

The Role of Educational Technology in Promoting Scientific Development in Tertiary Education for Transforming developing Nation for Global Competitiveness

Aniah, A and Wushishi, D. I.

Department of Science Education, School of Technology Education (STE)

Federal university of Technology, Minna

anthonyaniah@futminna.edu.ng

08036195385

Abstract

The paper focused on how educational technology can help in promoting scientific development through teaching and learning for global competitiveness. The paper highlighted the following as areas that can promote scientific development i.e production of scientific equipment for instruction at various levels of education and usage in hospitals and industries, computer education, videotape recording (DVD), photography, micro teaching among others. The paper recommended that: government should adequately fund tertiary institutions for procurement of required educational technology devices for effective teaching and training of students, educational technology teachers' should be retrained on periodic basis through seminars, workshops and conferences to refresh their knowledge and expose them to some complex skills of maintaining educational technology devices and also improvisation, motivate the teachers in terms of increases in allowances, promotion and salaries paid as at when due to keep them on the job. This will enhance the process of teaching and learning and also promote national development and global competitiveness.

Introduction

No nation can make meaningful progress without the basic science and technological learning infrastructure put in place. The state of decay and absence of learning facilities in Nigeria's tertiary institutions and the large number of graduate unemployed youths on the streets has become a source of great concern to teachers' in spite of the increasing national revenue. It is these challenges that made tertiary institutions to be calling for urgent revitalization of Nigeria's education sector. For the purpose of this revitalization, the provision of educational technology materials is one of the major components. This component will greatly improve the process of science teaching, learning, research and development. By this, quality teachers and students that can enhance national development and at the same time global completion will be produced.

Educational Technology in Teaching and Learning

Educational technology and technology in education are often used interchangeably. The term technology is the application of science to make global demand for goods and services. While educational technology is concerned with finding solution to problems of teaching and learning through the application of appropriate media or modern technologies especially electronic media (Hardware and Software). Educational technology according to Davies (1978) in Eze (2012) is the development and presentation of instructional content using learning theories with the aim of promoting the achievement of predetermined instructional objectives and sub-system that interact to achieve educational goals. Association for Educational Communication and Technology (A.E.C.T, 1977) in Adekunle (2005) sees educational technology as a complex integrated process involving people, procedures, devices and organization for analyzing problems and devising, implementing, evaluating and managing solutions to those problems involved in all aspect of learning. Educational technology is a veritable tool for enhancement of teaching and learning and for

fostering development and acquisition of skills by teachers and students for economic empowerment and self-reliance.

Educational Technology as a Tool for promoting Scientific Development

Educational technology is a tool that develops in students the desired skills, right spirit and knowledge to excel in life wherever they find themselves. Dascal and Dror (2002) stated that the learners must be involve or actively participate in the learning process. This will not only enhance quick and efficient skill acquisition, the knowledge gained will be better remembered and will have meaningful impact on their lives. Effective participation in the process of teaching and learning is largely ensured through the use of educational technology devices.

Computer is an information communication technology (ICT) device that one can get information across to its desired destination. It is an educational technology innovative media used in enhancing qualitative, meaningful and productive education to the learners. Computer as an ICT multimedia instructional device could be used to enhance teaching and learning through various programmed packages, graphic design, data processing, word-processing, internet search (Eze, 2012). Training through educational technology can create job opportunity for students after graduation. Individuals can establish a computer communication centre to earn a living, employ others which will equally boost Nigeria economy, reduce unemployment and compete both within and internationally.

Videotape recording is a digital process of information or events with electronic medium known as videotape recorder. Digital video is an ICT instructional device use in enhancing learning outcome through sense of sight and hearing (Audio-visual). It has advantage of recording a programme and replayed it instantly and can be used for play back and continuity of learning at home (Aniah, 2013). Schools that have video recorder and camera system in their educational technology centre or micro teaching laboratory have the opportunity of recording abstract events for effective instruction. Videotape instruction shown through television makes teaching more practical and meaningful to the learner. Educational technology students who are well trained and have acquired the practical skills of recording, production of quality television programmes can generate jobs for the unemployed such as covering of events for entertainment and reference purposes (Eze, 2012).

Abia-Pacific Economic Co-operation (2002) opined that educational technology curricular provides learners with relevant knowledge and skills needed for effective performance in areas such as data processing, word processing, accounting, banking and finance, public administration and a lot more. This paper expresses confidence that tertiary education has the capacity for providing professional training and skills acquisition through educational technology thereby set the pace for providing job opportunity to students on leaving school. It should be noted that students of educational technology who are well exposed and groomed on video recording techniques will not only establish video recording studio but alongside photography to cover events like traditional ceremonies, birthday, title taking, coronation and other events of interest including working in the broadcasting and performing arts houses.

Enhancing Global Competitiveness through Educational Technology Tools

According to the World Economic Forum (2013) it defined competitiveness as “the set of institutions, policies and factors that determine the level of productivity of a country”. It further stated that the term is also used to refer in a broader sense to economic competitiveness in global market. The forum stressed that the concept is also seen as the accepted tool for evaluating a country’s potential for growth by comparing most of the world’s countries; it provides insight into comparative advantages of each. Wikipedia, the free encyclopedia (2013) defined competitiveness as the ability and performance of a firm,

subsector or countries to sell and supply goods and services in a given market in relation to the ability and performance of firm, sub-sectors or countries in the same market.

Science Equipment Development Institute in Minna, Niger State was established in June, 1992 by the National Agency for Science and Engineering Infrastructure (NASENI) to mass produce science equipment for sustainable national development and the development of engineering designs in small and medium enterprises (SME) in order to standardize Nigeria made products and also make them globally competitive which is the focus of this paper. According to the institute its mission and vision is "to create an enabling knowledge driven environment for local mass production of standard parts, goods and services required for the nation's technological advancement. The institute produces school laboratory apparatus for physics, chemistry, biology, introductory science, integrated science etc. it also produces scientific equipment for research, industries and higher institutions among others. The institute also transferred scientific equipment to private sectors, industries including consultancy and extension services. Furthermore, the institute has produced and distributed scientific equipment to schools and hospitals (SEDI, 2012).

Science Equipment Development Institute (2012) said that it has made remarkable progress in the areas of primary and secondary school science kids in order to acquire basic skills and develop scientific attitude and create self confidence in problem solving, other areas of production which are competitive include; ceramics products such as flower pots and vessels, tea cups, lab mortar, saucer and plastic rubbers of various kinds and interlocking tiles which are used for house decoration.

According to Masters in Technology (M.Tech) students (2001) on excursion from Federal University of Technology Minna to National Education Technology Centre, Kaduna (NETC) stated that the centre is well known for the production of instructional materials, teaching and training in various aspects of education including excursion from institutions of learning especially educational technology students to enable them see and learn how educational radio and TV programmes among others are produce and presented. It was also disclosed to the students that educational resources from NETC are sold or distributed to institutions of learning on request for enhancement of knowledge. Similarly, in many states of the federation, there are education resource centres for training and production of instructional materials for schools.

Today, computer centres and private schools are increasingly becoming competitive. According to Okwo in Eze (2004) he is of the opinion that most of the innovations in education like micro teaching and computer education among others were made possible by educational technology. Micro teaching is designed to give teachers the required teaching skills for professional competence. It is aimed at preparing student teachers for actual classroom teaching exercise. By exposing student teachers to the actual practical teaching while in school will give them knowledge required to establish and manage their own schools after graduation and also employ others thereby become employer of labour and reduce unemployment in the country.

Computer as an ICT devise is a product of educational technology. Today, computer centres can be found everywhere because of their importance in national economic development to tell of the level of competitiveness involved in the business. Computer as a product of technology has reduced unemployment rate by gainfully employing others.

The role of Educational Technology in Promoting Scientific development for Global Competitiveness

The role of educational technology in promoting science and technology teaching and learning for global competitiveness cannot be over- emphasized; Educational technology helps students to be well trained and exposed to real practical through effective teaching thereby acquire the relevant skills that will generate jobs, and provide employment

opportunities for national development and global competitiveness. Educational technology provides a solid base education through in-service training, workshops and seminars for the acquisition of skills for effective teaching and learning. The knowledge and skills gained will help students to start-up a business and to be self-employed and also employ others. Using technology as a tool for teaching and learning increase students motivation, the amount of time students spent on task, their willingness to critically review and revise their work, and their pride in the finished product. Technology can also enhance students acquisition of discrete skills through drill and practice as well make them active learners.

Conclusion

From the above discussion in this paper, it could be said that educational technology promote science teaching and learning in schools through the application of various relevant modern technologies such as use of computers and other internet facilities. Furthermore, educational technology can be seen as base for skills acquisition through exposure to practical i.e computer education, Videotape recording (DVD), seminars and workshops. This will not only help students to be self reliance and employment providers but also compete favorably with other nations of the world.

Recommendations

Government should provide adequate fund to tertiary institutions for the procurement of required infrastructure for effective teaching and training of students, teachers' should be exposed to basic knowledge and skills on educational technology teaching through seminars, workshops and conferences to be able teach students and equip them properly to be self employed after graduation. Educational technology teachers' should be well motivated in terms of increases in allowances, promotion and payment of salaries as at when due to keep them on the job and to encourage productivity. Also, private individuals or firm should support government in the sponsorship of educational technology development with a view to promote science and technology teaching, development and national competitiveness.

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