

NEED TO IMPROVE THE USE OF INFORMATION AND COMMUNICATION TECHNOLOGY (ICT) TOOLS IN SECONDARY EDUCATION IN NIGERIA

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Abstract

In this era of advanced technology, one who does not have a knowledge of the use of Information and Communication Technology (ICT) becomes a misfit in the society. This paper discussed the concept of ICT and the great roles ICT plays in the secondary education system. It described some ICT tools used in the school system and some factors that militate against their use. The benefits of ICT tools in the school system were enumerated and recommendations for improvement in their use were proffered.

Introduction

Education is the totality of all the means through one acquires knowledge, skills, attitudes and values and develops positive behavior to make one become useful to oneself and the society in which one lives. Every nation recognizes the role of education par excellence in the transformation of the individual. This is why every facet of the population is catered for in the education system.

Secondary education is the transition stage, in-between primary and tertiary levels, that supplies candidates for tertiary education. Therefore, it is a crucial stage in the transformation of the individuals.

The National Policy on Education (NPE) (2004) stated that the broad goals of secondary education shall be “to prepare the individual for “ (i) useful living within the society and (ii) higher education.” The teacher being the implementer of the curriculum in the classroom setting has to be well armed to the teeth to ensure that the learners acquire basic education. This she should do by being innovative in her teaching methods and use of Information and Communication Technology (ICT) tools.

Teaching is all about communicating; it does not follow that knowing your subject makes you a teacher. As Igwebuiké and Ojogan (1995) succinctly put it, “even the greatest expert will fail to put it across without the ability to communicate the subject.” Usun (2004) opined that teachers should not be content experts or task masters and assessors but should assume the role of modeling and facilitating collaboration and enquiry.

The government recognizes the role of ICT in advancing knowledge and skills in the modern world. As stated in NPE (2004), “... government shall provide necessary infrastructure and training for the integration of ICT in the school system.

The National Economic Empowerment and Development Strategy (NEEDS) (2005) stipulated six goals for education in Nigeria. The sixth goal is to promote ICT capabilities at all levels. Some of the targets set for achieving the goals are to ensure that “(a) 80% of secondary school graduates are computer literate; (b) 50% of secondary schools have functional ICT facilities; (c) 50% of teachers at all levels are trained in computer skills.”

The strategies for achieving the goals include, “(a) incorporating computer literacy in primary and secondary school curricular; (b) developing and producing curricular for teaching computer education in secondary schools (c) providing secondary and tertiary institutions with ICT equipment and facilities.”

Application of technology to the teaching and learning process is one of the great challenges of the 21st century in our education system. In the classroom, the teacher uses communication skills (in non-verbal, oral and written forms) to pass messages (content/subject matter) to her receivers (students) and ICT has to do with communication. Therefore, ICT is an integral component of the school curricula activities. No doubt, ICT is very vital to the achievement of the Nigeria education goals, the Millennium Development Goals and Vision 2020 goals.

Origin of Communication Vis-à-vis Education

Early man discovered how to express himself in terms of drawing, models and symbols. Sticks were used to draw ideograms in the sand. Stones were carved to sketch figures and symbols on rocks and walls of caves. Smoke and the beating of the drum also served as media of communication. Later, he developed speech and the technique of writing as means of communication.

The invention and production of electronic equipment and introduction of same into the education system and the systematic designing and using of teaching methods have boosted the teaching and learning process. However, the use of products of technology in our schools is still low. Educational technology has not been fully embraced; so many teachers still maintain the position of dispensers of knowledge instead of managers of the teaching and learning situation.

In many schools, there is great emphasis on typical traditional method of classroom teaching. In that method of teaching, the teacher is the fountain of knowledge from whom the students imbibe knowledge, passively. It is assumed that the students' heads are like an empty vessel or tabular rasa. So, the teacher fills the empty vessel with knowledge.

The talk-chalk method has been the predominant way of teaching and learning in Nigeria schools. That does not promote effective communication.

In the classroom, communication takes places among two or more individuals for the purpose of giving and receiving information which are in line with the stated objectives. In the present age of technological advancement, what the teacher tells the student is no more conducive to real learning. Learners learn better and quicker through participation and interaction with teaching resources.

The learners play an active role for learning to take place and they are highly motivated when given responsibility for their own learning. ICT can be used to support conventional classroom work. The progression from chalk and talk and textbook-driven methods to the use of educational technology and now ICT has turned learning communities to learning opportunities and possibilities.

If teachers engage in internet search, curricula contents would be enriched because new information of content and methods can be downloaded and used in the classroom.

What is Information Communication Technology (ICT)?

Information is the product of data. Data are facts about objects, people and events. When data are put into use, they become information. Therefore, information is an organized, meaningful and useful interpretation of data.

Communication is the process of passing information. According to Honby (2005), "Communication is the activity or process of expressing ideas and feelings or of giving people information." Relatively, communications means "methods of sending information, especially telephones, radio, computer, etc."

Technology is scientific knowledge used in practical ways. It refers to machines equipment and new ways of doing things based on modern knowledge about research and computer.

Information Technology (IT) is the use of hardware, software services and supporting infrastructure to deliver information in form of audio, video and text messages. Computer,

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communication network and know-how make up IT because it must possess the technical skills and competencies to harness various IT tools.

ICT is the application of newer technology and communicating same through sophisticated electronic approach. In that case, there is traditional or old ICT like radio, television and the new ICT like computer, internet technology. ICT refers to forms of technology used to transmit, store, create and exchange information which include technological devices like computers, satellite system and network, hardware and software equipment, and services associated with video conferencing and electronic mail. It also includes technology such as radio, television, DVD and telephone (both fixed and mobile lines).

As the World Bank cited by Rodriguez and Wilson (2006) defined it, ICT is a set of activities facilitated by electronic means of processing, transmitting and displaying of information. The National Policy for Information Technology (2001) described ICT as any equipment that is used the acquisition, storage manipulation, management and control, display, switching and transmission of information. Butcher (2003) defined ICT as electronic technology for collecting, storing, processing and communicating information and that they can be separated into two main categories (a) those which process information such as computer system and (b) those which disseminate information such as telecommunication system.

Objectives of ICT Education

ICT in education is for collecting, storing, processing, communicating, and delivering information related to teaching and learning processes through the use of computer, micro electronic devices, satellite and communication technology; internet and modern methods of instruction and research.

The objectives of ICT education include the following:

- a. To promote access to ICT for all teachers and students
- b. To emphasis the role of ICT as a tool for teaching and learning
- c. To promote education for all through usage of all types of electronic media
- d. To use ICT to increase efficiency and effectiveness of the school system

ICT Tools for use in Schools

1. **Information Resources:** These are made up of internet and data bases. The internet is an international network of computers which enable individuals to have access to publication and transfer of information. The cybercafé and internet imply the use of internet, World Wide Web (www) and on-line services. Databases are collection of records systematically stored in a computer so that a computer programme can consult it for answers to question.

In computer Assisted Learning for example, student learn by interacting with a programme stored in the computer, designed according to pedagogical criteria that had been predetermined.

2. **Digital Camera:** This is used to capture or record, produce and playback image and sound in digital form. With digital camera, images are captured (initiate state), images recorded are edited, (manipulate stage) and information recorded (still or video) are passed to the audience (communicate stage) (Technique4Learning, 2006).

It can be used to record information from a field trip and report back to students. This can be used for prompt writing in many forms- descriptive essays, poetry, persuasive speech, etc. Information or messages recorded with digital camera can be made available on Video Home

System. (VHS), Digital Video Disc (DVD) and Video Compact Disc (VCD) to students and teachers for later use.

3. **Video Cassette Recorder (VCR):** It is a machine used to play back cassette, using digital camera. It is used to record programmes delivered by broadcast, cable or satellite transmission. By connecting digital camera and video sender to VCR, information recorded or live programme can be shown to the class.
Live teaching micro-teaching, etc can be recorded with VCR and digital camera and compressed on VHS, VCD or DVD for later viewing and assessment of performance.
4. **Video Conferencing:** This allows people in different locations to see and talk to one another; it is like a 2 way television. It can be used by teachers to share knowledge with one another and with their students.
It is tele-meeting in which video pictures are transmitted. This can be used in debating and quiz competitions. It is visual presentation of information and instructional resources. Computer linked to the cyberspace (internet) is the proper tool for it.
To save cost, the Mobile Internet Unit (MIU) which uses a Very Small Aperture Terminal (VSAT) equipment can be mounted on bus roofs for the general public to gain access to internet services.
5. **Audio-Conferencing:** This is vocal presentation of information without physical contact between presenter and receiver e.g. GSM conference call and internet chatting. It has to do with telephone, radio to teach oral skills.
6. **Electronic Mail (E-Mail):** It is a system of sending written messages to and receiving them from people by means of computer connected together in a network. It is a means of sending computers via electronic magnetic waves.
Email gives students opportunity for real or natural communication and can be used for e-learning planning. It is fast, cheap and easy to operate.
7. **Virtual Classroom:** They can be created through electronic media which brings together learners in different geographical locations as if they were in a physical classroom. They are possible through audio-video conferencing or telephone conferencing.
8. **Multimedia:** Multimedia teaching packages refer to the use of multiple forms of media e.g. movies, slides, music, radio and video in presentation. It is an aspect of ICT that makes for participatory teaching-learning process as the availability of teaching aids, learning resources or instructional material enables the learner to participate in and contribute to the teaching and learning process.
Multimedia is becoming the principal way of presenting information since it allows information to be presented in different forms.
9. **Other ICT Tools:** These include creation of virtual libraries (electronic) and virtual laboratories through computer, on-line test and measurement/evaluation of students' performance, on-line students' registration, on-line checking of students' performance in

JAMB, WAEC, NECO etc. Computer Aided Instruction (CAI) package and Computer Aided Learning (CAL).

Benefits of ICT Tools in Education

The world is developing technologically and at a rapid speed and ICT is the bedrock for national survival and development. In this information age in which different people extend their knowledge through the creation and use of information is the order of the day, one becomes a misfit if one cannot create and use information effectively.

The use of ICT in education services delivery will automate methods of instruction, research and assessment of students. It will revolutionize communication process and improve evaluation of curricula activities.

It requires a transformation of the old teacher to a new teacher because teachers are to assume new roles of teaching delineate learning tasks and select good methods organized on ICT-based activities and promote discussion, interaction and assess achievement of individual students and all students.

There will be efficiency and effectiveness of the school system if ICT is infused into the education system. ICT can be used for all disciplines and for transdisciplinary projects.

It provides individualized interactivity and encourage methods of teaching that are learner-centred. This is because it is the gateway to information for teachers and students and student-student dialogue and interaction, students' independence and autonomy is guaranteed. There is room for file sharing, collaborative writing among users.

ICT can be used to promote interactive learning, giving home work and encouraging individualized instruction. Teachers can design and develop learning materials downloaded from the internet for research activities.

ICT will help students in English or other languages, study (in aural, oral skills, grammar review, vocabulary and sentence construction skills, new ways of reading and discovering texts, correct spelling, syntax, voice recognition, etc) and in all other subjects. It will help students to update their academic knowledge. It enhances learning and peer collaborative writing and editing. This leads to mental, attitude skills, development and creativity.

According to Young and Bush (2004), "ICT in teaching languages has advantages of authenticity, interactivity, various accessible resources and combination of pictures, sound and text." This can lend authenticity to classroom situation. The teaching of discrete grammatical structures can be broadened to fostering of communicative ability.

Simulation and exploration encourage scientific spirit of inquiry in topics that deal with system. So, if students are to understand complex system, there will be no need to provide them with a set of rules that describe it but rather allow them to explore their behavior, make decision and predict results.

Teachers can enrich presentation with graphics and table and present by projection devices. They can tell students to type their assignments using word processor and submit on the diskette or through E-mail. This will increase their intellectual prowess. By this, the spirit of inquiry and creativity inculcated in the students and a sense of cooperation and team spirit is developed in them.

Teaching is not bound by time constraints because students can communicate with people outside the classroom and gather information around the world. The television, Video, Video Compact Disc (VCD) and Digital Video Disc (DVD) technology can provide words, images movement and animation in combination with audio (reading comprehension) and stimulate discussion and critical reasoning.

The computer programme can promote and motivate learner's interest and flexibility and work at their own pace.

The computer and multimedia computer programmes promote interactive learning and manipulation of texts.

Short Message Service (SMS) technology allows students and subscribers to type and send text-based message through their mobile phones. This activity develops reading and writing skills.

The internet service enhance daily access to a vast range of information, printed materials created using desktop publishing services increase circulation of print materials and make one have access to written materials.

Lecturers and information can be disseminate to students through newspaper, magazines, internet and extranet, radio, television, post and telephone mass media.

School activities like games, sports, clubs and societies, fieldwork and excursions can be enriched through ICT. Through ICT, libraries are digitalized and made available online. This paves way for comfortability and convenience to review literature. As UNESCO (2002) stated, ICT adds value to the process of learning and in the organization and management of learning institutions.

Limitations to the Use of ICT Tools

There are many things to consider when using ICT tools. These include the types of materials to be presented, students' interest, teaching methods, availability of software and hardware, physical structure of the class, etc. Teachers must possess relevant ICT skills and knowledge to be able to use ICT in teaching. However, many teachers do not have the technical competence in handling hardware and software nor do they use ICT tool as teaching resources in the classroom. They lack adequate computer skills and familiarization with the tools.

If many teachers are asked about the handling and use of computer, word processor, spreadsheet, educational software, audio-visual media, multimedia presentation, design of web pages, internet resources, use of CD ROM to collect information in different subject areas, internet-based research etc. they look dazed. Their lack of competence in the use of ICT tools in the impedes upon the benefits derivable from it.

Lack of fund for computer purchases and maintenance is also a constraint. There is still a wide gap between the national policy of provision of ICT tools in all schools and the implementation of the policy.

The epileptic electric power supply is a big problem that hinders the effective use of ICT tools in schools. Other limitations include dearth of IT personnel and teachers to deliver ICT to students, inadequate or lack of ICT infrastructure, time constraints to cover curricula because of overcrowded subjects, low ICT awareness, negative attitude towards and lack of confidence in attaining the skills necessary for the use of ICT tools, poor teachers remuneration and conditions of service and undue importance placed on paper qualification.

Conclusion

Considering the large population literacy in Nigeria, ICT is needed to deliver literacy education. As Barret (2003) put it, ICT is undoubtedly the most effective means of rapidly distributing knowledge and information, the core of education to educational poor and starved communities."

With modern networking technology, the whole wide has become a global village. One needs to communicate with the wider world.

With ICT, teaching is more dynamic. There is expansion of vision and access to high quality materials and students' interest and motivation are increased.

Recommendations

1. The government should provide schools with ICT tools and fund for their maintenance. It should ensure that teachers become ICT literate; this will be done by training teachers on how to integrate ICT tools into teaching-learning activities.
2. The secondary school curriculum should be reviewed to include ICT as a compulsory subject and the school time table should allow adequate use of ICT in all subjects. Digital gadgets should be applied to all aspects of teaching and learning.
3. Positive attitude should be developed in teachers and students towards ICT. This will be through regular training programmes for secondary school teachers on termly basis.
4. Web and Internet facilities should be made available, accessible and affordable. Also, the government should ensure constant electric power supply in all schools.

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