

AUDIO TECHNOLOGY FOR ENHANCING DISTANCE LEARNING IN NIGERIA**Ogar Christopher Eje, William Nkanu O. and Okenjom, Godian Patrick**

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ABSTRACT: *This paper critically examined the place of Audio technology in distance education in Nigeria. Basic concepts such as audio technology, distance learning and information technology were theoretically defined in the context of the work. A brief appraisal of audio technology in distance education in Nigeria was highlighted, and it was observed that, although distance learning in Nigeria is not very recent but the integration of audio technology to this system of education seems to be a new development. The study highlighted the categories of audio technology in distance learning and their implications to distance learners. It was further stressed that audio technology in distance education has much advantages with some observed limitations. The paper concluded by recommending the need to integrate audio technology to distance education as an aid to improve on the existing practice. The federal government should review the nation's educational policies to reflect this development. All stake holders in education business should put their hands to the wheel to ensure the successful integration of audio technology into the school curriculum. Efforts be made by education managers to ensure the provision of audio technology resources and trained personnel to support the use of audio technology in distance in Nigeria.*

KEYWORDS: Audio technology, Distance Learning and Information Technology

INTRODUCTION

Nigeria like other developing countries of the world is in a serious quest to provide functional education for her teeming population. Education holds the key for national transformation and development through the provision of the necessary manpower as workforce for accelerating national development and reconstruction. Universities and other higher institutions are established to provide the necessary manpower for the engineering of social, economic, political and cultural development of the nation. The libraries act as agents to assist the universities in fulfilling their statutory functions and goals through teaching, learning, research, and public administration. The libraries provide the necessary resources and facilities in adequacy and great depth to enhance teaching, learning and research. These resources are provided in multi – faceted formats both in print and media formats to ease the learning and teaching process. In Nigeria, emphasis on the provision of education to meet the needs of the populace have become obvious. Government at all levels need to provide free access to education for all. This policy is captured in the revised National Policy on Education, (2004) by the Federal Republic of Nigeria stated the objective of distance of education as:

- ❖ Provide access to quality education and equity in educational opportunities for those who otherwise would have been denied:
- ❖ Meet special needs of employers by mounting special certificate courses for their employees at their workplace:
- ❖ Encourage internalization, especially of tertiary education curricula;

- ❖ Ameliorate the effect of internal and external brain in tertiary institutions by utilizing Nigerian experts as teachers regardless of their locations or place of work.

In fact, the above objectives cannot be achieved adequately in the absence of audio technology. Keegan, 1980. Jasper, (1990) observed that many writers believed that distance education requires effective Information Technology to be efficient and effective. Also, Gunawardena (1988) justified the need for the use of Information Technology in distance learning due to the unique position the distance learner finds himself without any teacher or fellow students physically present to clarify decisions. Distance learning in Nigeria is not very recent as one may imagine. They have been in existence distance learning centers that offered some sort of correspondence course. With the advent of Information and Communication Technology, distance learning programme is changing gradually from correspondence courses to online education or web – based delivery of education (Sani, 2012). The need to integrate audio technology into the distance learning has become imperative. The purpose of this study therefore is to investigate the role Audio Technology could play in enhancing distance learning in Nigeria.

Statement of the Problem

In spite of the fact that audio technology is believed to be of relevance to distance learning in particular and education generally, it seems to be of novel practice in education in Nigeria. The operations of distance learning programs have neglected audio technology application to learning. Students on the other hand find it difficult to adopt to change from the use of traditional methods of materials to audio resources due to lack of skills or fear of change. In the field of library and Information science profession operations of distance learning are challenged with the ever increasing number of students enrolment and lack of audio technology resources. Also students are faced with the problems of lack of feedback and clarification of questions and problems associated with learning because of absence of teachers and fellow students as essentially needed in formal classroom interaction. These problems have led to the need for this study to investigate the successes and challenges pose to distance learning programmes in Nigeria

Objectives of the Study

This study is specifically carried out to:

- i. Defining some basic concepts such as audio technology, Distance learning, Information Technology;
- ii. Trace a brief historical development of Distance learning in Nigeria;
- iii. Classification of technologies in distance learning;
- iv. Examine some theoretical and empirical bases of audio technology in distance learning in Nigeria;
- v. Ascertain ways audio technology have been adopted in distance learning generally;
- vi. Identify benefits, challenges, and
- vii. Proper solutions and recommendation for ways forward.

LITERATURE REVIEW

In reviewing literature, some terms will be defined and reviewed according to various scholars and authors.

Audio Technology/Media

In distance education system audio technology like radio broadcast and audio cassettes are mostly used as an audio media for effective teaching learning purposes. Radio is the biggest mass media of all and covers the largest population in the world. Both radio and audio cassettes are one-way technologies Ponmeni (2013). Radio is used for live radio broadcasting and also broadcasts can be stored and used later through the way of audio cassettes. Popoola and Haliso (2009) define audio technology as:

resources as those information bearing materials. That is in both printed and electronic formats, such as audio tapes, CD-ROM databases, internet/E-mail, video tapes/cassettes, textbooks, journals, indexes, abstracts, newspapers and magazines, reports, diskettes magnetic disk, computers, micro forms e.t.c. These information materials are the raw materials that libraries acquire, catalogue, stock, and make available to their patrons, as well as use to provide various other services.

Kawatra (2008) refers to media as graphic, photographic, electronic or mechanized means of arresting, processing or restricting visual or verbal or equipment which is normally used to transmit information better persons.

Operationally, audio technology is the integration and harmonization of the various resources with the view to transmitting knowledge and information between people. It is a combination of audio and visual materials including computer to promote teaching and learning that appeal to the senses of hearing seeing and touching. Therefore, audio technology in distance education involves the uses of audio visual materials to promote or educate learners that are far from the instructors or teachers. It is the extension of education to those who do not have the opportunity to access to formal education or to still receive it through correspondence courses, using audio resources as the main medium of instruction.

Distance learning

Many writers have their opinion of what distance learning mean. Jegede (2000) defined Distance learning as “correspondence study”, “home study”, “distance study”, “telematics teaching” and “extra moral system”. Jegede further maintained that distance learning is the provision of education by mode other than conventional face – to – face method, but whose goals are similar to and just as noble and practical as those of on-campus, full time or face to face education. On the other hand, Keegan (1980) defined distance education as a systematic educational activity, which encompasses the choice, preparation and presentation of teaching materials as well as supervision and support of students’ learning which is achieved by bridging the physical difference between the students and teachers by means of at least one appropriate data. Yusuf (2006) defined distance learning as terms that include distance education, distance teaching, correspondence study education, home study, external study and independent study. Eze And Uzigwe (2012) citing the work of Kalfman, Walkims and Guerra (2009) described distance education as the provision of useful learning opportunities at convenient place and time of the learners, irrespective of the institution providing the learning opportunity. This programs take different dimension depending on the institution operating it.

Information Technology

Information Technology is also one of the new term or concept brought about as a result of information revolution of the 21st century. Many writers or scholars defined this concept in various ways, some of which can be used interchangeably. The oxford dictionary of computing defined Information Technology (IT) as: any form of Technology i.e any equipment or technique used by people to handle information. It incorporates the whole of computing and telecommunication technology together with major parts of consumer electronics and broadcasting, it application and industrial, commercial, educational and domestic operations.

Ogar, Kari and Horsefall (2015) defined Information technology as equipment or electronic devices meant to store information. It could be referred to as and electronic information saving devices occasioned by improvement in technological advancement. The advancement of these technologies lead to what is now commonly known as Information and Communication Technologies.

It could be postulated that information and Communication is a product of Information Technology. The former technology emphasis is on information saving equipment while the later act upon the former through creating easy access to stored information.

According to this research work, distance education is viewed as the process of providing learning to students without physical contact but through correspondent courses and other media to distance learners.

Overview of Audio Technology in Distance Learning in Nigeria

The history of Distance learning (Education) in Nigeria is not very resent as compared to the history of Audio Technology in Distance Learning in Nigeria. They exist scanty literature that suggests the operation of correspondence course of some sorts in post-independence Nigeria in the 1960s. Perraton (1991) Observed that:

Distance education in Nigeria has traditionally taken the form of correspondence course, whether home grown or external... in post-independence Nigeria, new home grown or correspondences courses were produced as a stop- gab measure when the formal system could not meet the demand to increase access to education at all levels and to expand and upgrade the teaching force.

Perraton (1991) highlighted some of the institution operating distance learning programs in Nigeria. Among others include:

- ❖ Centers for external students (University of Ibadan).
- ❖ The institute of Distance Education, Abia State University, Uturu.
- ❖ School of part time studies-federal polytechnic, Auchi.
- ❖ Centre for Distance learning, university of Abuja.
- ❖ Distance learning institute (formerly correspondence and open studies unit, university of Lagos and

❖ National Teachers' Institute, Kaduna.

From investigations carried out, findings revealed that none of the institutions operating Distance learning Education adopt audio technology for giving instruction. It is therefore evidenced that audio technology in Distance learning (Education) is yet to find a place in its operation and management. The integration of distance education into the Nation's policies on education will a long way promote the teaching and learning of distance education.

Classification of Technologies in Distance Education

Many educators have attempted a classification of various technologies used in Distance learning generally. Okebukola (1997) classified technologies for Distance education as follows:

1. First Generation: the pre-computer age model.
 - a. Print
 - b. Board
2. Second Generation: The Multimedia Model.
 - a. Print
 - b. Board
 - c. Audiotape
 - d. Video
 - e. Computer-Based learning (e.g.CML/CAL)
 - f. Interactive video(desk and tapes)
3. Third Generation: The tele-learning model.
 - a. Audio conferencing
 - b. Video conferencing
 - c. Audio graphic communication
 - d. Board cast TV/Radio+Audiotele conferencing.
4. Fourth Generation: The Flexible learning model
 - a. Interactive Multimedia (mm, CD Rom)
 - b. Computer mediated communication (CMC) e.g. e-mail, GSM, etc.)

Abambade (1999) Categorized educational media as shown in the figure below

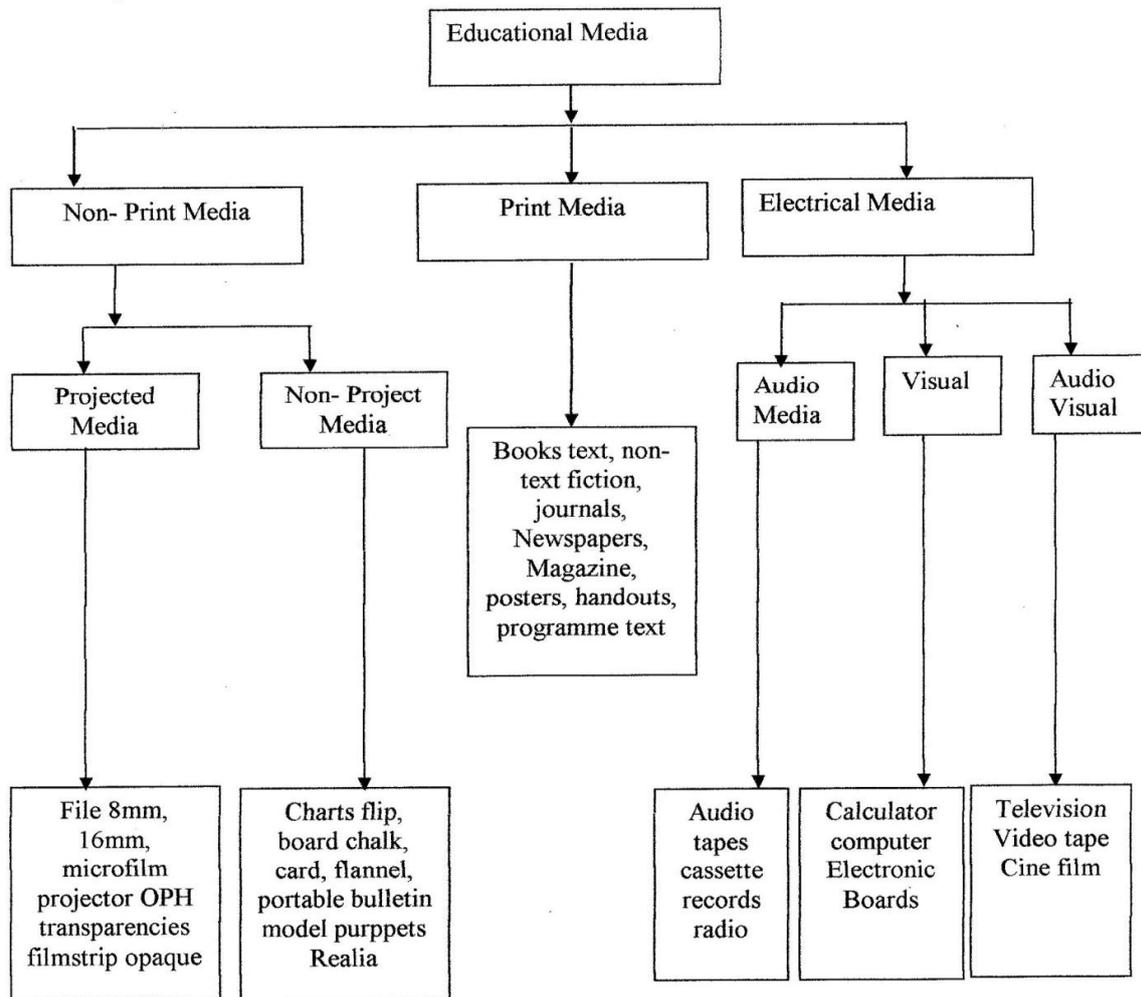


Figure 1: Educational Media Categorization (Adapted from Abimbade 1997)

Barron (1999) also categorized distance-learning technologies four levels as shown in figure 2

| | |
|---|--|
| Print Textbooks Study guide Work books Fax | Audio/voice Telephone Voice mail Audio conferencing Audio tape radio |
| Computer E-mail Audio conferencing Web based courses CD-ROM Collaboration software | Video Video tape Satellite delivery Microwave Broadcast video Desktop video |

Figure2: Distance-learning technologies (Adapted from Barron, 1999).

Theoretical Base of Audio Technology in Distance learning

The main focus of this section is on impact of audio technologies on distance education and with a special references to voice mail, audio tape, audio conferencing and audio instruction, Jasper (1990) observed that technologies in Distance Education is playing an ever more important role in the multimedia system of distance education, not only in its simplest form but also in complex combination allowing two interactive communication and interactions in a same vein.

Eze and Uzigwe (2012) observed that, because of information explosion and the emergencies of ICT, many people through different means and media aspire to acquire education at all levels. The fact has brought education into focus which is considered as one of the most development in education system. Omeyemi (2001) cited by Eze and Uzigwe (2012) referred to the development as one of the greatest innovations in education in Nigeria.

Advantages and limitations of Audio Technologies in Distance Education

The advantages and limitation of adopting audio Technologies to distance education have been observed by some scholars. Barron (1999) opined that voice mail is becoming extremely common to users due to the following reasons:

- ❖ Allows students to leave messages for instructors regardless of time;
- ❖ Allow instructors to leave messages for individuals or groups.
- ❖ Can be used to administer quizzes (thin option requires some programing; and
- ❖ Serves as an alternative to e-mail for those students who do not have a computer.

Holmberg (1981) observing the relevance of audio cassette maintained that it provide the capacity to individual and personalizes the messages transmitted by the mass media, one can record all that of sound on cassette from wind to mute, from nature sound to artificial or synthetic once which could be used for pedagogical purpose. It is remarked that, tape lends itself to what is termed the mirror effect 'that the recorded words mostly on tape (cassette) has become a second very common medium functioning in most study environment'.

Mishra (2008) opined that audio conferences have been used in distance learning for a number of years. They are carried out in form of audio conference, lecture or other forms of multimedia. Their advantages, it was observed it revolves around:

- Convenience and cost in allowing learner contact with primary courseware
- The cost of original production of material
- The frequency with which primary courseware need to be updated and
- The importance of telepresence (i.e. a set of technologies which allows a person to feel as if they were present to give the appearance of being present) in distributing live teaching.

Mishra further maintained that video conferencing and dialogue increases the scope for dialogue through the following:

- elimination of expensive travel;
- makes the best use of limited times;
- allows genuine dialogue between all participants;
- allows immediate, full two way communication of content verbal, pictorial object, etc and
- provides a sense of social presence.

On the other hand Cooksun (1997) maintained that telephone is one of the simplest, most accessible technologies use for distance learning that can be use to mentor students and to research numerous students simultaneously via a conference called audio conference.

It encourages two-way verbal communication that are electronically transmitted to one or more remote sites Cooks (1995) identified or listed four critical condition of audio conferencing that are not normally encountered in conventional instructions to include;

- ❖ Mediation of technology
- ❖ Challenging administrative experience
- ❖ The absence of a visual channel of communication and
- ❖ The geographical dispersal of the instructor and students

It is believed that if more than one student is at each location, audio conference can be set up using speakerphones and telephone bridges. This bridge is an e-electronic system that links multiple telephone lines and automatically balances audio levels. The method is relatively cheap and requires no heavy capital outlay. It is particularly useful for the home bound or remote students and there are the nucleus of distance learning Ruok (1975).

A major problem of audio conferencing is that two speakers from different parts cannot function or talk at the same time, as one will switch off for the other by the machine itself.

Empirical Bases of Audio Technology in Distance Education

A number of studies have been carried out to investigate the effect audio media would have on students when compared to other modes of instruction. To determine the effect of audio media in Distance education learners, some literature reviews are carried out.

Oosthock and Achers (1973) evaluated an audio tape-mediated course. Their results showed that only the high-quality group as a whole acts clearly more sensitively to the possibilities offered by the audio mediated course. The difference in their performance when measured by t-test is significant 1% level. Popham (1962) used audio tapes lectures in both graduate and undergraduate classes and found no significance difference in achievement in the tapes and live lecture presentations. Similarly, Menne *et al* (1969) found no significance difference between audio tapes and live lecture in an introductory college course. MacDonald (1972) compared video recording with audio tape plus relevant slides to determine whether the additional cost of video tape was justified. The results was shown that the two groups did not differ significantly from each other in an information test and it was concluded that the

audiotape version was more cost-effective because the transmission equipment cost for the audiotape plus slides was about one half that for video. On the effect of tapes lesson in problem solving, Sekyra and Lorce (1970) found that there is a definite incremental effect due to successive exposure to tapes lesson designed to provide practice on four aspects of problem solving.

In another study, Hartley *et al* (1988) investigated the effects of sex of speaker and listener on recall from mechanical audio tape. In this research, they investigated;

1. Whether the sex of the speaker might also be an important factor that determines an audiotape effectiveness
2. Whether males might be better listeners than females, and
3. Whether there might be an interaction between the sex of the listener and the sex of the speaker

The result of their study shows that;

1. There was no indication that males voices were more effective than female voices
2. There was no indication that males were better listeners than females
3. There was no indication of any interaction between the sex of the listener and the voice of speaker.

In contrast to their study, Nicholas (1984) in his study reported that male students were better listeners than female students. In support of this view, King (1959) found that boys did better than girls at primary school level in terms of listening tasks that had a practical and a scientific content. In another study Okwo (1990) investigated the interactive effect of field dependence-independence and three instructional systems (audio only, audio picture and picture audio) on students immediate post test and intention test scores in physics.

The result showed that a statistically significant difference ($p < 0.05$) in the immediate post test and retention test scores of the various groups and also that there was no statistical difference in the immediate post test and retention test scores of males and female students. All these review showed that audio technology is an efficient, cost-effective and technically uncomplicated medium for distance education.

Advantages of Audio Technology

Audio technology as a whole has some specific advantages. Barron (1999) outlined some of these advantages as follows:

- (a) Inexpensive: all of the audio/voice technologies are inexpensive
- (b) Easily Accessible: almost every home in the advanced countries such as the USA has a telephone. In addition, most students have access to an audiotape player in their homes or in a car.
- (c) Easy to Use: almost everyone is comfortable using a telephone and an audio cassette. With voice technology there is no software to install and no hardware to configure.

Limitations of Audio Technology in Distance Education

Audio technologies are faced with some inherent challenges and problems. Kawatra (2008) observed that distance learning has some inherent challenges which include the followings:

1. Technological limitations: This limitation is related to the company product. The quality, supplies and other legal rights associated with the company may act as an impediments to the availability, use of the audio materials.
2. Skills: Audio technology application to distance education has some implication to the students. Using these tools require the need for training on the part of the users (students).
3. Physical strains: The use of audio technology in distance education causes some health challenges such as head ache, back ache, eye pains.
4. Lack of feedbacks and social interaction associated with formal schooling.

Guidelines for Incorporating Audio Technologies in Distance Education

Makinde (1988), Barron (1999) listed some guidelines to adopt as follows:

1. Distribute visual materials in advance to participants: If an audio conference is scheduled, efforts should be made to produce handout or other visual materials that might be of use during the presentation. These materials should be distributed to all well in advance.
2. Encourage Interaction: In an audio conference, programs should encourage social interaction among participants and instruction. This interactions should be built into the format.
3. Record Audio Conferences on Audio tape: It is necessary to record all proceedings, or activities at the conference on audio tape due to ease of operation. These records should be distributed to participants and even those who were unable to participate in the conference and those who may like to review the content.
4. Get to know your students: It is necessary to get to know your students by visiting remote sites or exchange photographs and or video tapes.

SUMMARY AND CONCLUSION

Distance education is a learning opportunities by extension rendered to those who do not have the privilege of attending formal education. This system of education is provided as part of government efforts to provide education to all. The introduction of distance education is not a recent development in Nigeria. At the early post independent Nigeria in 1960s, there were in operation some correspondence courses which led to the growth and development of distance education in Nigeria. Distance education at present has found its place in the education policy of Nigeria. On the other hand, audio technology application to distance education seems to be

a novel practice in Nigeria. The need to integrate this development into the National policy of education and with a sound programs for its application in distance learning opportunities is hereby advocated. The need for all stakeholders in education business to collaborate and support laudable initiatives for full implementation of distance education programs should be seriously contemplated. Adequate facilities resources and other frameworks be put in place to give distance education appropriate place and attention in the scheme of operation in the Nations educational development agenda.

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