Integrating Information and Communication Technology (ICT) in office Technology and Management: Challenges and Strategies for Sustainability

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Abstract: Information and communication technologies have over the years gained wider acceptance as an educational tool. Today, information and Communication Technology (ICT) are used not only for learning but are also used to aid teaching. This is why the integration of information and communication technology (ICT) in Office Technology and Management is of great importance. Nigeria, being a developing country however; has to contend with myriads of challenges. These challenges include but not limited to: the absence of infrastructural facilities, inadequate or poor funding lack of in-service training and poor condition of service of lecturers and instructors, unstable government policy, lack of standard workshop for practical work and lack of related modern instructional material, high cost of and access to the use of ICT facilities and inadequate technical support staff. This paper therefore; proposes some strategies that can be adopted for upgrading the use of Information and Communication Technology (ICT) in the teaching and learning of Office Technology and Management to include provision of adequate infrastructural facilities, proper funding of ICTs usage in schools, retraining Office Technology and Management academic staff, increased access to technology, provision of adequate technical support staff, and among others.

Keywords: Information and Communication Technology, Office Technology and Management, strategies, sustainability, integrating, challenges.

Introduction

Rouse (2018) opined that Information and Communications Technology (ICT) is an umbrella term that includes any communication device or application, encompassing radio, television, cellular phones, computer and network hardware and software, satellite systems and so on as well as the various services and applications associated with them, such as video conferencing

and distance learning.

Polytechnic education in Nigeria is organized as part of tertiary institutions whose aim is to provide middle-level manpower to man the various sectors of the Nigeria economy. According to the Federal Republic of Nigeria (2004), polytechnics in Nigeria shall maintain a two tier programme of studies, namely; the National Diploma (ND) and the Higher National Diploma (HND) with one year period of industrial experiences; serving as one of the pre-requites for entry into Higher National Diploma Programme.

Office Technology and Management is one of the programmes in polytechnics education in Nigeria, whose curriculum was reformed and handed over to the various polytechnics for implementation by the National Supervisory body of Polytechnics - the National Board for Technical Education (NBTE) in 2004.

Office Technology and Management Curriculum was designed to replace the Secretarial Studies curriculum which was last reviewed in 1989. Onojetah (2012) asserted that the NBTE in reviewing the curriculum in 2004 enshrined many new courses including Information and Communication Technology (ICT) courses in the present curriculum.

According to the curriculum and course specification by NBTE (2004), Office Technology and Management programme is designed to equip students with the competencies required to work in a modern office environment. The main objectives of OTM programme are the: Acquisition of secretarial skills, Acquisition of general education and laying foundation for advance studies.

The curriculum emphasized that at the completion of the programme, graduates of ND/HND OTM should fit into any computerized office and perform professionally the functions of the secretary which among others include; reciting the functions of the office to the whole organization, attending meetings, and providing information as may be required, making accurate records of proceedings, filing and retrieving information, taking appropriate actions independently when faced with challenging secretarial office problem that are conducive and co-exist with the work group.

The newly introduced courses in OTM are as follows:

In ND programme the new courses include:

- OTM 113 - Information and Communication Technology.
- OTM 123 - Information and Communication Technology.
- OTM 124 - Modern Office Technology.
- OTM 125 - Career Development.
- OTM 221 - Peoples' Communication skills.
- OTM 222 - Records Management.
- OTM 213 - Desktop Publishing.
- OTM223 - Web Page Design.

In HND Programme, the new courses include:

- OTM 312 Business Communication
- OTM 313 - ICT Office Application 1
- OTM 322 - ICT Office Application 2
- OTM 325 - Professional Career Development

- OTM 414 - Oral Communication Skills.
- OTM 413 - Oral Communication Skills
- OTM 415 - Advanced Desktop Publishing
- OTM 424 - Professional Ethnics and Social Responsibilities.
- OTM 425 - Advanced web Page Design

ICT Instructional Facilities in Office Technology and Management
Information and Communication Technology instructional facilities in OTM include: Computers, Internet, E-mail services, Teleprocessing, Telephone, Overhead projectors and Dial access systems, interactive white board and among others.

Computer
The over-increasing dependency of education upon the computer seems inevitable because it helps to meet the need of students for greater individualization of instruction and greater relevance of subject matter. Computer-assisted instruction consists of programmed instructional/sequence presented with the computer directly usually at a terminal. Ugwuanyi and Ezein Onwukwe and Aliche (2012) asserted that using-time sharing method, a single computer can provide simultaneous instructions for a large group of students, each working independently and in his own sequence at a teleprinter or other terminal connected to the computer. The computer processes the students in rotation, but with such great speed that each student feels that he/she has the machines and gives performance summaries to teachers and/or other school personnel. According to Wanous in Utoware and Edionwe (2012), the teacher can utilize the data to prescribe various learning activities for the individual student and for group activities as well.`

Internet
The internet is global system of interconnected computer networks that use the internet protocol suite to link devices worldwide. Onwukwe and Aliche (2012) asserted that using the internet, teachers can get virtually any type of information that they could find no other way through the World Wide Web (WWW). The internet provides access to more information than a librarian could dream of, all of which they can load into their own computers. OTM lecturers can use the web to visit museums, libraries, science resources, journals, magazines, book reviews, business statistics, geological maps, music, speeches of Heads of States, etc. The picture text, data video and audio files can be copied and saved for their own use (subject to copyright). The only requirement for one to access the internet is have a computer which will enable him/her link up with another computer.

Teleprocessing
Moses (2017) said that teleprocessing refers to a form of online processing in which users at a remote workstation are able to access a central computer to store, retrieve or process data. With this facility institution organizing distance lectures can enter a query at a workstation causing the computer to search its files.

Telephones
Telephones connected to the internet could be used to facilitate smooth running of distance education programmes for instance in a case where the lecturer needs to inform his students of the change in course on-line, the telephone could be very useful (Moses, 2017).

Overhead Projectors
Moses (2017) asserted that this is one of the recent innovations in classroom that enables lecturers to display charts, pictures, words, and so on. According to the author the lecturers can use it effectively in place of the board.

Dial Access System
Rouse (2018) stated that the major objective of the dial access system is to provide direct and individual access to the entire collection of audio material at whatever time is most appropriate to the learning process. Through the use of dial system, a teacher or a student has the capability to request any available programme, either audio or video.

Electronic Mail (E-mail) Services
The e-mail is a computer network application in which messages are sent or received through various means by computer on the network. Each user of the e-mail has a mail box address in which messages are received and stored in the computer. This implies that lecturers can send their lectures or messages to their students in distant learning location via e-mail (Onwukwe and Aliche 2012).

Closed-Circuit TV via Microwave cable Satellite TV
Utoware and Edionwe (2012) noted that closed-circuit system using microwave cable picking of standard band TV, or a central dissemination system normally service classroom monitors or similar reception areas elsewhere. The author further said that many school systems in the developed countries use this method to mass-deliver instructional units for class viewing. The transmission is generally made from the central delivery system through wavelengths unobtainable on home sets. If integrated in OTM and wisely and imaginatively used closed-circuit TV can play a major role in broadening and enriching the education of students.

Visual CDs/Video CDs/DVDs
These are used with a television or computer set for instructional purpose in the classroom. Onwukwe and Aliche (2012) said that there are very many educational video CDs/DVDs in the market today. These can be purchased or borrowed from the many video clubs around for instructional purposes.

Mobile learning
In recent years, development in mobile computing and communication led to the proliferation of mobile phones, tablet computers, smartphones, and networks. MoleNet in Rouse (2018) defined mobile learning as the exploitation of ubiquitous handled technologies, together with wireless and mobile phone networks to facilitate, support, enhance and extend the reach of teaching and learning. Mobile learning can be adapted in OTM classes since aside from the fact that it helps in the enhancement of students' learning; it also helps teachers to easily keep track of the students' progress. The most commonly expected advantages from adopting mobile technology in education include their potential to be engaging for students, to enable interactive learning, and to support personalization of instruction to meet the needs of different students.

Interactive White Board
An interactive white board (IWB) is a large interactive display that is connected to a computer. A projector projects the computer's desktop on the board's surface where users control the

computer using a pen, fingers, stylus or other device. The board is typically mounted to a wall or floor stand. Davis in Onwukwe, Lekwa and Aliche (2013) asserted that in some classrooms in advanced countries, interactive whiteboards have replaced traditional or flipcharts, or video/media systems such as DVD player and TV combination. He stated that even where traditional boards are used, the IWB often supplements them by connecting to the school network digital video distribution system.

Challenges of ICTs in Office Technology and Management
Significance challenges that are facing the integration of ICTs in OTM include but not limited to the following:

Inadequate Funding
Integrating ICTs in OTM is capital intensive. For example, fund is required to pay the personnel at all levels, purchase of needed consumables, hardware and software, training and retraining of personnel, provision of infrastructure, provision and maintenance of equipment and machinery. Onojetah (2012), lamented that it is unfortunate that not much of funding is available for education of which OTM is inclusive.

Poor Infrastructural Support
Computer equipment was made to function with other infrastructure such as electricity under controlled conditions. In a country where electricity supply is epileptic in nature makes it difficult to depend on the nation's ICT infrastructure. In Nigeria, many electronics equipment and computer shave been damaged, due to power fluctuation. Ekpeyong, Ogbeide and Robinsion (2012) asserted that when electricity supply is not stable and constant, it is difficult to keep high-tech equipment such as computers functioning especially under extreme weather conditions.

Therefore, in educational institutions before the integration of ICT in business education programme, policy makers and planners have to carefully consider the following:

- Availability of appropriate rooms and buildings to house the technology.
- Availability of adequate supply of electricity, and safety/security.
- Access to computers/internet connectivity.

Lack of Incentive for Teachers
When it comes to practically applying ICT, many teachers may not know how to deal with it and sometimes they are reluctant to accept new technologies in their classrooms. Thus, policy makers and administrators need to provide teachers with adequate incentives to encourage them in upgrading their ICT skills and usage. Bailey and Powell in Inije, (2012), averred that getting teacher buy in is important when technology is involved, especially for those who are not convinced technology is worth the time and effort. They further said that Research and best teaching practices consistently show that without effective staff development and continuous support, technology integration will never be satisfactorily achieved.

Inadequate Technical Support/Poor Maintenance Culture
Technical support specialists are essential for the integration of ICT into OTM. The general services provided by them are in areas of installation, maintenance, network administration and network security. Okebukola in Ekpeyong, Oagbeide and Robinsion (2012) lamented that there is acute shortage of trained personnel in application software, operating systems, network

administration and technicians to service and repair computer facilities. Tinio in Inije (2012), said that without on-site technical support, much time and money may be lost due to technical breakdown. Apart from the fact that there are inadequate skilled and trained technicians to service and repairer computer facilities, there is poor maintenance culture, where many computers are abandoned because of poor maintenance culture.

Lack of Access to Technology
Inije (2012) asserted that Information and Communication Technology tools are very expensive to acquire and that this may greatly reduce the number of schools, teachers and students that can have access to them. In some schools where ICT facilities are available the problem of access may also arise if teachers and students cannot have easy access to them.

Strategies for sustainability of ICT in business education
To tackle these challenges identified above the following strategies should be adopted.

Proper Funding of ICTs Usage in School
Okebukola in Ekpeyong, Oagbeide and Robinson (2012) lamented that funding is still a major obstacle in ICT usage in OTM. The authors opined that funding for technology should be addressed seriously at the beginning stages of technology planning and that consideration should be given not only to the initial cost but also a means of providing varied and constant sources of revenue that will continue to power ICT usage into the future. Thus, there should be adequate and sustainable funding in a holistic manner.

Provision of Adequate Infrastructural facilities
The problem of infrastructure has been a major one hence adequate, functional and sustainable provision and maintenance of infrastructural facilities become of urgent importance. In particular there should be regular power supply of electricity not only in the classroom but also in the homes or where students and OTM lecturers and other personnel involved in Office Technology and Management programme reside to enhance administration, learning/teaching and research in OTM.

There is also a compelling need to equip OTM departments with every necessary ICT facility. The provision of these equipment is not something that will be left for the government alone considering the merger allocation to education in government budget. Other stakeholders: the private sectors, NGOs philanthropists, and so on should also be involved.

Provision of Adequate Technical Support Staff
Another strategy to integrate ICTs in OTM is to provide fulltime technical support team for available technology. According to Baily and Powell in Inije (2012), most teachers have had horror stories about equipment failure, software complexity, data loss, embarrassment and frustration in the course of using ICTs. Technical assistants should be on ground to solve such problems. The author explained that technical assistants are mainly people that are skilled in the maintenance and repairs of the ICT equipment and that these people will greatly facilitate the process of teaching and learning by providing fast, efficient, and on the sport repairs opportunities during machine breakdown and other such machine related problems, that affect the teaching and learning process.

Access to Technology
Inije (2012) advised that where computers and other ICT tools are available in the school, they should be located in such a way that students can have unlimited access to them and said that another strategy to solve the problem of access is to create an ICT library for OTM students. It is important that students have easy access to ICT tools where they are available. ICT equipment that is purchased to facilitate teaching/learning should not be located in remote areas that will hinder easy access by both teachers and students.

Offering Incentives for Teachers to Use Technology
Adu and Olatundun (2013), averred that incentives of different types including financial incentives should be given to OTM lecturers to encourage them to devote some time for ICT literacy and competency. Mini grants, that is, minimum amount of money to be used to purchase ICT equipment offered to teachers without requiring repayments, can also be used to encourage ICT usage in an innovative way in the classroom.

Coaching Teachers at Different Skills Levels
Apart from formal professional development courses for OTM that may be organized by the institutions, individual coaching, peer tutoring, collaboration, networking and other private arrangement should be undertaken by teachers to upgrade their skills and competence in using ICT in the classroom. Inije (2012), asserted that the Information and Communication Technology (ICT) equipment available in the market today will be obsolete in the near future hence; teachers of OTM will need to keep abreast with relevant new technology in the market, so as to upgrade their knowledge and skills in ICT usage in the classroom and beyond. This of course can be achieved through personal effort by undertaking some form of executive programmes or employing a personal coach knowledgeable in new technology to upgrade teachers' ICT skills and knowledge.

Plan a training programme for teachers
Okoro (2017) asserted that teachers as the nation builders need to be versatile and conversant with the latest technology. Therefore constant training programme for teachers will promote the sense of professionalism in them. The author further said that in planning for an ICT training programme for teachers, the first step is motivating them to learn new knowledge and gaining new skills and competencies. He advised that to acquire new knowledge and skills in ICT, the school should: Set up a team which consists of teachers with varying skills and competencies, Acquire new inputs from other experts such as teachers from other schools, Implement a mentoring system to help teachers with minimum skills in ICT Provide opportunities for teachers to pursue ICT training at any teacher's training colleges or universities which offer in-service short courses within one to three months. Evaluating and supervising ICT-using teacher in teaching and learning are significant roles that have to be played by the school leaders. These will ensure the skills and competencies of the teachers are met as have been targeted in the school's documented policy.

Curriculum Review
Inije (2012), averred that there is need for tertiary institutions' running OTM programme to regularly review their curriculum and ensure that their curriculum is designed with relevant ICT courses so that graduate of the programme would not have to seek another training in order to fit into jobs for which he/she had already been trained.

Using Appropriate Software

Adu and Olatundun (2013), pointed out that one barrier to technology integration is the difficulty many teachers face in identifying and using appropriate software for instruction. To reduce this problem, software selection should involve a team of teachers and experts so as to identify the relevant software for their lessons. The computer which is one of the major components of ICT depends on appropriate software for maximum results. A teacher may not be familiar with all available software. It is thus, necessary to organize seminars and workshops where experts will; present and explain the appropriate software that will enhance the teaching/learning of OTM.

Conclusion

Information and communication technologies (ICTs) have become commonplace entities in all aspects of life. Across the past twenty years the use of ICT has fundamentally changed the practices and procedures of nearly all forms of endeavor within business and governance. Education is a very socially oriented activity and quality education has traditionally been associated with strong teachers having high degrees of personal contact with learners. Many important changes have occurred in the last few years in the education systems, which will require teachers and school leaders to upgrade and refine their technology skills. Some of these changes in government policies related to the use of information communication and technology (ICT) in schools while others are due to developments in state of art pedagogical practices. As a result of this latest development there is need to integrate ICTs into education systems, OTM inclusive. However in integrating ICTs in OTM some challenges are identified and strategies suggested and discussed for its sustainability.

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