

Usage and Challenges of Information Communication Technology (ICT) in Teaching and Learning in Nigerian Universities

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Abstract: This study examined the concept of Information Communication Technology (ICT), its relevance and usage in teaching and learning. The challenges of ICT on learning process in Nigerian universities were discussed using descriptive survey, unstructured interview, observations and participatory experience. The study revealed that ICT is relevant as evaluative tool and as an improvement of knowledge and skills. It also revealed that teacher factor, digital divide, box of coloured-chalk, inadequate funding, management attitudes, inadequate of internet connectivity, energy related and low Tele-Density were some of the challenges of ICT in teaching and learning process in Nigerian Universities. Recommendations made were that all employed teachers in federal, state and private universities should undertake mandatory training and retraining on ICT programmers. This is to provide them with practical and functional knowledge of computer, internet and associated areas of ICT for improved effectiveness and efficiency. Government should develop ICT policies and practices that would support lecturers in their academic work and students in their learning. ICT tools should be made more accessible to all the students and staff. Also, digital divide should be bridged within and between the staff of universities, teaching should move from the box of coloured chalk to e-learning. All hands, that is, government, parents and Non-Governmental Organization (NGO) must be on deck towards computerization of Nigerian universities, the globalization of education and network education management.

Key words: Challenges, ICT, universities, teaching, learning, Nigeria

INTRODUCTION

Today, improved communication technology has made time and space less complex. It could be observed that this modern age is the age of information explosion in which an average individual wants to explore the information system. Thus, the ability for timely acquisition, utilization, communication and retrieval of relevant and accurate information has become an important attribute for better teaching-learning process.

Advanced and developing countries have also attested to the fact that ICT is a central focus for the educational policies, for use and integration in our school curriculum, yet Nigerian educational system has not adequately exposed students, teachers and institutions of learning to the realities of ICT tools and skills that would prepare them to face the challenges of the global world of internet and knowledge sharing within the shortest possible time. Adegun (2007) revealed that presently in Nigeria, the use of e-learning in the educational sector is still at the rudimentary stage. The educational system is the formal education, classroom based instruction where the teacher and students are physically present at the same time and at the same place. The teacher uses the traditional method of teaching in addition to some manual

instructional materials for teaching. Because of the relevance of ICT to teachers in the implementation of school curriculum, it is argued that teachers should be adequately prepared, trained and equipped with relevant ICT tools/skills such as computer-mediated communication, internet, electronic publishing, video conferencing, multi media (Cornu, 2002; Joassen and Reeves, 1996; Olorundare, 2006).

Though, Nigerian Government has made some efforts towards the provision of basic tools for teaching/learning and application of ICT to schools this effort is limited only to very few institutions (YTF, 2004). Therefore, there is the need for effective and efficient use of ICT to generate information for good decisions and productivity. Now-a-days, endowments, population mobility, social problems are becoming more complex for the teachers, hence the use of powerful administrative tools such as computer based information system to solve the problems.

INFORMATION COMMUNICATION TECHNOLOGY

The challenges of the school system in the 21st century will be incomplete if the demand for ICT is not met. What then is ICT? Is it knowledge, machinery

and electronic gadgets? ICT is a broad term that has to do with the harnessing of process, the methods and the product of electronic and communication: related technologies (and other related resources in today's knowledge driven society), for enhancing the productivity, the spread and efficiency of a set of programmed activities geared towards the achievement of clearly determined goals.

Bamdele (2006) defined Information and Communication Technology as the which encompasses a range of 'new' technologies and their application including all aspects of the use of computers, microelectronic devices, satellite and communication technology. ICT, therefore, uses modern day technological devices-mostly computers and relevant software package to store and retrieve information needed in institutions, corporations and organizations.

In education industry just like other sectors, Information Technology (IT) focuses on electronic generation, storage, retrieval, utilization and protection of information for future use, while ICT revolves around different type of technologies likely going to be utilized for processing, transmitting or communicating information.

The National Policy for Information Technology (2001) defined IT as computer, auxiliary equipment software and firm ware (hardware), procedures, services and related resources. The document described ICT as any equipment or interconnected system of equipment that is used in the automatic acquisition, storage, manipulation, management, control, display, switching and transmission of information. In another related concept, ICT is conceptualized as communication in whatever forms used, accessed, relayed and transmitted to communication or send and received information (Olorundare, 2006). Communication itself is a process of exchange of information ideas between 2 or more individuals with the purpose of bringing about a change in behaviour (Adebayo, 2007). In this context ICT are tools that comprise electronic devices which are utilized for information and communication needs of institution, organization, students and individuals. Such electronic devices include computer (hard and software), networking, telephone, video, multimedia and internet. Application and utilization of these devices converts information, text messages, sound and motion to common digital form. ICT provided students and teachers with practical and functional knowledge of computer, internet and other associated area of ICT. In the classroom situation, communication process influence learner's behaviours through interaction. It is an integral component of school curriculum activities since some of

the curricular activities, task teacher/student undertake involves the use of communication skill both oral and written information. For instance, in all science subjects, students record their practical experiments, observations, demonstrations in both formal and informal text or present their findings/discovery in either oral or written reports. Therefore, to prepare students for information age and competitiveness and communicate effectively in the 21st century, complete internet/intranet services should be made available 24 h in all schools in Nigeria.

RELEVANCE OF ICT IN TEACHING AND LEARNING

The functions of teaching in education process is considered paramount especially when we consider teaching and learning process as the acquisition of knowledge and skills by individuals to enable him become useful member of the society. Indeed, teaching may convey and at times actualize the objectives of education of the learner. It involves deliberate activities geared towards the development of less matured and inexperienced. Teaching embraces forms of process, behaviour and activities which do not succumb to explanation by a single theory. It is also, argued that in educational institutions teaching cannot take place without the students (learner), the teacher, the curriculum, content and instructional materials. The above judgment may not stand the test of Information Age/ICT. This is because teaching imposes content, learner's freedom is restricted, while ICT employs independent judgment in decision making, this is seriously eroding teaching situations. The only main task of the teacher is to create enabling environment that may bring about desirable change in behaviour.

At the classroom situation, ICT is utilized to enhance teaching effectiveness. It is a challenging process that involves 3 levels: Macro, Meso and Micro. The macro level determines National Policy on IT and Education outlines various educational information technological needs of the society and the implementation digesting and translating the policy into practice. The level charges the institution with the responsibilities of providing personnel and facilities needed for the full implementation process of the ICT. The micro level is the implementation procedure using the curriculum through various skills of interaction, observation between the teachers and the learners, the content of instructions and ICT tools. Therefore, classroom teachers are expected to utilize ICT facilities to inculcate relevant knowledge to students. Any classroom teachers with adequate and professional skills in ICT utilization will definitely have his students perform better in classroom learning.

USAGE OF ICT IN TEACHING AND LEARNING PROCESS

Accessibility: ICT makes records and information about school activities easily accessible, fast and regular. It gives room for unrestricted access to teacher and students for relevant information and development in various subject-areas. Access to latest textbooks, journal books published by reputable scholars in various disciplines is guaranteed.

ICT as an evaluative tool: Other areas of ICT utilization include evaluation of learning outcome and classroom management. ICT facilities could be used to prepared lesson plan, write students report, storage of data, collect and analyse student's achievements. Curriculum content could be enriched through search in internet by teachers or curriculum experts. Information, messages skills strategies and relevant school practices hitherto unknown to both students and teachers that cannot be found in recommended school textbooks could be easily down loaded for information and academic development of students. Recent research findings in any particular subject area could be easily obtained through internet. ICT do not only bring about improvement in what is taught in the classroom but encourage personal and professional advancement. ICT encourages active participation in classroom interaction as knowledge is shared (Emenike, 2003). Hence, ICT gives room for modern method of assessment and evaluation of students' performance.

ICT as an improvement of knowledge and skills: The use of ICT in classroom situation sees the teacher as facilitator rather than dispenser of knowledge. Teachers serve as guide in teaching and learning. Some of the ICT commonly used in classroom for educational purposes include lap top computer, local area network (confines in a particular classroom building) and the internet. The computer has the capacity to put text, graphics, pictures on screen and accept students input, which can be easily retrieved and analysed. The internet provides e-mail services generally utilized for correspondences and dissemination of information. Students and teachers read comments from daily mails (news papers) use chat room where activities take place lively and the use of World Wide Web (www) for necessary information (Adebayo, 2007).

ICT has increase importance within the school curriculum. Not only does it support teaching and learning within other curriculum subjects, but it is also a

subject in its own right. Developing skills, knowledge and understanding in the use of ICT prepares pupils to use such technologies in their everyday and working lives. ICT tools enable pupils to access, share, analyse and present information gained from a variety of sources and in many different ways. Teacher too will be able to change and update material on a web-page based on new information or new needs of the learner.

The use of ICT provides opportunities for pupils to work both collaboratively and independently, to consider which ICT tools best suit the task in hand and to know when and when not to use ICT to complete such a task. As such, the role of ICT within the curriculum is not only to enhance the learning experiences of pupils but also to help them develop the skills essential to participate effectively, both now and in the future. ICT enhances, performance of teachers in time of course materials delivery and provides maximum attention to students as they could meet through e-mail feedback facility. ICT provides new opportunities to explore high level cognitive activities such as, autonomy, creativity, problem solving and teamwork. It equally provides with the means to take into account individual needs of students especially, while using web based technology (Appendix 1a).

CHALLENGES OF ICT IN TEACHING AND LEARNING PROCESS IN NIGERIAN UNIVERSITIES

In spite of the accompanying gains and clarion call for full introduction and utilization of ICT facilities in our school system, there are still serious inhibiting factors encountered in the implementation of the policy at institutional and classroom level. Such factors are:

Over the years now, government intention is to provide facilities and necessary infrastructure for the promotion of ICT at all levels of education. This intention has not been met because of some inhibiting factors include inadequate computer trained and certificated teachers in our school system. Absence of trained teachers in computer science to teach students practical aspects of computer skills and non-availability of computer and allied tools in school all put together militate against actual utilization of ICT in our school system. On a serious note ICT has not been fully integrated into the curriculum of primary and secondary school education nation-wide. Not until the National Research Development Council (NRDC) reviews the 4th edition of the National Policy on Education and integrate ICT into the curriculum the problem shall continue to sway again. Most teachers in the school system (primary and secondary) play avoidance techniques in the

utilization approach. They distance themselves from any related computer related activities and training. They also rely on traditional methods of teaching. Such distance may be as a result of fears, ignorance, negative perception or inferiority complex. The teacher factors problem presupposes an urgent need for all employed and practice teachers to brace up with the challenges of ICT and use ICT tools and skills to their advantage. Onuma (2006) remarked that as important as ICT devices are, they should be seen as tools, teachers can use to help students to be more productive and successful in learning. The successful implementation of any curriculum is dependent on the informed and rationale choice the classroom teacher makes about curriculum programmes and materials required for use in school. In 2006, the Equity State Government introduced computer training to all the primary and secondary schools teachers to enhance effective teaching and learning process (UPEB, 2006).

Inadequate funding: Inadequate funding is directly on the part of the government. Low level funding in school is as a result of inadequate budgetary allocation. ICT equipment or accessories, soft and hardware are costly. Investment in ICT educational services is also at a low level. Coupled with low level of budgetary allocation and poverty among Nigerian, to procure ICT tools for private use. Few available computers in higher institutions cannot serve all the students. Secondly, institution use available one supplied.

Management attitudes: The attitudes of various managements in and outside institutions towards the development of ICT related facilities such as the internet and procurement of computers is rather slow in some instances and in others there are no aids or support by the government (Peter, 2007).

Inadequate of internet connectivity: Again there is also low of internet connectivity in Nigeria. To achieve the aim of the National policy on education with regard to students becoming computer literate, ICT should be placed as a project by the government with corresponding funds available to train and retrain teachers on computer usage (Adebayo, 2007).

Energy related problems: Power supply all over the country appears erratic. All ICT tools depend heavily on steady supply of electricity if there are to function effectively. In urban cities, where there are power

supplies, it is irregular and regularly interrupted. Interrupted power supply disrupts actual utilization of ICT services. The negative effect of erratic power supply in Nigeria makes ICT dysfunctional.

Low tele-density: Low Tele-Density is another major problem of ICT utilization in Nigeria. Access to telecommunication tools such as telephone, computer, internet among others still at low ebb. With infusion of Global System for Mobile (GSM) telecommunication, utilization of ICT resources for educational purposes is still low (Abolade, 2005; Onuma, 2006).

Digital divide among university staff: Digital divide is described as discrimination against the ICT usage between countries, cultural, religion, family, rich and poor, urban and rural dwellers, geographical spread, race, gender and vulnerable group (disabled).

Most of the Nigerian universities discriminate against gender. Men are usually sent for workshop training, induction course, seminar on ICT usage. In some universities, the senior staffs are entitled to ICT facilities, while the junior staffs are not given the ICT tools. This may have influence on the teaching-learning process since men would be able to use ICT facilities in dispensing knowledge than women (Appendix 1b).

Box of coloured chalk: In Nigerian universities, teachers presentation in the classroom is often by chalk and talk method. Teachers are seen carrying the box of coloured chalk to the classroom for their lessons.

Today, technology had brought changes from chalk to power point, e-learning and gradually moving towards mobile learning. Implicit in this, is that universities teachers are supposed to move from the box of coloured chalk to e-learning and probably to m-learning [combination of internet, computer and mobile phones] to make teaching less strenuous for teachers and the students (Appendix 1b).

Culture: Cultural Morales or imperialism of different countries determines the use of Information Communication Technology. In Nigeria context, the culture of some zones did not allow teachers to use ICT facilities believing that students could be corrupted and that it could influence their altitudes, norms and values. In order to achieve maximum impact and influence of ICT the culture of the society to which teachers belong have to be adjusted to meet the challenges of knowledge economy age (Appendix 1b).

Appendix 1: Data analysis on the usage and challenges of ict in enhancing teaching and learning in Nigerian Universities

S/N	Questions	Yes		No	
		Frequency	(%)	Frequency	(%)
Section A: Usage of ICT in teaching and learning					
1	Enhances easy delivery of lectures	960	98	20	02
2	Improves knowledge and skills	980	100	00	00
3	As an evaluative tools	853	87	127	13
4	Assist in performing many teaching functions	960	98	20	02
5	Create motivation in learning	872	89	108	11
6	Provides necessary information for teachers and students	970	99	10	01
Section B: Which of the followings are the challenges facing the usage of ICT in your institutions					
1	Teacher factor	657	67	323	33
2	Digital divide among staff	637	65	343	35
3	Box of coloured chalk	882	90	98	10
4	Managerial attitudes	725	74	255	26
5	Culture	686	70	294	30
6	Inadequate funding	940	96	40	04
7	Energy related problem	950	97	30	03
8	Low Tele-Density	774	79	206	21
9	Inadequate internet connectivity	715	73	265	27
10	Visual libraries	735	75	245	25

Sampled universities, 25; Sampled respondents, 1000; No of questionnaire retrieved, 980

CONCLUSION

There is no gain saying that in education sound information system will discourage guessing, rumour or gossip and thereby promotes trust, confidence and supportiveness, saves time, enhances personal confidence of the teachers and encourages him to exhibit good judgment, since the judgment are made based on hard facts and figures.

ICT therefore, in education is an indispensable tool in the modern teaching-learning process; hence its adoption for teachers will go a long way towards the enhancement of teaching and learning process. This is because issues such as good course organisation, collaborative learning and effective class management will be facilitated and enhanced by the use of ICT based technology.

ICT therefore, provides teachers with a structured means for presenting past, current and project information gathered from various source and on a continuous base. It is a system used to collect, process and store, transmit and display information for usage. Therefore teachers should be adequately exposed to the use of ICT because of its efficacy and global focus.

RECOMMENDATIONS

To actualize ICT utilization tools and skills in Nigerian schools the following recommendations were made; Free and compulsory ICT services should form part of students general studies programmes in higher institutions of learning to provide students with practical and functional knowledge of computer, the internet and associated areas of ICT. Basic knowledge of computer should be a pre-requisite condition for award of any degree.

Students at all levels should be provided with basic concept of ICT by the trained teachers. Concepts mapping include computer processing, data processing, computer application storage and computer laboratory among the rest. This will sustain their interest and provided opportunity for independent and individual learning.

All employed teachers in public schools at all levels should undertake mandatory training and retraining of ICT programmes to provide them with practical and functional knowledge of computer, internet and associated areas of ICT with the hope of integrating it with the curriculum and instructional method in teaching and learning. The training should be in form of conferences, seminars and workshops to prepare teachers for information Age and competitiveness of the 21st century.

ICT installation and maintenance of its facilities is cost intensive, therefore government should vote special fund and invest honestly for successful utilization by both students and teachers. Solar energy and wireless technology requiring limited electricity should be an option to consider in the rural areas. There should be a monitoring, inspection and evaluation division at all levels of education that will be responsible, for ensuring the ICT curricula are adhered to, the monies allocated for such purposes are not diverted and ascertain that the right equipment is procured and delivered at the appropriate time.

Recently, the Nigerian government in her desire to explore the super highway of online education jettisoned the idea of satellite university campus initiative in the country. Towards this direction the National Information Technology Agency (NITDA) and Nigeria Universities Commission (NUC) took an action on how information

technology could be spread to tertiary institutions for proper management. Hence, some universities in Nigeria started some visual university programme. This ICT gesture should be spread to all the 3 tiers of education in Nigeria. Information technology therefore, is of paramount importance to all business organisation education inclusive for smooth running of the organisation. Without information technology in organisation, the organisation seems toothless. Therefore, all hands must be on deck towards the computerisation of the tiers of education and towards the globalisation of education and networked educational management. This could only be possible with the provision of essentials such as computer facilities, computer training, appropriate data base and internet. School administrators, teachers and students need to be computer literate so as to be able to apply computer to administrative functions, teaching and learning. To this end, the government and other stakeholders should give priority to training personnel that would train computer end-user towards effective application of computer knowledge to teaching and learning. Earnings from the Value Added Tax (VAT) and Education tax could be used to fund ICT based education.

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