PROMOTING DIGITAL AUDIO BROADCASTING FOR EFFECTIVE TEACHING AND LEARNING IN NIGERIAN SCHOOLS

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Abstract

Audio broadcasting, most especially the digital, remains the most favourable, modern, popular and easier medium of effective teaching and learning when compared to television and challenges of computer technologies. The study seeks to provide theoretical insights and positions on how digital audio broadcast can be used for effective teaching and learning. In addition, the study traced the origin of analog to digital audio broadcasting as well as its advantages. In addition, disadvantages were also looked into as well as measures to overcome them. The applications of audio recording and how to use audio broadcast in schools were also presented. The paper discusses the guidelines, concludes and makes some useful recommendations.

Keywords: Digital Audio, Broadcasting, Teaching, Learning, Nigerian Schools

Introduction

Digital audio broadcasting (DAB), also known as digital radio and high-definition radio, is audio broadcasting in which analog audio is converted to digital signal and transmitted on an assigned channel in the Amplitude Modulation (AM) or more usually frequency Modulation(FM) Frequency range (Casey, 2008) DAB is said to offer compact disc (CD) quality audio on the FM broadcast band. Digital radio or instructional radio describes specific material or programs that were broadcast by radio to students. These students were of various ages; ranged from children in Pre-Basic to Post-Basic schools. The radio programs could be used in formal classroom settings as well as by individual students who were continuing their education (Holin, 2007). Audio technologies in form of audio tape, radio transmission, compact disc, telephone, microphone, public address system (PAS) could be a good instructional resources in developing country like Nigeria (Fakomogbon, 2002)

Origins of Digital Audio Broadcasting Technology

The earliest development of audio technology was traced to photograph records in 1887 by Thomas Edison. In the early 1900s, considerable improvement were bought by Emile Berliner (Fakomogbon, 2002), Fakomogbon, (2002) expresses that Radio Corporation of American began recording folk songs in 1999 for the use in schools. By1920, self-instructional courses were developed and made available in many subjects. The oldest educational radio station was the University of Wisconsin, USA which began broadcasting in 1917. Omoniyi (2005), Casey 2008) and Fakomogbon (2002) asserted that radio broadcasting became available in the 1920s and the first licenses were granted to colleges and universities. Instructional radio was used and popular when the technology was new,

but the use declined after the 1930s when instructional television was created. Instructional radio was used sporadically until the early 1980s because some educators felt it taught students to listens and to use their brains to form mental pictures better that they could learn with television (Instructional radio, 2014).

Similarly, Digital Audio broadcasting has been under development since 1981 at the Institute for Rundfunktechnik (IRT). In 1985, the first DAB demonstrations were held in Geneva and in 1988 the first DAB transmissions were made in Germany (Education – Wikipedia, 2014). DAB was later developed as a research project for the European Union in 1987. The United Kingdom (UK) was the first nation to receive a wide range of radio stations via DAB in 1999. By 2006, 500 million people across the world were in the coverage of DAB (World DMB, nd.).

Scholars agreed that the major supporters of instructional technology were the various universities and professors that hoped to utilize radio for distance education benefits. Casey (2008) states that by 1923, over 10 percent of all broadcasting radio stations were owned by educational institutions to deliver educational programming. Another major proponent of instructional radio, according to Casey was the National Education Association who in 1930 claim that audio broadcast (in combination with film and television) would "be as common as the book" in its education use, just as powerful in it's effect on learning and teaching (Casey 2008; Instructional Radio, 2014).

College students studying from a distant were the main target of instructional audio (radio). Educators no longer had to depend solely on mail delivery to teach those students at a distance (Casey, 2008). It is with whole to note that digital radio broadcasting, or instructional radio has been utilize frequently in developing countries as a language – learning – toll (LLT); not necessarily focusing on distance learners, but rather targeting a blanket audience of people trying to learn a language other than their own (Jamison, Suppes Wells, 2014; Resner, 2001) Mass Media and Educational Media.

The term mass media is used for dissemination of useful information and ideas. The media include those, which use modern means of communication such as radio, television, computer and film (Falade, 2004). In fact, they co-exist with important traditional media such as folk dance, drama and puppetry. Mass media are different types of useful materials, devices and symbols that make use of effective tools to invest the past with an air of reality. They provide the learners with realistic experiences, which capture their attention and help in the understanding of the historical phenomena (Haung, 2000). They appeal to the mind through the visual auditory senses and thereby enliven the past.

Mass media are therefore devices presenting units of knowledge through auditory or stimuli or both with a view to help learning. They concretize the knowledge to be presented and help in making a learning experience to be real, lively interesting (Falade, 2004). They compliment the work of the teacher and help in the study of textbooks. The great educationist Johan Cornelius once asserted that the foundation of all learning consists in

representing clearly to the senses and sensible objects so that they can be appreciated easily.

The word "media" is derived from Latin "medianus" pertaining to a medium. The medium or means of conveying the user's or speaker's intention. The media are therefore to mediate between the teacher and the audience, with the objective of conveying meaningfully the intention of the doer – the teacher (Omoniyi, 2005). Media could be defined broadly, as channels for communication. In education, the media are aids for teaching and learning. The media are sometimes called instructional media. The word "instruction" apart from being a derivation of training is not adequate to describe the media that are meant for teaching and learning purpose. Hence, the term "educational media" is more inclusive and encompassing (Abolade 2001; Omoniyi, 2005).

The media are technologies that are capable of delivering information and experiences widely and quickly. They serve very different specific roles in explanation, illustration, systematic instruction, preservation, practice and many others. The general argument in favour of using educational media in schools is that they promote efficiency and bring about innovation because they help students get away from traditional rote memory learning (Falade, 2004; Omoniyi, 2005).

Audio Aids

Audio aids are teaching and learning devices that mostly appeal to the sense of learning. These include records, instructional radio, audio recordings, and telephone signals and so on. Although visual elements and support are lacking in a situation where content is being relayed exclusively by sound, if the recording is realistic enough, the audience will become thoroughly involved (Omoniyi, 2005). Events that require audio recording are:

(i) Documentary Sounds:- here, a teacher create collection of documentary sounds by recording from radio events of historical significance. The verbal delivery of such speakers could be most effective. Such events can be recorded from the news media at the time they happen and used later in a teaching setting.

(ii) Special lecture/Talk; this is when a resource person is invited to talk to students, or give a "guest lecture"; it might be helpful to make an audio recording of the event. The recording can be saved for use at later time. The remarks can also be reviewed by the students if they choose to listen to it again. Or if the teacher wants to teach the same topic in the future, the recording can be used.

(iii) Sound Effectives: It is necessary to make the audio recording as much like the actual situation as possible. For instance, the sound of industrial machines, the sound of a moving car, sound (noise) from a market scene or religious centres like churches and mosques. Sound effects not only add to the realism of a situation, but they can be used in teaching certain types of content. The roaring of lion, barking of dogs, trumpeting of elephant, mewing of cat and the cries of other animals are more realistically taught using audio recording of such sounds.

Advantages of Digital Audio Broadcast

Digital Audio Broadcast or Radio has some advantages that make them useful for all categories of learners. For Example, blind, illiterate, young and non-reading students can benefit from audio-recordings. They can also enhance effective acquisition of vocabulary in any language (Fakomogbon, 2002). Radio is originally devised fro entertainment purposes, the radio is now widely used for education.

Casey (2008) and Omoniyi (2005) pointed out the following as advantages of Digital audio technology in education:

(i) Supplements Instruction: it widens the general knowledge of both the learners and teacher alike. It helps to remedy the cribbing of the curriculum in a new pattern. It takes   cross-sections and panoramic surveys of the subjects to enable the listener to see via clear perspective. In the hands of a thoughtful teacher, it may became a highly educative labour-saving and timesaving device.

(ii) Infuses new life: by correlating knowledge and skills to the immediate needs and the natural environment of the learner. Radio DAB infuses a new life into the curriculum. Scattered heads of facts and information are strung together as integrated knowledge having social relevance evading the curriculum.

(iii) Direct contact with great personalities: Audio materials enable the students to listen to the expert, the historian, the author, the scientist and the fast rate teacher. This direct contact with the great personalities gives a lot of pleasure to the students.

(iv) Reflects on the spot current events: In audio media, the running commentary of some inaugural ceremony, lectures delivery, at conferences, seminars, workshops and so on have an attraction of its own.

(v) Provides sense of participation: by presenting significant events as they unfold Radio gives the pupils a sense of participation. When the pupils listen to stirring address or to a vivid description of some events, they feel that they are actually participating in the event.

(vi) Inspires: breathing life into dead words; the radio can be a source of inspiration to speakers. Though often scripted before hand, broadcasts are not merely written to be read aloud, but to be spoken with all the stimulation and nerve of life.

(vii) Brings Reforms:- by presenting various responsible views concerning controversial issues radio challenges dogmatic teaching and passive learning.

(viii) Suited to group instruction: distance learners scattered all over the world, may at the same time listen to the same broadcast.

(ix) Reinforcement: Radio reinforces the intellect with contrived emotional factors such as drama and music.

(x) Provide Source Materials: sometimes radio provides source material for the main stream of classroom work.

(xi) Supplementary source of Information: Radio constitutes a supplementary source of information enabling the pupils to listen to original instructional talk by the specialists, which awaken their intellectual curiosity and convey new idea to them, bringing them into contact with eminent personalities.

(xii) Inexpensive: All of the audio/radio/voice technologies are relatively inexpensive.

(xiii)   Easily accessible:- almost every home in Nigeria has radio. In addition most students have access to an audio tape player, transistor radio, car- radio or cell phones with in-built radio in their homes, hostels, or in a car.

(xiv)   Easy to use:- almost everyone is comfortable with the use of radio, audio cassette player CD player. With radio, audio or voice technologies, there is no software to install and no hardware to configure! They are also easy to repair or maintain.

Types of Digital Audio Broadcast (DAB) in Schools

Digital Audio broadcasting has been used for educational purposes for many years (Casey, 2008):

(i)   School Broadcast: this is specially meant for students by their teachers. Here, a subject teacher will deliver his/her teaching via radio on live transmission. Students will need not to be in any classroom, they may be in their hostels, rooms, classes, libraries etc listening to his/her teacher imparting on them with the knowledge content (topic/subject). A typical example is the digital frequency modulation (FM) radio station of the Educational Technology Centre of the Faculty of Education, Obafemi Awolowo University, Ile-Ife where lecturers broadcast their course lectures live to their students. This is better employed where there are large numbers of students offering a particular course.

(ii)   General broadcast: speeches, lectures or talks of important personalities are important in general broadcast.

Limitation of Digital Broadcast

Limitations or disadvantages of Digital Audio (Broadcast) are as follow:

(i)   There is usually a fixed rate of information flow.

(ii)   Some teachers simply wish to use audio media for their lectures without giving consideration to the objectives and mastery of the subject matter.

(iii)   Some teachers/students may tend to over use the radio media.

(a)   This may require scheduling: Some of the voice technologies (such as audio conferences) are synchronous; meaning that they must be scheduled at a convenient time for the students and teachers (Teacher's Guide to Distance Learning; 2004).

(b)   Not conducive to visual information: many students find it hard to focus and learn strictly through audio input. In addition, audio-only format restrict the content that can be conveyed (abstract concepts are very difficult to convey through audio).

(c)   May be Impersonal: with audio- interactions alone, there is no eye contact and no body language. Students may be "turned-off" or bored.

Overcoming the Limitations of Digital Audio Broadcast

The following are measures to be taken to overcome limitations of DAB:

(i)   The radio cannot adequately deal with the visual aids. So, it is not suitable for subjects that depend very much on visual emphasis. This limitation can be overcome by providing visual materials to go with the sound broadcast.

(ii)   It is a one way communication, so the class cannot interrupt the broadcast with questions. The radio goes on at its own pace. In this case learners can ask their questions at the end of the transmission.

(iii)   The radio requires concentrated attention. This may lead to some strain or loss of initial interest. "Strain breakers" such as background noises, music and varying voices are used to break the monotony.

(iv)   The teacher may not have listened to the programme before the class. He may not also be knowledgeable about the topic, therefore he needs to enrich himself with supplementary materials before hand or pre-hear the transmission. It is therefore necessary to obtain all essential information about the programme before its use in the classroom.

(v)   The use of radio in the classroom may have some time - table difficulties. The school time-table may not coincide with the transmission time. The school, therefore, need to obtain the schedule of transmission from the radio station and adjust its time-table accordingly or record such programmes.

Guidelines for Incorporating Audio Technologies

Audio technologies should not be used indiscrimately. They cannot be used ordinarily as lecture; rather, teacher should listen to portion(s) considered relevant in the pre-recorded media and play it for the class (Fakomogbon, 2002). When students go on filed tip, encourage them to record voices and sounds of birds, animals water falls and so on for later consideration. Students and teachers should be familiar with appropriate recording techniques of audio cassettes/reel-to reel tape, thus:

(i)   Distribute Visual materials in advance: if an audio conference is scheduled handouts, handbooks or other visual materials that might be of good value during the presentation should be distributed well in advance.

(ii)   Set Communication Protocols: since the participants will not be able to see each other, it is important to agree on protocols to help identify the speaker in an audio conference. In most cases; it is advisable to instruct all speakers to state their name before making comments. For example, "This is Stephen Andrew, and I would like to comment on ...."

(iii)   Encourage Interaction: In an audio conference, interactions are built into the format. For instance, instructors to take turn asking questions, and make sure that none of the students is allowed to monopolize the conversation. With both audio conferences and audiotape delivery, students should be required to use mail, fax, or voicemail to engage in further interaction with each other and the instructor.

(iv)   Record Audio conferences on Digital Audio CD: It is very easy to record an audio conference. That way you can distribute the tapes for students who were unable to participate in the conference and for those who would like to review the content

(v)   Get to know the students: if possible, seek ways to get to know the students, such as visiting the remote sites, gathering the students together in one place or exchanging photographs or videotapes (A Teachers Guide to Distance Learning 2005).

How to use Digital Audio Broadcast in Schools

Digital Audio broadcast in schools could be used through the following:

(i) Integration: to make the communication of knowledge an exciting experience, school broadcast should be integrated with class work, assignment or class projects.

(ii) Starting Point: A school broadcast should become the starting point of a series of teacher-pupil discussion. Listening to it should induce an intellectual tension and problem solving attitude in the learner.

(iii) Supporting Literature: supporting Literature should also be made available.

(iv) Pasteurization: Appropriate pictures should be printed and distributed among the listening schools.

(v) Illustration: maps, charts, diagrams, graphs should also be distributed to the students.

Applications of Digital Audio Recordings

DAB can be used to introduce and evaluate lessons. They are also very useful in individualized/self-paced learning. The slow learners could play several times an audio recording without the machine becoming impatient.

Pre-recorded audio materials could be good source for introduction of new materials. They are also useful in History and Social Studies classes. For instance, audio recorded voices of prominent figures that have died can be brought to the classroom. Current events (such as political rallies and demonstration) and speeches could be recorded and presented to students. Audio media can also provide musical accomplishment during games and sports (Fakomogbon, 2002; Casey, 2008; Wikipedia, 2014).

Audio tapes could be prepared by teachers to meet specific instructional purposes in any subject area. Students can also prepare their own audio-tapes. They can record off the air events presented on radio or television. They can re-arrange teacher's presentation during lesson for their review. Students can record their own voice for self evaluation especially in language training for example.

Fakomogbon (2002) opines that audio tapes enable learners to use the materials at any time they choose:

(i) Stop and start the sound at will

(ii) Replay a passage as often as they wish, and

(iii) Skip over any material they do not need.

Conclusion and Recommendations

This paper examined digital audio broadcast and its relevance in the educational system. It would be of immense benefits if properly introduced into the Nigerian school system. However, there is likely to be some obstacles in the implementation of the digital audio broadcast, this paper has therefore revealed how to overcome them. The guidelines for the incorporation of the broadcast media are also clearly described.

To promote the digital audio broadcast for effective teaching and learning in Nigeria school, the following recommendations are hereby put forward:

(i)   Government should supply functioning digital audio equipment into schools with the focus of making use of them to enhance the teaching and learning process.

(ii)   In-service training should be organized for teachers in Nigerian schools to enhance the   usage of the equipment and to complement the chalk and talk method.

(iii)   Technicians that will be in charge of the equipment should also be employed by the government to make the promotion of digital audio media a successful one.

(iv)   Digital based audio broadcasting should be versely upgraded

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