

# Impediments to the Adoption of Information and Communication Technology (ICT) in Teacher Preparation Programme

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## Abstract

Teacher education programme prepares young undergraduates for a teaching career. Advancement in Information and Communication Technology (ICT) is rapidly transforming work culture and teaching and learning cannot escape the fact that modern classroom must provide technology based learning. This is more so in the preparation of teachers who are expected to mount today's classrooms in a world that is technological driven. Common practice in teacher preparation is the traditional methods that heavily depend on teacher-talk-chalk technology. This paper examines the major impediments of ICT adoption in the training of pre-service teachers. The paper identifies accessibility to ICT, teachers' attitude, accessible infrastructure as major impediments. Since ICT adoption is a complex and expensive venture, institutional corroboration amongst various schools and government commitment to funding ICT should be pursued among others.

**Keywords:** teacher preparation; ICT; adoption and impediments

## 1. Introduction

Information and Communication Technology (ICT) has been defined as “tools that use technology to communicate, exchange and share information” (United Nation Development Programme, UNDP, 2003:1). Application of ICT in research and development in all human facets has become inevitable in an era aptly described as information age. Advancement in information technology and the wide spread of digital information resources and computer usage is rapidly transforming work culture and the school curriculum cannot be insulated from the fact that today’s classroom must provide technology based learning (Angers & Machtmas, 2005).

Essentially, ICTs are important mediating process and essential to pedagogy as it can facilitate interaction between the various education practitioners (Lopez-Pino Caqueta & Delara, 2011). Studies have shown that ICTs improve teaching and learning and is very essential in capacity building as it strengthens the capabilities of teachers in lesson preparation and delivery and also the capabilities of the learners (Apawu, 2011, Wodi, 2008). One of the great revolution in education in the US and elsewhere has been the tremendous use of educational technology in advancing the productivity of education and extending educational services to remote area, making learning more powerful and more lasting and providing instruction on a more scientific basis (Ahluwalia& Davis, 2008).

Generally, Information and Communication Technology has accelerated the emergence to an information society and knowledge economy (Kozman, 2005) and has altered and will continue to influences teaching and learning contexts across all tiers of education (Spender, 2002; Salmon & Jones, 2004). Brandenburg and Dudt (1998) state that ICT in education serves as a knowledge tool and a skill base for students employment preparation. UNDP (2001) declares that ICT is indispensable in the development of the developing world and encourages every country especially poor countries to include ICTs in their national development policy agenda (Ojo, 2004). According to UNDP, “the new terrain requires shifts in public policy-national and goals to harness today’s technological transformation as tool for human development.

Teacher Education Programme in the University of Calabar prepares young undergraduates for teaching careers. These pre-service teachers are expected to mount our classroom and not only teach but bring into the classroom the requisite knowledge and skills in a classroom that is increasingly getting complex with a high demand on the application of modern techniques in teaching. The indispensability of ICT in development poses a great challenge to the school curriculum. Kumer Che-Rose & D’Silva et al (2008) suggest that preparing teachers to understand, use and adopt ICT must become integral skills in every teacher’s professional development. Similarly Baylor and Ritchie (2002) observe that regardless of the amount of technology and its sophistication, it will not be used unless practitioners have the skills, knowledge and attitudes necessary to infuse it into the curriculum.

Despite the recognition of the importance of ICTS in enhancing the quality and effectiveness of the teaching and learning process and its application in research and

development, teacher education programme in the Faculty of Education, University of Calabar has little evidence to show that it applies ICTs in the preparation of pre-service teachers. The basic question is why is ICT, despite its recognized importance, not applied across teaching especially in the preparation of pre- service teachers?

To answer this question, the following would be considered:

1. Are ICTs tool available in the faculty?
2. Are ICTs used in teaching and learning situation|?
3. What are the impediments of adopting ICTs in preparing pre-service teachers?

## **2. Availability of ICTs Tools**

ICTs are a wide range of infrastructures, instruments, object process, protocols and devices (Cubitt, 2005). According to Cubitt, ICT should include:

- Computers and wireless devices
- Peripherals and storage instruments
- Software application
- Network infrastructures
- Legal and regulatory framework

ICT tools should include hardware such as the telephone facsimiles, video, television, radio, computer-based or computer mediated modes such as email, chat and news group, list-serves, CD-ROMs as well as software application

From available physical facilities within the faculty what one can visibly see are computers in offices but without the wireless devices. In other words, while computer can be seen in most departmental general and administrative offices, these computers serve the same purpose just a little but beyond the type-writers.

The computers are not networked to the main network infrastructures provided by the institution. Peripherals and storage instruments such as telephone, television are very few but again they are not connected to list-servers or computer mediated modes for chats, group discussion, email etc. Cubit (2005) suggests a strong relationship of the various components and accordingly these components must be articulated into a network for the purpose of communicating, exchanging and sharing information.

## **3. ICT in Teaching and Learning**

Beetham and Sharpe (2007) showed that application of ICT especially thee-learning or mobile model of learning can be a vital tool and resource for learners to achieve better learning outcomes. The use of ICTs in teaching and learning in the faculty of education is

very dismal. ICTs are not employed in the area of instruction - teaching, group discussion, examination, chats etc . Studies found that the school environment have a large effect upon the degree to which teachers embrace technology. If school environment are technology rich then teachers are more apt to use technology. The school must provide the necessary technology friendly atmosphere. Understanding and mastering basic skills and concepts in Information and Communication Technology (ICT) is considered as one of the core component of modern Technologies and their applications go through some process until it becomes more of a culture. Mere acquisitions of technologies without the proper preparation are almost always unsustainable. The 6-3-3-4 system of education in Nigeria is a clear example.

Essentially therefore, ICT application should follow these approaches

1. Awareness of the use and benefits
2. Creating the enabling environment for acquisition- space, training, maintenance
3. Actual purchase and acquisition of equipment
4. Training/use of the wares at minimal level e.g. registration
5. Diffusion of use into other areas – submission of grades, classroom teaching etc.
6. Adoption of ICT as a culture – application of ICT across the school practices especially in instructional delivery.
7. Technical review, further training, upgrading of software

The faculty is still at the preliminary stage of acquisition of computing equipment and training.

The learning environment for ICT application for most departments is tragically uncondusive. For the proper operation of ICT, basic facilities are required. Electricity, space, lighting, internet access, air-conditioning and even furniture, printers resources such as computers, video equipment, digital microscopes, and various types of hard and software, videos, audio tapes etc. that are also essential are not in place.

#### **4. What are the Impediments of ICTs Adoption in Teacher Preparation Programme**

From the practitioners' perspective, the major impediments to the adoption or application of ICTs in teaching preparation programme include the following:

1. Accessibility of ICTs tools
2. Lack of technological support
3. Inadequate technology training
4. Lack of official policies that mandate the use of ICT in regular teaching/learning

In a desperate effort to catch-up with the global Information grip the Federal Government

provided a large number of VSAT operations for internet connectivity services and instituted the National Telecommunications Policy in 2000, National Information Technology Policy in 2001 and established the National Information Development Agency in 2001. All these efforts have not transformed ICTs into the daily routine of the education enterprise. There still exist a dire lack of networkable computers and accessibility to ICTs tools in the faculty. While access of trainers to computer has improved through the Self-Acquisition Model, unless these computers are connected to other ICTs tools, they cannot serve the desire purpose. Charp and Sylvia (2003) note that learning that incorporates technology within the students' learning process and the teachers' delivery process is more effective when compared to the traditional classroom of textbooks, chalk and the board.

The relative costs of networking is the major impediments to accessibility of the equipment and provision of the requisite ICTs infrastructure as a huge sum of money will be required annually for the importation of computer hardware and other ICTs tools. The sophistication in operation of most IT hardware does also require investment in training and capacity building. The huge investment required cannot be provided by the faculty. For any technology implementation plan to be successful, it must allocate sufficient time and resources for a focused staff development programmes (Fons&Whyler, 1995). Atkins and Vasu (2000) content that many teachers attended college before computers were prevalent in the classroom and therefore have no models of effective technology integration in their content areas. It is imperative to make it compulsory for all trainers to have a certain level of ICT proficiency. The International Society for Technology in Education (ISTE) recommends that teachers not only demonstrate knowledge, skills and understanding of technology, but in addition that need to demonstrate continued growth in technology knowledge and skills. According to Weaver (2002) any successful ICT model requires the coordination and cooperation of the entire organization - from its acquisition to implementation and evaluation. He emphasized the need to solicit and incorporate the input of all concerned, from teachers, to the IT experts and technicians, policy makers, curriculum developer as well as learners. (Islam, Chittithaworn, Rozali & Liang, 2010)

The trainers of pre-services teachers do not engage in deliberate application of ICTS in teaching and learning and this can affect the overall application of ICTs in classroom of the trainee since *ab initio* they have no foundation during their training on such application. Teachers are necessarily be effective agents by which the use of technology in the classroom can be revolutionized. Past history has shown many promising education reform (6-3-3-4 for example) fail due to the negligence of the end-users attitudes and needs. Kagima, (1998) summits that successful implementation of educational technologies depends largely on educators, who eventually determine how they are used. Their attitudes toward technology determine implementation of any would-be-technology and its end application.

Teachers attitudes toward computer have been found to bear a direct effect on their classroom use of computers (Isleem, 2003, Abas 1995, Almusalam, 2001; Woodrow, 1987). However, the adoption of ICT into education does not lies in the acquisition

computers; there must be focus on the end-users ability to apply ICT in teaching and learning.

Studies show that unless teachers' have identified computer access and computer training and computer competence they will not use them in their practice (Watson, 1998, Woodrow, 1992)

## **5. Conclusion**

If teachers have no personal history of technology use, then they are more less likely to integrate that technology into daily lessons (Friedrichsen, Dena & Zembal-Saul, 2001). Training must move from the technical to the instructional aspects of technology use. Most teachers (trainer) know little to nothing on how to incorporate technology into lessons and therefore pre-service teachers are not aware/have no skill about how to incorporate technology into lessons.

Easy access to scholarly communication is a very critical input for quality research outcomes. Scholarly communications in electronic formats are now in vogue and since most of our institution lack fund to equip the library with scholarly Journals, electronic formats is a cheaper option (Agarwal, 2009). Institution must begin to generate and promote Open Archives of research publications. This will again require intensive training programme for quality software production.

## **6. Recommendations**

- i. If a technology programme is to succeed, there must be clear school-wide vision of technology mediated education especially for those responsible for training teachers.
- ii. There is the urgent need to network with the necessary ICT accessories in all teacher education preparation programmes and give compulsory training for teacher trainers to integrate ICT into their School curriculum. Ludlow (2001) contends that educators need to acquire competencies for implementing technology into lessons and to ensure that hardware/software facilitate rather than hinder teaching and learning.
- iii. Many of the training programmes are isolated from everyday teaching/classroom activities as many teachers are left to find ways to incorporate the technology into their teaching (Sahl&Windschiti, 2002). There must be a shift away from this to a deliberate effort of adoption, adaption and utilization of technology in pedagogy.
- iv. Easy access to scholarly communication is seen as a critical input for quality research outcomes. Our Institution has begun to promote Open Archiving (AD). This can stimulate the needed desire to acquire and adopt ICT. Institutional support should be reinforced.
- v. ICTs project is a capital intensive venture. There should be collaborations amongst institution to ease their access to ICT and ICTs tools.

vi. Institutions in developed economy can mentor institutions in developing countries in ICT acquisition and adoption through a model of staff exchange on ICT applications for teaching and learning as well as donation of hard/soft models of computers with preload lesson plan and various classroom interactions to schools in developing countries.

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