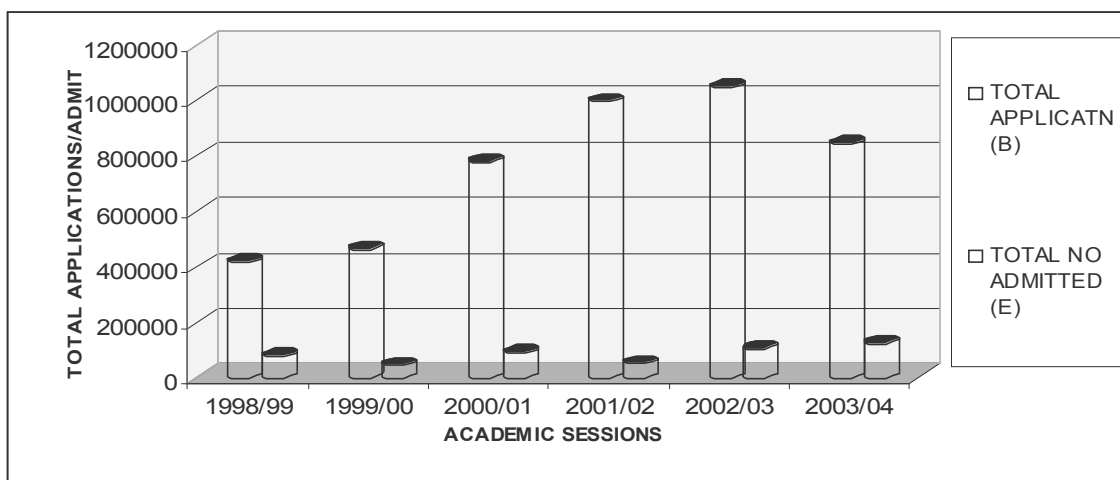


Fig. 1: Comparing Total UME Applications with the Total Admission

Source: Adapted From (JAMB Statistics 1998-2005)

Figure 2 also shows that though the number of JAMB applications increases yearly, an average of 16.61% of the total JAMB applications for UME always choose Engineering / Environmental Technology courses, and at the same time, the percentage of intake (admitted) drops sharply from 16.6% to 5.1% between 1998 to 2001.



Fig. 2: Comparing Total UME Applications with Engr/Envr Applications
 Source: Adapted from (JAMB Statistics 1998-2005)

Figure 3 is a simple comparison between Engineering/Environmental applications and their admissions. The percentage admitted fluctuates yearly ranging from the 5.10 as the lowest to 16.60 as the highest which translate into an average of 10.11% per year. The difference of 89.89% is the average annual non-admitted candidates among those who applied for Engineering and Environmental Science courses. This does not in any way suggest that all these left-over candidates are not qualified to enter for these courses.

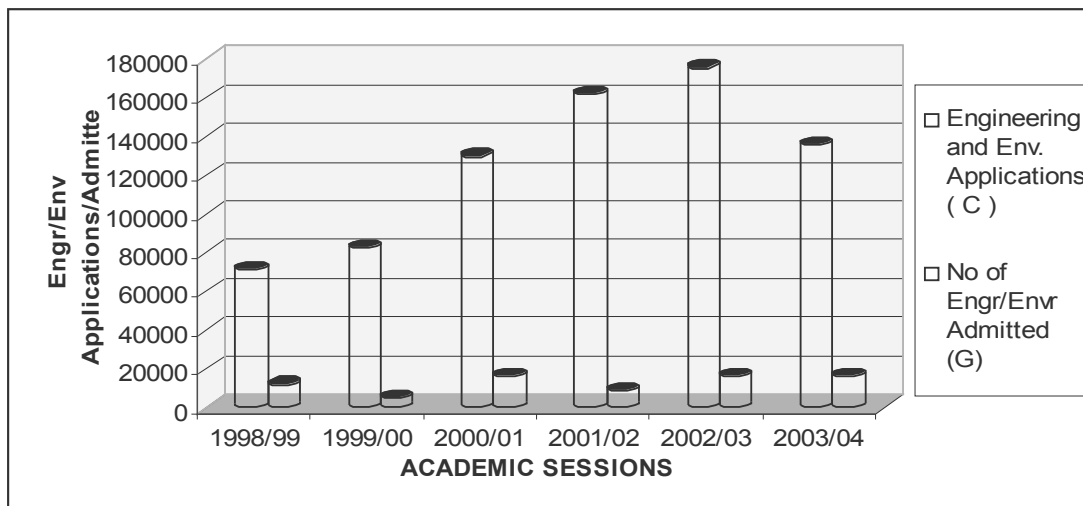


Fig. 3: Comparing Engr/Envr Applications with Engr/Envr Admissions.
 Source: Adapted from (JAMB Statistics 1998-2005)

This percentage of the left-over is a big concern for mass educators and indicates a big problem for the country in that many dreams of the youth can not be fulfilled. E-learning could have been the solution to this. But since these courses are not yet adaptable for e-learning, this means that candidates in this category are disadvantaged.

Table 2 below is the findings on the teaching delivery media of five distance learning programmes of five universities in the south-western Nigeria. Even though the establishment of these programmes dated far more than ten years, the table shows a total non-adoption of e-learning in delivering the distance learning lectures of the universities. The most modern lecture delivery medium in these universities is the sale and distribution of audio cassettes and VCDs. The major delivery means are the print medium in form of textbooks, handouts, and lecture notes. Till now none of them has started teaching through the internet talk less of employing teleconferencing or videoconferencing.

TABLE 2: TEACHING MODES FOR DISTANCE LEARNING PROGRAMMES IN FIVE SOUTH WESTERN NIGERIAN UNIVERSITIES.

TEACHING MODES UNIVERSITIES	SYNCHRONOUS (HOLIDAY COACHINGS)	ASYNCHRONOUS TEACHING				
		Print	Audio Cassette/ CD/VCD	Internet/ E-Mail	Tele/Video Conferencing	ITV
University of Lagos	√	√	√	X	X	X
University of Ibadan	√	√	√	X	X	X
Lagos State University	√	√	√	X	X	X
Obafemi Awolowo University	√	√	√	X	X	X
Olabisi Onabanjo University	√	√	X	X	X	X

Source: Author's personal investigation

CHALLENGES FACING E-LEARNING IN NIGERIA

While e-learning has a lot of opportunities and advantages over traditional methods and even the conventional distance learning methods, certain impediments can hamper the successful delivery of e-learning if not adequately planned for. These include:

1. Lack of e-teachers:

To teach through e-learning is basically different from any form of traditional method. E-teaching demands for e-teachers. To have been trained to teach does not imply that you can teach in e-learning. Just because teachers have teachers' educational qualifications, does not necessarily prepare them to be e-teachers.... (N G. Campbell, 1997, pers. comm).

The summary of it is that effective application of e-education can only take place in schools with:

- a. Teachers who understand what it is like to learn in an e-environment,
- b. Teachers who are confident working in synchronous and asynchronous environments interacting with communities of students and peers they may never see.
- c. Teachers who are able to locate and publish in a web-based environment, (Healy 1999, 294-298).
- d. Teachers who are technically skilled in the modern educational technologies of e-learning.

2. Lack of e-facilities :

These are computers, (soft and hardware), Internet, Broadband, Satellites links, Cabling, digital phones and any other information technology facilities. According to (Higgins 2002, (1)), underpinning the e-education strategies is the assumption that the infrastructural backbone of communication technologies such as cabling, satellite links and bandwidth is available to users. E-education strategic planners need to take into account these structural issues when designing flexibly

delivered teaching and learning packages. Since most of these facilities are very expensive, the major part of the foundation for e-learning should be laid by the governments by providing facilities to engender easy take-off of such projects.

3. Lack of political will:

This has been a serious impediment to development. Since the government will be the last hope in the provision of e-learning facilities, making of friendly policies on e-learning, will be an essential factor on the success of e-learning. The lack of political will to do the above is a sign that e-learning will result in failure. Whether e-learning will succeed in a city or country or not depends on the political will of its citizens especially those in authority. In line with this is the digital level of those in authority. If the people in authority are still non-digital in their thinking or can not appreciate the goodies in such a venture, they may not have the political will to embark on such a gigantic, expensive project.

4. Getting candidates e-studentship ready:

Even when facilities are available but the students are not prepared for e-learning, the result will also be a failure. The computer awareness and the technical operability of the students in information technology is a crucial determinant of the success of e-learning. One can imagine what may happen if non-computer literate candidates are admitted for e-learning programmes. Computer application knowledge must definitely be a subject requirement for entering into e-learning and the students must be e-studentship compliant. As at now, this has not been so as a high percentage of the youth and would-be candidates are not computer literate talk-less of being e-student compliant. Youths in the rural areas that form the majority are the most affected.

5. Digital Divides:

E-learning is an expensive education system. Without a conducive environment to reduce the cost of acquiring computer and other modern educational facilities, many would-be students will be left out. The economically disadvantaged, including those with unstable or inadequate incomes, or who rely on fixed incomes may not be able to afford e-learning if nothing is done to assist in this. E-education in the personalized western form requires ownership of expensive computing hardware and access to telecommunication systems. Perhaps the only source of access is through either public provision or by community arrangements or corporate sponsorship.

6. Energy problem:

Computers and information technology equipment run on energy. Without electricity, they will not work. This invariably means that the success of such a programme will be hampered with epileptic power supply as is the case in Nigeria. Poor energy supply will definitely frustrate both the e-teachers and e-students. Efforts should be made on making power supply more adequate and special emphasis should be directed at making this available to the rural areas as well. One way out of this is renewable energy e.g. solar, wind, biogas etc.

7. Adapting curricula for e-learning

The curriculum that works with the traditional synchronous courses may never work with e-learning. There is a need to know how to write e-curriculum and what know what e-learning curriculum is like. Without a specially written e-learning curriculum, the normal curriculum will fall short of any achievement. For example, to adopt the normal architectural design studio curriculum for e-studio will make a mess of the course as the first is more of person to person tutelage while the other is more technologically intensive. E-curriculum needs skill and knowledge of how to write them.

POSSIBILITIES OF TECHNICAL COURSES AS DISTANCE LEARNING IN NIGERIA.

Though the peculiarity of non-adaptability of most technical courses for distance learning remains a big problem in Nigeria, developments in Mass Communication, mainly the radio and television, have

however had much impact on education, making distance learning possible; Telecommunication has produced the remote telephone and satellite systems which have turned the world into an open learning classroom. A combination of all these technologies has resulted in limitless opportunities for the educational system – (Okebukola & Shabani 2004). The hope is therefore rising on trying even technical courses like engineering and architecture as a distance teaching and learning. The most relevant techniques that are more appropriate for practical courses like these courses include Teleconferencing, Videoconferencing and ITV all transmitted through telecommunications and enhanced by Multimedia system. With the above techniques in place, complex exercises can be simulated for easy practice and understanding.

In practical works, the use of materials, equipment, and specimens are simulated and demonstrated through multimedia while assignments can be based on learners' place of work to allow their applications. For instance, while undergoing architecture or engineering as a distance course, students can be attached (as in Industrial Training attaché) to architectural or engineering firms where they are supervised, corrected and guided by qualified professionals and on special occasions attend outreach centres of the school of Architecture /Engineering to meet other e-students and outreach tutors. Apart from this, post-graduate or post-professional examinations can be conducted after a course of training as e-learning by the professional bodies.

TOOLS FOR TEACHING TECHNICAL COURSES AS DISTANCE LEARNING

A. Computer and Distance Education:

Used in combination with any of the other technologies, the computer provides limitless possibilities in information processing and information generation. When new information technologies are discussed, much attention is always focused on the computer because of its versatility. The computer has also gained the attention because it is regarded as the main changing agent for the future. It is envisaged that most work in the very near future will be done through computers. This has made the computer technology an important subject for the educational system. Since most of the technical practices can now be digitized, using computers in carrying out technical assignments and projects will no more be a problem in distance education.

B. The Indispensability of the Internet in Distance Learning.

Internet is a Computer-based global information system. The Internet involves interconnecting many computers in a network. Such network may link tens, hundreds, or even thousands of computers, enabling them to share database of information. The Internet has made it possible for people all over the world to effectively and inexpensively communicate with one another. Unlike traditional broadcasting media such as radio and television, the Internet does not have a centralized distribution system. Instead, an individual who has Internet access can communicate directly with anyone else on the Internet, make information available to others, find information provided by others, or sell products with a minimum overhead cost.

In a plain man's language, the internet can be likened to the world storehouse of knowledge. It is a virtual world brain, virtual library, virtual conference room, virtual market and virtual classroom. Since internet can be accessed by anyone from anywhere so far the facility exists, it makes distance learning, even in engineering, architecture, planning and fine arts (which has not been possible as correspondence course) possible.

In Olabisi Onabanjo University Department of Architecture, information, instructions, lecture notes, assignments and projects are being given through the Internet as attachments to the students' e-mail messages. A centrally maintained web page is being opened which the students can log on to. And within the web page will be "E- Portfolio" that would include some of the following features: A gallery of good portfolios of architectural works, an on-line lectures, tutorials, tests and self-assessments on how to carry out works, an on-line forum discussions and interaction as well as an on-line projects allocation, supervision, critiquing and presentation.

C. Multimedia System

Multimedia is the presentation of information using the combination of text, sound, pictures, animation, and video with the aid of a computer. Thoughtfully presented multimedia can enhance the scope of presentation in ways that are similar to the roving associations made by the human mind. Connectivity provided by hyperlinks transforms multimedia from static presentations with pictures and sound into an endlessly varying and informative interactive experience.

Multimedia has had an enormous impact on education. Because of the visual appeal, students are motivated to learn more and therefore assimilate better. Through multimedia presentations and programming, lectures can be made more interesting. For example, in Olabisi Onabanjo University, we discovered that students are more motivated, learn, contribute and interact better in multimedia lectures. Even seminars presented using multimedia are known to attract more attention and interests.

D. Teleconferencing

Teleconferencing is a discussion through telephone between two or more people in different locations who can hear but can not see one another. For example, a lecturer of architecture can teleconference his/her students who are in their hostels or homes on "Rendering techniques" to share with them the common mistakes s(he) found the students making during the usual lectures. Our GSM phone can be used for teleconferencing. However, this can be done with only three people, i.e. between the teacher and two students". Better teleconferencing through internet can connect more people than GSMs.

E. Videoconferencing

According to (Michael 2002, 1993-2001). Videoconferencing can be adopted as a computer based teaching technology in which moving (video) or television pictures can be transmitted synchronously in two directions through high speed digital lines so that the students from one side can see and hear their lecturer in another place and vice versa. Videoconferencing is the most real modern teaching technology that can be adopted for teaching practically oriented courses. With videoconferencing, perfect interaction in oral, visual, graphics and letters are possible as if you are physically present in class in 'Real Time'. This makes it interesting, motivational and enjoyable for the students. Various learning styles can be adopted e.g. the use of video clips, animation, audio, and graphics. This is very good for practical training because of its visual appeal.

F. Instructional Television (ITV)

Instructional television (ITV) is an effective distance education delivery system through television or video sets. ITV may be either passive or interactive. Passive ITV typically involves pre-produced programs which are distributed by video cassette or by video-based technologies such as broadcast, cable, or satellite. In contrast, interactive ITV provides opportunities for viewers' interaction, either with a live instructor or a participating student site. For example, two-way television with two-way audio allows all students to view and interact with the teacher (Lochte, 1993). At the same time, cameras at remote sites allow the teacher to view all participating students. It is also possible to configure the system so that all students' sites may view one another.

In ITV, motion and visuals are combined in a single format so that complex or abstract concepts can be illustrated through visual simulation. Instructional television is an effective way to take students to new environments (the moon, a foreign country, or through the lens of a microscope). Events are captured and relayed in real time such that time and space are collapsed. It is very effective for introducing, summarizing, and reviewing concepts. It can be used effectively as a motivational tool.

However, because teachers and students are physically separated by a distance, the teacher's challenge is to psychologically reduce this, not only through the appropriate use of technology but also through the use of effective teaching practices.

CONCLUSION AND RECOMMENDATIONS.

This paper has looked into how the age old traditional methods of teaching and learning are fast becoming archaic and outmoded and how this has particularly affected the training of technical

professionals in Nigeria. Conditions in Nigerian higher institutions are now becoming pathetic as a high percentage of prospective students are turned back yearly and those admitted are congested in large classrooms benefiting little or nothing from their lectures. Data from the JAMB office clearly shows that Nigerian universities can no more cope with the number of intakes into them. And since the trend in the world education is to educate more persons within a short time so that nobody is denied qualitative education, e-education is the nearest answer left. But the problem of adaptability of such courses for e-learning makes this impossible. Moreover, while it is possible for candidates in management and literary courses to have admission opportunities into Open-learning, universities' outreach centres or enroll for external professional examinations, candidates in the technical courses can not do so. The computer based educational technologies is seen to offer solutions to several of these perennial problems. In the above view, some of these computer/internet based technologies, have been found to be appropriate for teaching these courses at distance in the advanced countries and so have been briefly discussed in this paper. Therefore, in order to fully achieve success in teaching technical courses as distance learning in Nigeria, the following recommendations at a three hierarchies of education management levels are necessary.

Departmental level:

Departments should assist in producing e-teaching resources to the lecturers. Lecturers should be trained to improve their skill in computing and other new educational technologies. Computer application should be made a prerequisite for all the departmental courses. Special computer training in specific software areas should be organized for lecturers.

Institutional Level:

All higher institutions should invest in IT, Internet, broadband, cabling and fiber optic facilities etc. Higher institutions can have outreach centres as cyber cafés where online students receive lectures. Computer literacy should be a condition for employing staff into all higher institutions. Computerization of every office, departments and every activity should be a must. Make computer facilities available to all lecturers. Computer literacy should be one of the admission requirements for candidates entering higher institutions. Nigerian professional institutes should take a lead by re-training their members through e-learning. An advanced post graduate course can be introduced by the institutes through e-learning. Higher institutions should endeavor to produce e-teachers.

National Level:

The government should provide all the impetus to make online studies easy for interested candidates. They should provide computer facilities in all secondary schools so that those in the remote parts of the country who are mostly affected can also enjoy such preparation from their school certificate level. Government should encourage proliferation of computer assembly in the country to make it cheap. Tariffs on educational facilities should be removed for affordability. Government should assist Universities to develop to their full capacity and potentials on distance e-learning. The government should fund education adequately for these facilities. And finally, since energy is of paramount importance to run computers, remote schools that are outside the national power grids should be assisted with appropriate renewable energy e.g. solar, wind, tidal, biogas etc.

Notes: All figures were produced with Microsoft Excel spreadsheets (2003)

REFERENCES

Baker, R.K. (2003, Summer). A framework for design and evaluation of internet-based distance learning courses phase one—Framework justification, design and evaluation. *Online Journal of Distance Learning Administration*, 6(2).

Campbell, N. G. (1997). Learning to teach online: An investigation of practice in teacher education. Unpublished Masters thesis, University of Waikato, Hamilton, New Zealand.

Galusha, J.M. (1997). Barriers to learning in distance education. *Interpersonal Computing and Technology: An Electronic Journal for the 21st Century*, 5(3-4), 6-14.
<http://www.emoderators.com/ipct-j/1997/n4/galusha.html>. (accessed: 29 July, 2006)

Healy, J. (1999). Failure to connect: How computers affect our children's minds – and what we can do about it. New York: Touchstone Books. p. 294-298

Higgins D(2002) Bridging the Digital Divide: A New Zealand Perspective on Distance Education. *Association of New Zealand (Inc) and University of Otago*. Dunedin New Zealand. 202-204

JAMB (1997-2001), Joint Admission & Matriculation Board statistics, 1997-2001. JAMB web page.

Keegan, D. (1995). Distance education technology for the new millennium: Compressed video teaching. (*Eric Document Reproduction Service No. ED389931*)

Lochte, R.H. (1993). Interactive television and instruction. Educational Technology Publications. Englewood Cliffs, NJ.

Michael G. M (2002). Video Conferencing, *Microsoft Encarta Encyclopedia 2002*. 1993- 2001 Microsoft Corporation

Okebukola P & Shabani J (2004). Old and New Technologies in Teaching and Learning in Higher Education. <http://www.hiveaf.net> (accessed 20 July,2004).

SAIDE (2004) **Distance Education**. Retrieved July 20,2004 from <http://www.viheaf.net>. (accessed 23 July, 2004)

Sheets, M. (1992). Characteristics of adult education students and factors which determine course completion: A review. *New Horizons in Adult Education*, 6(1).

WCEFA (1990). The Communique: Article 1. *The World Conference on Education for All of 1990*, (WCEFA). Jomtien, Thailand.