USE OF ELECTRONIC AND PRINT MEDIA IN THE TEACHING AND LEARNING OF SCIENCE

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Abstract

Teaching and learning media are different kinds of media used to explain content to learners so that learning can more be effective. This paper therefore examined the use of electronic and print media in the teaching and learning of science. This paper discussed the concept of electronic and print media, their uses in the teaching and learning of science, advantages and the challenges faced in the use of these media in the teaching and learning of science. In view of these, it was recommended that Government should allocate special budget provision to provide Media material and gadgets to the schools both at elementary and secondary level, the teachers or schools should be provided opportunity of in-service training for media use in the teaching and learning of science, there should be more emphasis on the practical training for prospective school teachers education institution, Media technology resource center should be established in teacher training institutions and there should be public and private partnership in the procurement of electronic and print media for effective teaching and learning of science.

Keywords: Media, Electronic Media, Print Media, Teaching, Learning and Science

Introduction

Science is an organized body of knowledge which is in form of concepts, laws, theories and generalizations. Science is the study of nature and natural phenomena in order to discover their principles and laws (Urevbu, 2001). Science is of immense importance because of its ability to shed light on so many natural phenomenan and it plays a central role in the world's current technological development.

Media are teaching and learning tools (Adekola, 2008) . Media are everything that can be used to stimulate thoughts, feelings, concerns and abilities or skills of learners so as to facilitate the process of learning (Agbamuche, 2015). This definition is quite broad and includes in-depth understanding of the source, the environment, human beings and the method used for the purpose of learning and teaching. Therefore, media are tools that can channel messages, stimulate the mind, feelings, and the willingness of the students so as to encourage the creation of learning process in the learners

Media are integral part of our daily life and has also plays a dominant role in the process of education. It has a great impact in shaping the lives of our future generation. Media could be a film clip, a song we hear on the radio, podcast of a lecture or newspaper article. Students can also create their own media. For example, student video projects

can be a powerful learning experience. The use of media to enhance teaching and learning complements traditional approaches to learning. Effective instruction builds bridges between students' knowledge and the learning objectives of the science subjects. Using media engages students, aids their retention of knowledge, motivates interest in the subject matter, and illustrates the relevance of many concepts (Yakubu, 2003).

Media can be used in almost any discipline to enhance learning, both in class, and also for out-of-class or out-of-school assignments. Short films and television clips, written articles, and blog postings can be viewed to reinforce concepts and spark discussion (Yakubu, 2003). People learn abstract, new, and novel concepts easier when they are presented in both verbal and visual form. Visual media make concepts more accessible to a person than text media and help with later recall. Why do students remember everything that is on television and forget what we lecture? – because visual media help students retain concepts and ideas. The crucial role that technology plays for creating learning environments that extend the possibilities of one-way communication media, such as movies, documentaries, television shows and music into new areas that require interactive learning like visualizations and student-created content can not be over emphasised.

Many media sources (feature films, music videos, visualizations, news stories) have very high production quality capable of showcasing complex ideas in a short period of time. Media help to develop quantitative reasoning, Learn more about this technique using the Teaching Quantitative Reasoning with the News module, it also media offers both cognitive and affective experiences (Adekola 2008). It can provoke discussion, an assessment of one's values, and an assessment of self if the scenes have strong emotional content, the use of media sources help connect learners with events that are culturally relevant. As a result, a positive consequence of utilizing media is that instructors must keep their materials and examples up-to-date, news stories can be used to connect theories taught in the classroom with real world events and policies, popular media (films, music, YouTube) are familiar medium to students that helps gain attention and maintain student interest in the theories and concepts under discussion. Students can see theories and concepts in action.

In more than a figurative sense, theories and concepts leap from the screen, students can develop their analytical skills by analyzing media using the theories and concepts they are studying. The use of media in the classroom enables students to see concepts and new examples when they are watching television, listening to music, or are at the movies with friends and students can experience worlds beyond their own, especially if the media is sharply different from their local environment.

Without communication, an individual could never become a human being. Without media, an individual could never become part of modern society. As children grow up, they come into contact with other social groups. The child of today comes into contact with groups other than those in school.

The learning process is a communication process and takes place in a system, the learning media occupies an important position as one of the components of the learning system. Without the media,

communications will not occur and the process of learning as a process of communication will not be able to take place optimally. Media allows the teacher to facilitate the transfer of knowledge to learners.

Teaching and Learning Media

The terms 'teaching' and 'learning' are associated with the introduction of knowledge which is accomplished by using certain symbols. When learners speak, read or observe things he/she use symbols, which represent specific information to give meaning to those things he/she is observing. (Jacobs, M., Gawe, N. & Vakalisa, N.C.G, 2002). Teaching-learning media can be seen as different kinds of media used to introduce (explain, elucidate, etc.) the learning content to the learners, so that the learning that takes place by the learners can be effective (Vreken, 2000).

A teaching-learning medium can be defined as an object the teacher uses, or given to the learners to use, in other to achieve specific teaching and learning outcomes. It is not only apparatus or pictures, but many other types of learning experience (Jacobs, *et al.,* 2002). Teaching-learning media can therefore be defined as any medium a teacher uses to present a lesson effectively. Media is classified into different types, such as visual, audio, computer based, live biota, excursions, etc. Generally, all the types of media can be classified into two namely:

Electronic Media and Print Media.

Electronic Media

Electronic Media are information or data that are created, distributed and accessed using a form of electronics, electromechanical energy or any equipment used in electronic communications. The common equipment we use on a day to day basis to access Electronic Media is our television, radio, computer, cell phones and other devices transporting information to and from us by means of electronic involvement (Adekola, 2008).

Electronic media are media that use electronics or electromechanical energy for the end user (audience) to access the content (Mehlenbacher, 2000). The primary electronic media sources familiar to the general public are video recordings, audio recordings, multimedia presentations, slide presentations, CD-ROM and online content. Most new media are in the form of digital media. However, electronic media may be in either analog electronic data or digital electronic data format. Any equipment used in the electronic communication process (e.g. television, radio, telephone, desktop computer, game console, handheld devices) may also be considered as electronic media.

Use of Electronic Media in Teaching and Learning of Science

Electronic media can be used in almost any discipline to enhance learning, both in class and also for out of class assignment. The use of some of these media in the teaching and learning of science are discussed as bellow;

Television

Television is a medium in the electronic media. It has enormous strength to attract both literates and illiterates and has equal strength in effective communication (Zia, 2002). Television has great influence on society. Such a powerful medium is being used in teaching and learning of science. Symptoms of diseases like HIV/AIDS and Ebola and ways of preventing the spread of such diseases can be disseminated to the general public with the aid of television. Erosion and pollution – types, effects/ consequences and measures of control/ways of prevention can be taught to

large audience at a time through television. Also causes, effects and ways of controlling hazard both natural and artificial/domestic can be passed across to the general public through television.Programmes on science education can be telecasted or relayed on different channels through satellite television. Some television channels like National Geography channel and Discovery channels are dedicated to science education programmes where issues on health, natural phenomena, wildlife, life in extreme climate and medicines, environment, agriculture,etc are relayed (Jaffer, 2003).

Radio

Radio is a component of electronic media and it has maintained a very good positive influence in the teaching and learning of science (Sulaiman, 2013). It has a high covering range reaching the public everywhere. Besides providing information, preserving art and culture, it is also playing a very important role in imparting knowledge to farmers on agriculture, and in health sector, it reaches the society at large on health issue like roll back malarial, immunization, etc.

Radio is a scientific device that functions as an effective auditory instrument for communication. It also plays an important role in education. It does not only informs, but also inspires human being for learning more and more. It does not only includes values and virtues, but also creates attitudes, interests and appreciation of human life. It can cover a very wide area at the same time.

Radio plays a significant part in expansion as well as qualitative improvement of education. There are some inaccessible areas in our country where expansion of education has faced difficulties. To a large numbers of socially disadvantaged children education is neither meaningful nor interesting.

Radio had been used in education for a period of more than 80 years (Sulaiman, 2013). It has since that time been used in many various ways. It's uses comprise school broadcasting, informal general education, social action programming and adult basic education and literacy. Radio schools are used to connect children in secluded forms leads in the out back together with a teacher sited many hundred miles away. Distance teaching universities frequently employ radio for its advertising and enrolment value, as well as for teaching radio have been used lengthily as an educational medium.

E-Learning

The use of electronic media in teaching and learning of science has led to the concept of E-learning (Woessman, 2004). E-learning refers to the use of various kinds of electronic media and information and communication technologies (ICTs) in education. E-learning is an inclusive terminology for all forms of educational technology that electronically or technologically support teaching and learning. Sometimes, e-learning could be termed technology-enhanced learning (TEL), computer-based training (CBT), internet-based training (IBT), web-based training (WBT), virtual education, and digital educational collaboration or distance/open education (Sulaimen & Eyadat, 2008). E-learning includes numerous types of media that deliver text, audio, images, animation, and streaming video, and includes technology applications and processes such as audio or video tape, satellite TV, CD-ROM, and computer-based learning, as well as local intranet/extranet and web-based learning. Information and communication systems, whether free-standing or based on either local networks or the Internet in networked learning, underlie many e-learning processes. E-Learning can promote

efficient teaching using computer-based learning, web-based learning and virtual classrooms. Students can learn through the Internet, intranet, extranet, satellite broadcast and interactive TV (Sulaiman et-al, 2008).

Teleconferencing

Teleconferencing refers to interactive electronic communication among people located at two or more different places. Teleconferencing is used in both formal and non-formal learning contexts to facilitate teacher-learner and learner-learner discussions, as well as to access experts and other resource persons remotely. In open and distance learning, teleconferencing is a useful tool for providing direct instruction and learner support, minimizing learner isolation (Rao, 2002). There are four types of teleconferencing based on the nature and extent of interactivity and the sophistication of the technology:

i. audioconferencing
ii. audio-graphic conferencing
iii. videoconferencing
iv. Web-based conferencing.

Audio conferencing involves the live (real-time) exchange of voice messages over a telephone network. When low-bandwidth text and still images such as graphs, diagrams or pictures can also be exchanged along with voice messages, then this type of conferencing is called audio-graphic. Non-moving visuals are added using a computer keyboard or by drawing/writing on a graphics tablet or whiteboard. Video conferencing allows the exchange not just of voice and graphics but also of moving images. Videoconferencing technology does not use telephone lines but either a satellite link or television network (broadcast/cable). Web-based conferencing, as the name implies, involves the transmission of text, and graphic, audio and visual media via the Internet; it requires the use of a computer with a browser and communication can be both synchronous and asynchronous.

Advantages of Electronic Media

Electronic media have the following advantages;

1. It is an advanced form of media in the teaching and learning of science.
2. It can be reached faster and can be made or relayed live.
3. It brings about innovation in the teaching and learning of science as it involves the use of motion pictures and animations in the learning activities.
4. It makes provision for varieties sources of information as people can surf through different channels and sites.
5. Distance education programs are conducted through online media which has proved to be quite beneficial to people who seldom have the opportunity to have interactive classes.

Print Media

Print Media include newspapers, magazines, books and other textual documents. Newspapers, magazines and books are the three most important representatives of the printed media (Vavla, 2009). They are all widely used by teachers and students altogether in their daily activities, but when it comes to using them within the classroom environment, the situation becomes a bit complicated. This is mainly due to the amount of time teachers need to prepare and adapt articles taken from newspapers and magazines into their classrooms. But, if the usage of articles in the classroom is compared with that of a video for example, the amount of time and tools needed to organize such activities are fewer. No television set is required, no electricity needed and the cost of purchase of items

such as a newspaper or a magazine is rather low. What is more, newspapers, magazines and books are now easily accessed and as such students themselves can contribute in the collection of these materials that will later on be used in their teaching and learning activities.

Use of Print Media in Teaching and Learning of Science

Print media can be used in almost any discipline to enhance learning, both in class and also for out of class assignment. The use of print media in the teaching and learning of science are discussed as bellow;

Newspapers

Newspapers bring to students real life situations and can be easily used as authentic materials. Newspapers engage students in interesting and enjoyable activities and they also encourage them to further reading. Recent advancement in science and technology, space science, climate change, satellite, atmospheric science can be discovered in newspapers. Most newspapers are linguistically up-to-date and provide valuable linguistic data` (Tafani, 2004).

Newspapers serve as a motivating medium in encouraging and stimulating students to read further and to engage themselves in the activities organized. They report real-life events that are of actual importance and emotional value to the students, and this arouses their curiosity. Students learn through reading, and reading about interesting new things, undoubtedly helps motivation (Sanderson, 2002). The newspaper is used to stimulate and motivate students to actively participate in the classroom and to succeed in their studies.

Magazines

Science magazines are publications containing science articles. It can be used by science teachers to teach relevant topics in science. Using science magazine in teaching and learning of science expose the teacher and the learners to update inscientific research and discoveries (Vavla, 2009). The importance of science magazines in teaching and learning of science cannot be over emphasized as it exposes the learner to findings and facts about science of nature, engineering, bioscience nutrition, biotechnology, etc. Magazines are much more colorful than newspapers and they offer many opportunities to the teachers to organize photograph activities that could stimulate verbal and/or written stories. They could be used to introduce coloured means of transport, fables and short stories and other stimulating activities as well.

Books

Books are playing vital roles in teaching and learning of science (Tafani, 2004). Science books with good colour separations, clear diagrams, images and pictures enhance teaching and learning of science and also motivate learners to read. Clear illustration with diagrams aids comprehension of science concepts and it helps the learners to discover knowledge themselves. Books are crucial in modern life as well as it is a driving force not only in education, but also business, law, science, medicine and entertainment (Beckert, 1992).

Advantage of Print Media in Teaching and Learning of Science

The advantages of print media are;

i. There is choice of reading time
ii. It is a much affordable form of media
iii. It can be used anywhere.

Challegenges of Media in Teaching and Learning of Science

Despite the importance of media in the teaching and learning of science, it faces the following challenges;

1. Inadequate infrastructure including computer hardware and software high, and bandwidth/access etc.
2. Lack of skilled manpower, to manage available systems.
3. Resistance to change from traditional pedagogical methods to more innovative technology based teaching and learning methods, by both students and academics;
4. The overall educational system is underfunded; therefore, available funds are used to solve more urgent and important survival needs by the institutions;
5. The over-dependence of educational institutions on government for everything has limited institutions' ability to collaborate with the private sector or seek alternative funding sources for e-educational initiatives.
6. Ineffective coordination of all the various ICT for e-education initiatives.
7. Some instructional media"s technological implementation process is time consuming.
8. Implementation process involves a lot of money, strength, and time. Need most of the schools to have enough resources to adapt new technology.
9. The introduction of untested media resources for instruction pose serious problem to their uses in the teaching and learning of science due to their unexpected break down in the process of using them.
10. Emergence of a large and often contrasting huge variety of media resources for instruction in Medical education. This development creates confusion in the development and use media resources.
13. Inadequate training facilities for e-education at the tertiary level.

Conclusion

Educational aids in form of electronic media and print media can cover various areas in science, ranging from wild life, marine life, human physiology, health education and all branches of science; and it can be made readily available to learners in form of charts, books, magazines, newspapers, CDs, DVDs, or copied on storage devices so as to be viewed on televisions or computer screens to effectively and efficiently convey knowledge to the learners.

Recommendations

Keeping in view the importance and impact of media on teaching and learning, the following recommendations were made:

1. Government should allocate special budget provision to provide Media/instruction material and gadgets to the schools both at elementary and secondary levels.
2. The teachers should be provided opportunity of in-service training for media use in classrooms.
3. Teachers education institutions should emphasis more on the practical training for prospective teachers in addition to theory courses i.e. teaching methods, instructional technology etc.
4. Media/Instructional technology resource center should be established in teacher training institutions.
5. There should be public and private partnership in the procurement of electronic and print media for the effective teaching and learning of science,

References

Adekola, G (2008). Methods and materials utilization in adult and non-formal education. Ibadan: Gabesther Educatio-nal Publishers.

Agbamuche, S C (2015). The Use of Electronic Media in Nigerian Educational System: Principles, Practice, Problems and Prescriptions. New Media and Mass Communication Vol.42.

Beckert, Ch. (1992). 'Getting Started in Mass Media', National Textbook Company, Chicago, IL.

Jaffar, Ali (2003). "Cable Television, Prospects and Issues" published in Report by PEMRA – Cable Television: A Future Vision.

Jacobs, M., Gawe, N. & Vakalisa, N.C.G. (2002) Teaching-learning dynamics: a participative approach for OBE. 2nd edition. Johannesburg: Heinemann. 362 p.

Mehlenbacher, Brad, et al. (2000). Active and Interactive Learning Online : A Comparison Web-Based and Conventional Writing Classes. USA,:North Carolina State University.

Rao,V.R, (2002) "Audio Teleconferencing—A Technological Prescription for Interactive Learing";available from http://www.clrec.org/rama

Sanderson, P. (2002). Using Newspapers in the Classroom, CUP.

Sulieman, A. and Eyadat, A. (2008). The Effect of Intranet Use on Students" Achievement and Self-Confidence.

Sulaimain Kamal-deen Olawale (2013). The use of instructional materials for effective learning of islamic studies *Jihat al-Islam* .6(2).

Tafani, V. (2004). Teaching through Media, Onufri, Tirana.

Urevbu, A. O (2001) Methodology of Science Teaching, Juland Education Publishers. Lagos.

Vavla, L(2009). Benefits of Using Newspapers, Magazines and Books in Classroom

Vreken, N.J. (2000). An introduction to teaching-learning media. A manual for student teachers. Potchefstroom: PU for CHE: 50 p.

Woessmann, T. (2004). Computers and student learning: Bivariate and multivariate evidence on the availability and use of computers at home and at school.

Yakubu N.A (2003). The virtual library and the polytechnic system. Paper presented at feasibility study on the development of a virtual library in Nigeria.

Zia, A. (2002). Cable Television Watching Habits of the Youth in Pakistan.

INFLUENCE OF GENDER AND SCHOOL LOCATION ON STUDENTS' MOTIVATION, ATTITUDE AND ACHIEVEMENT IN MATHEMATICS IN OYO EAST LOCAL GOVERNMENT AREA, OYO STATE.

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