The Role of Information and Communication Technology in Vocational and Technical Education in Nigeria

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Abstract

This paper attempts to examine the roles of Information Communication and Technology (ICT) in Vocational and Technical Education (VTE) in Nigeria. To achieve this, the definitions of ICT and VTE were given. The benefits of ICT and the use of ICT were also discussed. The challenges of VTE were also highlighted before the exposition on the role of ICT in VTE. It was concluded that the emergence of ICT remain at the centre of global socioeconomic transformation. The paper recommended that schools offering VTE should be connected to ICT facilities and the staff should be properly trained to be ICT compliant.

Keywords: *ICT facilities, Vocational and Technical Education, Nigeria, School system*

Introduction

The concept of Information Communication Technology (ICT) is seen from different perspective by people based on their accessibility and the use of these facilities. ICTs, however are facilities, tools or resources that could be used to process store, preserve, access, retrieve and disseminate information with ease.

Mansell and Silverstone (1996) defined ICT to include electronic network-embodying complex hardware and software - linked by a vast array of technical protocol. On the other hand, the United Nation Economic Commission for Africa, UNECA (1999) also stated that ICTs cover internet serve provision, telecommunication equipment and services, information technology equipment services, media and broadcasting library and documentation centers, commercial information provider, network-based information services and other related communication activities.

Human being needs information to reduce the ambiguity in their environment, to define and solve problems. ICT have made it possible to access multifarious information sources scattered in every part of the world (Olatokun, 2007). The convergences of information Technology (IT) with communication to form ICTs according to Onilude and Adesanya (2007) brought the resolution on ICTs which has not only altered the way people live, work and play, but has also created a new infrastructure for business, scientific advancement and social interaction. These advances in science and technology and the advent of internet in recent years has led to cultural, Political, geographical and socio-economic transformation on a monumental scale world wide.

Vocational and Technical Education (VTE) on the other hand is defined by Ogunyemi (2001) as the kind of training pertaining to a particular art, science or occupation. It is composed of theoretical and practical instructions given to those to be employed in commerce, industry on any

type of enterprise, using tools, industry or any type of enterprise using tools and machinery for the operation, production and distribution of goods and services.

The Federal Republic of Nigeria, FRN (2004) in its 4th revised edition of National Policy on Education, defined VTE as "those aspects of the educational process involving in addition to general education, the acquisition of practical skills, attitude, understanding and knowledge A reality to occupation in various sectors of economics and social life.

From these definitions, it is explicit that VTE is an educational phase that trains individual to acquire specific mechanical or manipulation skills required to function effectively in a rapid changing technological society. Its primary philosophy is seeking to graduate individuals for gainful employment, with the aim of making them self-sufficient, economically, politically and socially. In actual sense, VTE courses are offered in Vocational and Technical Colleges, Monotechnics, Universities, etc.

Benefits of ICT

With ICT, numerous benefits have been recorded in government agencies, educational and research institutes, private sectors, Non-governmental organizations (NGOs), etc. Iskander (2003) stated that Internet as an ICT tool has been recorded to be widely spread and influencing almost all human activities. Information seekers according to Ubogu (2000) increasingly want instant individual access to information without any mediation. They are expecting to find the resources they want in a digital form and accessible electronically, which is achievable through the use of ICTs.

Gleeson (2001) commenting on the benefits of ICT: Posit that the last couple of decades witness revolution in computer-based communication technology. These changes have revolutionalised the way people utilized information in various communities. One of the more recent advances in this realm has been electronic publishing, especially the production of electronic journals. Electronic Journal also known as e-journals have not only affected the way information is acquired and how scientific and technology research, seeks that needed information.

With the general communication infrastructures such as electronic mail, telephone, web pages, instant messaging, chat wikis provided by ICTs, allow the technologist and scientist to plan, share data and result, write academic papers and maintain contacts. Dissemination, ICTs, such as electronic journals, popular media web sites, transmit finding to the audience are crucial in facilitating communication and access to information for research development activities in all sector of the economy be it in VTE, health, science and technology, etc.

Galbreath (2000) opines that ICT have become central to contemporary society. Whether one is talking on phone, sending an email, going to the bank, using a library, listening to sports, coverage on the radio, watching the news on television, working in an office or in the field, constructing practical projects, driving a car or catching a plane, one is using ICT. He further asserted that the prevailance and rapid development of ICT has transformed human society form IT age to the knowledge age.

Considering the benefits of ICT to educational institutions, Obioha (2005) posited that ICT tools aids researchers in their information seeking and use of information speedily. It helps in the acquisition of more knowledge. She also found out from her work, that in view of these benefits, aids from both local and international agencies are made to support research activities including the provision of ICT tools and training and re-training of users. From the foregoing, it is clear, that the benefits of ICT most especially to educational sector cannot be over emphasized, which Raymond (2006) stated that set pace for any form of innovation and change for the society.

The Aims and Objectives of VTE

The goals of VTE is encapsulated in the National Policy on Education (FRN, 2004) to among others, provide trained manpower in the applied science, technology and business particularly at craft, advanced craft and technical level; provide the technical knowledge and vocational skills necessary for agricultural, commercial and economical development as well as to give training and impart the necessary skills to individual who shall be self reliant economically.

In pursuance of the above goal, the training of VTE is articulated I n both theory and practical with the aim that on completion of training period, the trainee shall have three options: (a) Secure employment either at the end of the whole course or after completing one or more module of employable skills (b) Set up their own business and become self-employed (c) Pursue further education in advances craft/technical programme.

The major aim of VTE as a business enterprise, is to become an instrument of self employment to the individual who has been empowered not only by subject matter inhibition but who through experimental learning perceived it as real life solution to problems and can make use of his initiative in labour market (Hassan, 2006). The major thrust of VTE thus can be described not just has knowledge or facts, but includes also the practice and comprehensive command of one "peculiar ability after training in solving human problems."

Gambo (2000) highlighted the objective of a functional VTE to secure as a catalyst for socio-economic development. He further explains that a relevant VTE will not only assist in development of skilled manpower as required by the nation but will also help in laying a solid foundation and industrial development as well as income generation for the individual and the nation, which invariably will serve as a facilitator for realizing the true perspective of self-reliance and sustained development at the same time reduce unemployment, poverty and hunger.

Barriers to the Adoption and the Use of ICTs

Even with the numerous benefits of ICT to all facets of human life, there are still barriers to its adoption in developing countries like Nigeria. Research carried out by Gbenga (2006) revealed that many schools in developing countries do not have computers and have no access to the Internet, which is an important requirement for supporting networking for learners and teachers as well as for collaborative learning. The internet can provide wealth of learning resources access to which is at present very limited to many educational institutions in developing countries. Spherically, Gbenga (2006), listed main obstacles faced by Africans schools including tertiary institutions with respect to internet access as follows; lack of infrastructure generally and network infrastructure in particular; high cost of ICT skills level and lack of enabling policy environment.

Another obstacle to the adoption and the use of ICT in higher institutions in Nigeria as identified by Gambari and Chike-Okoli (2007) is that, Nigeria is not fully part of Global University System (GUS). The GUS is an initiative to educate students through a satellite or wireless telecommunication infrastructure, mostly using internet.

Lack of proper acquisition of ICT resulting in utility, low ICT skills, inadequate supporting infrastructure and high cost of maintaining and servicing equipment are all barriers to the adoption of ICT (Olatokun, 2007). This fact was corroborated by Unegbu'a (1999) that high cost of purchasing and replacing the ICT facilities and high cost of training and retraining staff resulting in low ICT skills on the part of the personnel as a major obstacle.

Other findings further revealed irregular power supply, as one of the major hindrance to ICT adoption and use. Alabi (1995) identified incessant failure of power supply and irregular functioning of telecommunication system as factor constraining the effective and efficient adoption and use of ICT.

The Challenges of VTE

The journey towards national self-reliance through technology education has remained elusive due to problems confronting VTE (Tsado, 2010). These challenges include lack of well trained manpower to teach VTE related courses in our schools. No-sufficient fund to provide modern facilities of learning which Nzelum (1993) opines is often neglected by the decision makers, is one factor militating against the realization of goal of VTE in Nigeria because most of the tools, machines and equipment in technical workshops are obsoletes.

Non-availability of learning facilities such as ICTs, computers and other educational media is also a problem in VTE. The curriculum of VTE is well defined with clear set goals but learning facilities designed for the implementation of these contents are not available and where available, they are non functional.

Absences of ICT experts in VTE are other challenges in VTE. This problem has made it difficult for those schools to be ICT compliance, as a result most of the academic information are still sourced manually from textbooks, journals, newsletters, etc. similarly, the over dependence on the traditional chalk-and-chalk method of impacting knowledge in VTE instead of employing modern technique of teaching, including educational media, ICTs, is still a major threat to the realization of the stated goals of VTE (Tsado, 2003).

The Role of ICT in VTE

To promote effective teaching and learning in **VTE,** ICT has crucial roles to play by embodying complex software and hardware through electronic network (ICTs). Computer Assisted Instruction (CAI) which is an outstanding automated instructional programme packaged for learners through an interaction process can be access from the net to guide effecting learning among VTE students. Akinyemi (1991) supported this assertion that gains attention of the learner from the attention through appropriate programming. He further stated that CAT guide students thinking and responding to students questions.

ICT can also be adopted to improve teaching and learning in VTE distance learning programme by using mechanical and electronic network of programme Instruction (PT) made accessible from the internet. PT is the presentation of the materials to be learned by students in a series of carefully validated order and in explicit steps. According to Adigun (1997) PT may be written in form of programmed text, laboratory worksheet, tape recorder, etc either printed or recording all accessible from the internet which is usually suitable for providing a more practical application in problem solving.

Current research findings, latest practical projects, technological innovations, up-to-date published academic papers, recent manufactured tools, machines, equipment with manual (used for VTE practical), etc, are all accessible from the internet and the simple fact that computer has both primary and secondary storing facilities make the retrieval of these information easy. Thus a functional digital library institutions offering VTE will immensely improve the quality of teaching and learning. Onilude and Adesanya (2007) also confirmed that electronic journal (e-journal) and other

related publication accessible from the net has not only affected the way information is spread, but the way the information is acquired.

Alternative to practical in VTE made accessible from the internet, in form of PT, can be administered to the students, where tools, machines and equipment are not available. Where time to carry out practical in the workshop is a constraints, alternative to practical's from net will serve, because skills acquisition is an important aspect of VTE (Ogunyemi, 2001). Thus where practical are not possible, an alternative can be adopted.

Evaluation of learning outcomes in VTE can be achieved by using ICTs, through e-test, e-examination, etc. Evaluation is a process of finding out the extent and kind of behavioral changes that resulted from instruction or teaching activities in the programme. Abimbolade (1996) stated that a well packaged e-examination guides students thinking and assess students performance.

Conclusion

The emergence and convergence of ICT remain at the centre of global socio-economic transformation, thus the role of ICT, in VTE can not be over emphasized.

Recommendations

For ICT to play its expected roles in VTE, the following recommendations are proffered:-

- All the schools offering VTE should be connected to ICT facilities.
- The PHCN should improve on its generation of electricity and the government should extend electricity to the rural communities when VTE institutions are cited, considering that most of ICT and their accessories are electricity-driven.
- ICT experts should be posted to VTE institutions as a government policy.
- Digital libraries should be established in institutions offering VTE by both government and NGOs.
- Training programme like workshops, seminar etc should be organized often for the staff of VTE institutions.

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