

# IMPORTANCE OF INFORMATION AND COMMUNICATION TECHNOLOGY IN TECHNICAL AND VOCATIONAL EDUCATION FOR WORKPLACE SKILLS ACQUISITION

*Jane Itohan Oviawe and Kennedy E. Ojo*

## **Abstract**

There is hardly any modern organization that operates without the use of information and communication technology (ICT). Technological advancement in Technical and Vocational Education (TVE) may be described as the improvement in machines and equipment, the methods of their uses and applications in the classroom, business and industry in order to increase productivity. Technology in this context means the application of ICT in the inculcation of the required skills that will make the student useful to themselves and the society in which they live in. Business today depends on ICT. Banks use ICT to up-date customers' account, libraries use it to locate books, offices use it to process and disseminate information while educational institutions use it to store students' personal data and files. However, the training in TVE has been noted to be defective as a result of non-acquisition of the skills required to meet the standard of modern day employers of labour. This paper thus examined the importance of ICT in TVE for Students Acquisition of Workplace Skills. The paper recommends among others that government should provide the required ICT infrastructure in schools; there should be an established vision for the plan of ICT in education. A committee involving all stakeholders should be set up for the development of ICT; etc.

## **Introduction**

ICT is an umbrella term that includes communication devices or application (radio, television, cellular phone, computer hard and software and networking, and satellite system) and services associated with them. It is a term used to denote a wide range of services, application and technologies using various types of equipment and software running over telecommunication networks. ICT can be defined as computer based tools and techniques for gathering and using information. It encompasses the hardware and software, the network and several other devices (video, audio, photographic camera, etc) that can convert information, images, and sound into common digital form. It includes electronic information in processing technologies such as computer and internet, as well as fixed-line telecommunication networks. ICT is an eclectic application of computing, communication, telecommunication and satellite technology (Yusuf, 2000). The information accessed through digital technologies can promote innovation, increase productivity and enrich the quality of lives. ICT in education is broad, deep and rapidly growing field of study (Moursund, 2005).

ICT utilizes a broad range of technologies that are applied in the process of collecting, storing, editing, retrieving and transfer of information in various forms. One of the major factors or agencies of national development and global competitiveness is Education. Education is a veritable tool for national development. It is through education that a nation achieves her ideal and aspirations. Through education a nation produces the manpower needs necessary for national development. It is therefore pertinent for any nation not only to embrace all it takes to improve the worth of education. This was the reason for the revitalization of Nigeria educational system with the introduction of the national policy on education to give training and impart the necessary skills to individuals who shall

be self-reliant economically (Federal Republic of Nigeria (FRN), 2004). Supporting this view, Ifedi (1982) stated that one of the main causes of unemployment among school leavers is lack of employable skills. Many do not possess the necessary skills and competencies which the modern economy demands. Thus, the nation is face with critical shortage of competent applicants and burdensome surpluses in of unemployable manpower. A sure way out of this unemployment and joblessness is the integration of information and communication (ICT) into technical and vocational education (TVE) programmes.

Employability in both public and private sectors of the Nigerian economy has grown tremendously and this has made the manpower production to be of far in excess to demand. The problem faced by employers now is too many well qualified job applicants chasing very few job vacancies. The increasing complexity of competition in the Nigerian labour market requires greater efficiency of workforce. TVE has become very relevant to Nigeria of today, where massive unemployment of both youths and adults is on the increase. One of the objectives of TVE is to prepare individuals for gainful employment. Whether paid employment or self-employment, the emphasis is on exposure to and acquisition of knowledge, skills and attitudes relevant and adequate for employment in specific occupations. Thus, the value of any TVE programme could be determined in its ability to adequately prepare and equip appropriate individuals in such a manner that they could fit into specific jobs or establish their own business after graduation.

ICT has affect man in all spheres of life. ICT has affected the way people live, work and play. People from all walks of life use ICT to accomplish various tasks. the influence of ICT an all human activities especially in the workplace is imperative and necessary that TVE students should be made to be aware and make use of ICT facilities to be functional in the world of work. To this end, Adesina (2002) posited that whatever be your profession or would-be career, it is expected that anyone who has acquired basic education should be able to perform the following: boot a system; shut down the system; operate the basic operating system that run a single users PC. for example, MSDOS and Windows millennium, Window 2000 or Window XP; use the computer to produce simple documents such as memo, letters, notes, etc; operate simple printers, to produce hard copy of work done on the system; use the e-mil facility to send and receive mails; and browse on the internet.

It is clear that the changes occurring due to the introduction of ICT to our world affects the skills required in the workplaces in order for employees to be competent in any working environment. Learners' attitude can be positively influenced through the use of ICT in the classroom. The use of ICT in the teaching of TVE programmes such as wood-processing has given a high support as it is neat, easy correction of errors as such, it is motivating, interesting, entertaining, educationally interactive, fun and meaningful.

Today, most assignments in schools have to do with ICTs such as the computer and the internet and students are expected to use the E-library to source for information. Before this can be done effectively, the students must have skills in accessing, manipulating and evaluating the electronic information sources (ICTs). All these can be attained in the TVE classroom, since TVE's goals and objectives been identified as the production of manpower with the required skills, knowledge and attitude to function effectively in the workplace.

### **The Concept of ICT**

In time past man has always been inquisitive to get ideas to serve daily needs. This search resulted in ICT tools and facilities. The use of ICT in acquisition of TVE skills cannot be underrated. ICT facilities are vital tools for enriching and facilitating observations, enhancing memory retention and resulting in effective teaching and learning. Much attention is accorded ICT because it can be

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used to perform a lot of tasks. Ajoku (2000) posited that the use of ICT in teaching enables the learner to develop problem-solving skills and attitudes as well as to develop knowledge and manipulative skills. The need for the use of instructional materials in TVE programmes has unlimited advantages. ICTs do not only reinforce learning but also supplement teachers' efforts to put knowledge and skills transfer across. The use of ICT is an innovation which poses challenges to the society due to the increasing demands of the workplace; ICT has made work interesting rather than labourious and stressful. ICT has changed the skills requirements and quantity of workplace and service jobs available. Researchers have explored the impact of ICT skill requirements. This recognition of ICT calls for its adoption by every institutions as a compulsory course.

Educational institutions should prepare students to suit the manpower needs of the workplace and to equip learners for the new information technology world. major concern should be to train all TVE students who could use ICTs in the discharge of their duties, be it writing of programmes, preparation of vouchers, payment of wages/salaries, keying in words, transcribing storing and retrieving of information, communication, etc. An educational institution could be assessed through its ability to train and prepare students for the challenging needs of the society; its success could be attributed to the identification of the required skills and competencies. This could be attained through teaching the students how to live in a dynamic world and how to adapt to the changes. Acquisition of skills in educational institutions should be in three stages. These are theoretical, practical and exposure. The combination of these three stages helps to facilitate the possession of appreciable relevant production skills, to avoid the production of mediocrity as graduates. To this end, Mischwat (1998) in Oko (2002) asserted that the importance of skill acquisition is the exposure to practical situations where these skills are displayed in similar environment as in the workplace.

### **The Status of Information and Communication Technology in Education**

ICT refers to all kinds of electronics that are used for broadcasting, telecommunication and all forms of computer-mediated communication (Akindolu, 2002). Advances in ICT have its full advantage in all spheres of life. The use of ICT in education has brought many online packages which gives the students greater control over what they learn and how they learn. It provides students with vast electronic learning capabilities. Gell and Cochran (1996) in Akindolu (2002) stated that ICT is able to bring students and teachers together for lectures, tutorials and one-to-one interaction across geographical locations. With ICT, the tradition world of paper has become obsolete.

Many nations of the world have embraced the use of ICT in their educational system. The dividend of this step has been so wonderful and amazing. Gell and Cochran (1996) in Akindolu (2002) reported how Britain made use of ICT to promote distance learning. Gell and Cochran stated that the Open University of United Kingdom started offering degree courses through the use of television and they opened a summer school over the internet. Also, master degrees were obtained in 1995 via the use of Integrated Digital Service Network. This afforded opportunities for students to upgrade their knowledge without undergoing unnecessary hardship.

In Austria, a policy known as eFit-Austria is already in place. The Austrian government through eFit-Austria gave e-Education a key position in order to make educational institutions and all people who are involved in Austria educational system fit for the knowledge society and information technology. The objective pursued by eFit-Austria include: enlarging access to education for all; raising the quality of education; enabling lifelong learning, enhancing ICT competencies of pupils/students, teachers and administrative staff; and raising the efficiency of school administrators.

The strategy put in place is worthy of emulation. It covers the whole educational system from primary schools to Universities, training centres of teachers, institutions for adult education, science

and research, sites of culture like museum, libraries and galleries. The Austrian government has been very supportive in financing the educational ICT activities. Between the year 2001 and 2003, the government has donated 70 million pounds for ICT activities. Subsequently, provision has been made for explicit funding with the normal budget.

The use of ICT in education in any nation depends on the computer technological awareness in that country. According to Akindolu (2002), the first time computer appeared in Nigeria was in 1963 when it was used to process the national census data. Some companies started the use of computer from that time. However, it is very obvious that the use of ICT in education is yet to be embraced by Nigerian educational institutions (Aleburu, 2005). Many reasons are responsible for this. The new innovation of ICT in teaching and learning process in most schools is still a dream yet to be realized. ICT has not been integrated into the curriculum and incorporated into the mainstream of instructional programmes. Another reason is the non-availability of ICT facilities in our institutions. For instance, apart from computer science department that are equipped with few computers, available for the use of their students, most of the other students and lectures outside the department do not have access to computers. Similarly, Aduwa-Ogiegbean and Iyamu (2005) reported that Nigerian schools are without internet facilities.

The implication of this is that students and teachers will not be able to come together for lectures, tutorials and one-to-one interactions across geographical locations. The traditional world of paper is still the order of the day. Students will not be exposed to enriching teaching and learning materials on the internet. Another reason is inadequate training of teachers. Most teachers in our schools have not been trained on the use of ICT facilities. Few of them may be trained only to appreciate the use of which will be inadequate for them to apply in teaching and learning process.

### **The Need for ICT in Education**

The use of ICT as instructional materials has become a reality. Culp and Lagowski (1971) posited that the use of ICT in science instruction has been seen by its advocates as potentials, a tool without peer and as the probable means for providing instructional flexibility and individualized instruction; the use of ICT should not be neglected if one has to stress the effectiveness and simplicity of in terms of teaching and learning. ICT has transformed many sectors of the society especially the manufacturing industries, finance and medicine of which it has the capacity of changing or restructuring the conventional method of learning in schools. ICT is replacing the chalkboard, overhead projector with various types of software, such as tutorial, simulation, drill and practice, telecommunication and internet. The Federal Republic of Nigeria (2004) in her national policy on education section 10 stated that most of our textbooks at present are unstable, inadequate or expensive... Radio and television are products of ICT designed to improve communication. They are also used for the development and improvement of education as well as for the expansion of instructional techniques. Afe (1989) asserted that the impact of ICT is unsurpassed by any innovation in the field of science and education.

Many nations have already advanced in the use of ICT in education and all human endeavours. For any developing nation like Nigeria ICT is expected to have a place in education no matter the demand it places on the teachers and resources of acquiring them are enormous. Danladi (1996) asserted that with the introduction of ICT in education one can now easily find instructional materials which are carefully structured for teaching specific lessons. In Computer-Assisted Instruction, ICT is to be used as a store of information which can answer questions (that is as a processor of answers to given questions) and to demonstrate visually or via educational robots, ideas and concepts. Walker (1986) identified the following as strength of ICT in education: (i) more active

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learning; (ii) more varied sensory and conceptual modes; and (iii) nearer speed of thought and an aid to abstraction. According to Graham (1998), ICT stimulates the interest of the learner; and gives the individual a flexible tuition at the learner's own pace and direction.

Since the acquisition of appropriate skills will be of tremendous benefit to the individual and the nation at large and Nigeria has accepted education as an instrument per excellence, it is thus imperative for curriculum planners to include ICT education into Nigeria educational system at all levels (primary to tertiary) so that the objectives of education can be achieved.

#### **ICT Literacy in Technical and Vocational Education**

The world has become a global village and has moved from the industrial based society to an information-oriented one as a result of ICT which is the dominant agent of the change. ICT skills, knowledge, and competencies are needed in almost all spheres of human life and its literacy is a prerequisite to effective participation in information-oriented society. For instance, for any individual or student or researcher to succeed, ICT knowledge is a criterion. Assignments, seminars, projects, thesis, and term papers have to do with ICT facilities such as the computer and internet and students are expected to use the library to source for information. Idowu and Adagunodo (2003) posited that knowledge, skills and confidence with ICT are now an asset to those entering the competitive labour market. Employment will soon be given to only those possess ICT knowledge and this knowledge will be used as a perimeter over those without ICT knowledge. Bukley (2002) suggested that in today's world, proficiency in ICT skills is as critical as reading, writing and arithmetic. ICT is now being compared to that of reading and writing literacy and a prerequisite for employment. Buttrussing the above statement, Bukley asserted that today's business world is looking for skilled workers who want to continue to learn and meet organizational goals. How much skills an individual has is fast becoming a determining factor to securing a proper job and good pay and in a society such as ours (Nigeria), ICT skills are most required and requested for in any kind of employment. The fact that ICT has moved into the society so rapidly, the need thus arises for everyone to quickly acquire basic ICT skills in order to pursue ones career goals and function effectively in the society.

Odili (1994) suggested that the increasing need of multi-national companies of persons, knowledgeable in ICT will definitely frustrate the efforts of the government to provide teachers for ICT related courses. This support the fact that with ICT knowledge, an individual is obliged to lucrative employment.

In Nigeria, policy makers, public institutions and the grassroots movement are striving for broad ICT access and being able to use ICT facilities is a requirement for democracy and participation in the workforce. A lot of old employees in government ministries and parastatals, companies, industries, educational institutions, etc that are not automated live with the fear of possible retrenchment for lack of required skills to work in an ICT office environment. Adesina (2002) posited that it is a complex thing today to secure professional jobs without demonstration of relevant ICT skills. Koko (2001) also asserted that on no account should staff without an up-to-date knowledge of modern office equipment be allowed to practice based on trial and error. no wonder employees in industries, ministries and parastatals without ICT knowledge and skills feel scared of threats of retrenchments and unemployment. It is sad but true that these ICT illiterate employees will soon loose their jobs paving ways for those who are ICT literate. Employment security is what people look out for and can only be 70 per cent guaranteed if an individual possesses the required knowledge and skills for the job which ICT knowledge is of top priority. ICT literacy cannot be avoided but must be embraced by Technical and Vocational Education students. It should e seen as a tool of making an

individual a good scholar, a prerequisite for good employment and a vehicle that can convey an individual and his/her messages round the world.

### **Benefits of ICT in Technical and Vocational Education**

The use of ICT in education and TVE particularly could be highly beneficial to students and the nation at large in the following way: increases performance when interactivity is prominent; improves attitude and confidence; provides instructional opportunities otherwise not available; increase opportunities for students-constructed learning; increases mastery of technical and work force skills; prepare students for work when emphasized as a problem-solving tool; increases the preparation of students for most careers and vocations; increase emphasis on individual instruction; ICT will provide flexibility and convenience; it will overcome some traditional barriers such as time and place; it helps students to study independently; enhances the learning achievement levels of students (Bezt, 1996); enhance problem-solving skills of students (Gokhale, 1996); Fosters peer interaction (Bilan, 1992); a student can take an instructor-led online class, which combines the benefits of self-study with those of more traditional classroom-based learning (Ryan, 2001).

It is evident that information is a key resource which permeates teaching, learning, research and publishing. To this end, Robinson (1991) in Okeh and Opone (2007) stated that the use of new information technology can serve three main functions in the educational system. These are to: (i) deliver all or part of the learning experiences to learners; (ii) supplement and extend content provided in different forms other than printed (hard copy); and (iii) provide a two-way channel of communication for exchange between tutors and students with their peers for feedback or for learning, problem-solving, advice, debate, and reports. According to Ikelegbe (2006) in Okeh and Opone (2007), other ways in which ICT can be used in education include: (i) supporting conventional classroom work; the teacher could ask his/her students to use ICT approach; (ii) helping in the design and development of learning materials. A lot of materials can be downloaded from the Internet. Such materials must however be adapted to suit the specific instructional objectives; (iii) accessing electronic teaching materials such as books, journals. These can be accessed, stored and analyzed by the use of ICT; (iv) accessing virtual library "stocks" electronic versions of books and journals; (v) giving or providing access to the world of resources especially in electronic form; (vi) playing a key role in educational administration. Students' data, personnel administration, purchasing and supplies, advertisement, etc can be handled with ease using ICT; (vii) facilitating independent study and individual instruction especially on the open distance-learning programme; (viii) making learning more vivid and engaging; (ix) assisting the teacher in assessment and testing; and (x) bringing a permanent solution to brain drain problems as we now live in a global village. Other benefits as identified by Ohakwe (2001) are:

1. Records can be managed and accounting functions performed using electronic document. Information is now being processed, stored, retrieved and outputted at a far greater speed than the manual method. The secretarial student is able to carry out his/her duties with ease and at a faster rate than it is in the traditional office. Also the technical or industrial students are able to perform their technical or engineering drawing activities using AUTOCAD faster than in the usual classroom arrangement.
2. ICT creates opportunities for learners to have access to libraries and databases of other universities, research institutions, or government agencies to consult stored files of TVE papers, studies or reports. For example, users could subscribe to any of several electronic TVE journals, newsletter and periodicals published on internet.

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3. It is used for communication between individuals. For example, through video conferencing, audio conferencing, voice mail, etc, technicians can dialogue over various issues without being in the same location.

### **Recommendations and Conclusion**

The basis for any meaningful national development in Nigeria will largely depend on how much the seriousness that is shown to the study of Technical and Vocational Education. a major way to get through this predicament is the introduction of ICT in the teaching and learning of Technical and Vocational Education. Technical and Vocational Education students skills are a particular instructional behaviour or dexterity in practical subjects, such as accounting, office education, engineering/architectural drawing and drafting, land surveying, etc. skills in these subjects areas were acquired through the conventional method of chalkboard, textbooks, manual typewriters, drawings in the studio or classroom, etc; but today, invention has made the acquisition easier through the use of ICT. Hence, the demands ICT places on teachers and students are very great and challenging. In the light of the above discussions and conclusion, the following recommendations are made:

1. There should be an established vision for the plan of ICT in education. A committee involving all stakeholders should be set up for the development of ICT.
2. Government should provide the required ICT infrastructure in schools. There should be provision of computers and internet facilities in schools.
3. Government should make provision for staff development through organizations of seminars and conferences to Train TVE educators in ICT skills.
4. Government should make funds adequately available for ICT implementation in schools.
5. Government should ensure steady supply of electricity in schools by mobilizing and monitoring PHCN for effective discharge of their duties.

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