

ENHANCING THE QUALITY OF TEACHER EDUCATION THROUGH THE USE OF MULTIMEDIA AND HYPERMEDIA

Tukura, C. S¹., Owodunni, M. A². and Owodunni A. S³.

¹*Department of Educational Technology,
Federal University of Technology, Minna, Nigeria*

²*Nigerian Educational Research and Development
Council, Sheda, Garki, Abuja*

³*Department of Industrial and Technology Education,
Federal University of Technology, Minna, Nigeria*

Abstract

Multimedia and hypermedia systems are used increasingly in educational environments. Teacher educators emphasize the importance of incorporating educational multimedia and hypermedia in order to engage students in active learning and prepare them for an effective transition to the society. This paper considers issues relating to ways of improving teacher education through the use of multimedia and hypermedia. It examines the roles of ICT in education and quality of teacher education, concepts of multimedia and hypermedia and their application in teacher education. The problems teachers encounter in the use of multimedia and hypermedia in schools were also discussed. The paper concluded that the use of multimedia and hypermedia can enhance teacher education. Consequently, the paper recommended among others that teachers and students should be encouraged to create multimedia and hypermedia applications and ICT teacher education must transcend beyond mere usage of computer for classwork.

Introduction

Teacher education is a form of education designed to groom those who teach or would like to be engaged in relevant professional services in schools, colleges and ministries of education. It is essentially the training and/or the production of would-be teachers for the pre-primary, primary, secondary schools and colleges (Nwana, 2009). A concrete definition of teacher education links teacher training with teaching. Teaching is therefore, the activity that involves one person or group of persons helping another person or group of persons to learn, acquire knowledge, information, ideas and concepts (Babatunde, 2007).

Teaching is viewed as the science of influencing change in behavior and thinking of the learner. It is the act of getting people to learn (Abdullahi, 2014). Teachers are therefore, the most important resources in education programmes. The National Policy on Education (FRN, 2013) emphasized that teacher education will continue to be given attention in all our educational planning because no education system can rise above the quality of its teachers. The policy identified five areas of concern for teacher education:

1. To produce highly motivated, conscientious and efficient classroom teachers for all levels of our educational system;
2. To encourage the spirit of creativity in teachers;
3. To help teachers to fit into the social life of the community and society at large and to enhance their commitment to national objectives.
4. To provide teachers with intellectual and professional background adequate for their assignments and to make them adaptable to our changing situation not only in the life of their country, but in the wider world, and;
5. To enhance teacher's commitment to the teaching profession.

Functional education therefore, depends on a good teacher and effective teaching. A good teacher can effectively translate knowledge,

skills, attitudes and values in accordance with certain professional principles. All those who do not perform the teaching act in accordance with acceptable professional principles are not teachers (Ukeje, 1999). In the language of Blooms' Taxonomy, good teaching should go beyond mere knowledge to the understanding of knowledge, which is reflective in the ability to acquire knowledge, analyze knowledge, synthesize knowledge and evaluate knowledge. In the present global technological age, a good teacher should be able to effectively utilize information and communication technology (ICT) as a tool for teaching and learning. They should be able to teach with the medium in such a way that learners can learn better (Ukadike, 2014).

ICT and its Roles in Education

ICTs are technologies that are used for collecting, storing, editing and passing information in various forms. ICT can be used in education in the following ways:

1. ICT as an object is referred to as the learning about ICT. The level of students and the type of education are dependent on what is learned. Indeed, education prepares students for the use of ICT, for future occupation and for social life;
2. ICT is used as an assisting tool. It is used for making assignments, collecting data and documentation, communicating and conducting research. It is used independently from the subject matter;
3. ICT is also used as a medium for teaching and learning: A medium through which teachers can teach and learner can learn. It appears in different forms, such as drill and practice exercises, in simulation and educational networks, and
4. ICT can be used as a tool for organization and management in schools. It can also be used to handle school chores and records, results to fees and general communication (Liverpool, 2002)

ICT is simply an effective means of transforming classroom learning into learning communities with students, teachers and community members playing a vital role in directing the course of education. This learning model with greater emphasis on collaborative group-based learning, the teacher remains as learner and learner as teacher (Liverpool, 2002). Electronic communication, and peer tutoring, have contributed to the development of a community of learners in which learning flourishes in a non – threatening, supportive environment. It is a contrast to the traditional experience where learning is stressed, dated, competitive endeavour in an environment where failure is not a valued learning experience. The profession of the teacher is therefore, shifting from transferring knowledge to guiding learning processes. This is attributed to the fact that information is increasingly available in the knowledge – based society. Information is becoming so rapid that education cannot keep on focusing on the transfer of knowledge any longer. It therefore, becomes more imperative for students to learn how to search, select, process and use information (Alaba, 2014). ICT is therefore, rapidly developing, but the opportunities it provided are yet to be fully exploited. Teachers are therefore, expected to equip themselves with the competencies that prepare them for these constant changes in opportunities. Due to the rapidly changing learning environment, teachers must be conscious of the fact that the skills they acquired in their own training should reflect the current state of affairs in the technological world.

Quality of Teacher Education

There is no single generally accepted definition of quality of teacher education. There are also variations or differences in what constitutes objectives of teacher education, its quality and measurement. However, what are peddled as definitions of quality are impressionistic and lacking in conceptual regour. They are partial definitions that reflect the concerns and

biases of a particular group at a particular point in time (Barnett 2012). Variations in educational inputs in different institutions do not ascertain lower or higher quality. For instance, the mere availability of qualified teachers or excellent or well-equipped laboratory does not imply that the teachers teach properly or the laboratories are effectively used.

The objectivist conception of quality is therefore, desirable and attainable. According to Umar (2013), the conception assumes that relevant performance indicators can be identified and measured, and that the same type of assessment can be used to measure that quality, of all courses or all institutions. The focus of objectivist approaches on inputs and outputs institutions inevitably make them summative in orientation with a heavy relevance on performance indicators that can be qualified. If it however, suggested that the approach should also focus extensively on educational process itself that is the quality of the teaching – learning process, and the quality of desired inputs and outputs. The enhancement of the quality of teacher education can therefore, be achieved when appropriate innovative tools are used for instruction (Ukadike, 2000).

Multimedia in Education

The use of multimedia in education and training is rapidly becoming a growing area of interest among schools, probably because of its potentials to improve the quality of instruction. Multimedia is a combination of various digital media types such as text, images, sound and video into an integrated multisensory interaction application or presentation to convey a message or information to an audience (Ogochukwu, 2010). Multimedia presentation improve students' level of understanding, productivity, efficiency and even retention. It is an integration of multiple media elements (audio, video, graphs, text, and animation) into one synergetic and symbiotic whole that result in more benefits for the end users than any of the media

elements can provide individually (Robert, 2015).

It is also conceptualized as the field concerned with computer – controlled integration of text, graphics, drawings, still and moving images (video), animation, audio, and any other media where every type of information can be presented, stored, transmitted and processed digitally (Winconsin, 2010). In multimedia presentation, the computer hardware and software make it possible to consistently deliver instructional contents in words, pictures and sound to diverse group of learners over vast distances. If the media system is well designed and used effectively, the presentation will not only mimic the best teacher, but it will help learners to build an accurate and effective mental model of reality than it is possible by use of text alone. It is indeed called a hybrid technology. It combines the storage and retrieval capabilities of computer database technology with advanced tools for viewing and manipulating these materials. It can also be seen as an electronically delivered combination of media, including video, still images, audio, text, animation, in such a way that it can be accessed interactively. The application needs computers that support multi- sensory input and output devices. Effective multimedia presentation devices are high performance computer systems with high resolution monitors and audio outputs.

The output devices in these systems can present visual materials in form of text, graphics, video or voice and music components. Today, the new generation of devices used include eye – motion tracking systems, foot pedals, multiple- axis joysticks and data gloves to translate fingers and hand positions to signals that are interpreted by the application (Effiong, 2015).

The requirements for multimedia systems continue to increase. These include the ability to format data for display, fonts, zooming across different system and panning. Today, many institutions are moving towards problem based learning as a strategy of developing man- power that are

creative, analytical and able to solve problems. It is an innovative method of encouraging learners to through real – life problems (Boud and Feletti, 1999). The teacher uses multimedia to modify the contents of a material. Thus, will enable him to carry out the meaningful task using different media elements. The elements can easily be converted for final presentation. (Mayer, 2007). The teacher will be able to learn better by incorporating digital media elements into the project. This is also due to the fact that they have been used to adopting multiple sensory modalities which make them more motivated to pay attention to information presented, and to retain the information better.

Many multimedia technologies are available today for developers to create the innovative and interactive multimedia application (Voughan, 2003). Some of these technologies include: "Sound forge and 3 D studio max" to create, edit sound and animation files, respectively. These technologies can also use authoring tools such as "Macromedia director or Author ware, to integrate and synchronize all these media elements into one final application, and interactive features, and package the application into a distributive format for the end- users (Aesoye, 2006). Also, teachers can create multimedia project in the classroom setting. They do this in a group, they will be able to learn to work cooperatively and collaboratively, using their group skills and a variety of activities to accomplish the projects overall objectives.

Hypermedia

Hypermedia is an enhancement of hypertext, the non- sequential access to text documents, using a multimedia environment, and providing the users the flexibility to select which documents they want to view next, based on their current interest (Effiong, 2015). Surfing the World Wide Web, following links from one site to another, looking for all types of information is called experiencing hypermedia. The World Wide Web is an example of

hypermedia. The major difference between multimedia and hypermedia is that the user is more actively involved in hypermedia experience, whereas the multimedia experience is more passive (Beckman & Eugene, 1999).

Hypermedia means converting graphics, audios, videos, text, animation, hyperlinks and drawing, in hypertext form with the help of a programming tool or software. The tools which are used for hypermedia applications are Adobe flash player, Adobe Reader, Adobe Director, Macromedia Flash Player, Macromedia Author ware, Visual Fox Pro and File maker Developer (Nguban, 2015). There is a special language for hypermedia which is used to make multimedia files capable of operating safe. It has only one non - linear medium quality. It allows you to navigate on any part of the document or book you are reading on a computer set. It is also a fundamental part of the World Wide Web which is often based on a relational database organization. In this model, documents are interconnected as in a network, which facilitates extensive cross - referencing of related items. Users can browse effectively through the data by following links connecting associated topics or keywords. In fact, as opposed to conventional documents such as books that one reads one page after the other, hypermedia documents are very flexible and allows one to explore related documents in any order and navigate through them in any direction.

To connect to hypermedia documents on the net, a user's computer must necessarily have the facility that enables him to support the multimedia. The support facilities needed include: hardware, software and browser. These browsers are Netscape, Internet Explorer and Mosaic (Encarta, 2009). Due to an increased exposure to the world wide web (WWW), better computers and modern performance (a device that connects computers to the net), the number of people experiencing hypermedia is increasing at a geometrical rate. The number of teachers using internet - enabled computers is also

growing along teachers in different teachers training institutions in the country. They are also known to use high grade mobile phones with internet facilities. This enables them to have access to multimedia and hypermedia application, particularly for e- learning. (Mogire, 2013).

Benefits of Using Multimedia and Hypermedia Application in Teacher Education

A lot of benefits have been observed in using multimedia and hypermedia in teacher education. Oladele (2009) stated that multimedia and hypermedia enable the teacher to perform the task of teaching with ease, as e- learning has become the vogue among learners. Borsook (1992) observed that multimedia and hypermedia help teachers particularly the would- be teachers, to have greater control over the instructional environment. It provides them with a level playing ground to vary cognitive abilities and also enhance collaborative learning. In fact, it helps in modeling the structure of the brain in comparison with printed text.

One of the valuable multimedia educational tools teachers also use today is the computer. It enables them to persistently learn about some topics through written text, sound, graphics, video and animation (Ukadike, 2014). Multimedia has tremendously impacted on teacher education (James, 2014). In medical line, teachers make use of multimedia stimulated operations that allow surgeons to carry out surgery on virtual patients. Also, engineering teachers use the interactive multimedia presentations of circuits' design to effectively study the rudiments of electronics. Teachers of architecture use multimedia presentation to expose their respective clientele to several houses that are to be built. Teachers of technology also animated to explain difficult and perhaps abstract concepts such as enthalpy and entropy in thermodynamics. A lot of examples of application of multimedia and hypermedia in teacher education are abound.

Problems Teachers Encounter in the Use of Multimedia and Hypermedia in Schools

The application of ICT in education has grown in leaps and bounds due to the numerous benefits to its users. It is now widely used by teachers to enhance the quality of teaching and learning. However, numerous challenges are faced by teachers, some of which have been identified by scori (2014):

1. Lack of effective power supply need for powering ICT resources;
2. Inability of the companies to develop multimedia content;
3. Lack of internet connectivity in the country;
4. Difficulty in procuring ICT gadgets or facilities;
5. High cost of internet connectivity;
6. Lack of effective deployment of multimedia technology to global network; and
7. Non- proficiency in the use of ICT by teachers and students.

Conclusion

The evolutionary development of some elements in our past has been absorbed by the present to project into the future. Progress has therefore, been made on the teaching-learning model. Human values and other developments together with the availability of electronic media and information reception system have significantly engendered growth and development in the teaching industry. Teachers use multimedia devices (electronics media devices) to store, and experience multimedia contents. The computer-based instruction enhances their multi-sensory perceptions, that is, it stimulates their sensory organs. It also improves teachers' writing and process skills. Their exposure to multimedia instructions help them by giving them a new and different perspective on how to present information especially in report writing. Similarly, using hypermedia, teachers can easily create their own database managers such as an inventory of equipment or video

disc images. It also encourages cooperation and collaboration. Teachers can learn how to work together towards a common goal. On a concluding note, multimedia and hypermedia application can be effectively used in education to engender database management, interactive instruction, students' project or electronic slide shows.

Recommendations

The following recommendations are made:

1. Government should provide all schools with multimedia and hypermedia applications, essentially for database management and interactive instruction;
2. Teachers and the students should be encouraged to create multimedia and hypermedia applications;
3. Capacity building among teachers should be made paramount. In other words, they should be made to embrace the new innovation tools for excellent performance, and
4. ICT in teacher education must transcend beyond mere usage of computer for classwork.

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