

Impact of Information and Communication Technology on Teaching and Learning Ability of Education Students in Universities in Edo State, Nigeria

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Abstract

This study investigated the availability and utilization of Information and Communication Technology (ICT) facilities by Teacher Educators for effective teaching and learning in Nigerian Universities, using descriptive survey research design. The study population consisted of all (128) Teacher Educators from the two public universities in Edo State of Nigeria. Out of 128 Teacher Educators, 100 were selected using random sampling technique. The instrument used for data collection was a questionnaire. The data collected were analyzed using simple percentage and chi-square. The findings revealed that ICT facilities which serve as a major contributor to effective teaching and learning in teacher education programmes were not available. The study recommends among others strategies for its (ICT) maximum utilization; and that ICT facilities should be made available for effective teaching and learning of teacher education programmes.

Keywords: Information and communication technology, teaching and learning ability

Introduction

The national policy on Information Technology (Federal Republic of Nigeria, 2004) envisaged the integration of Information and Communication Technology (ICT) at all levels of educational institutions. This was to play a leading role in the actualization of the goals of education as stated in the national policy on education. The goals which include the contribution to national development through high manpower training, development of individual intellectual capability in order to understand their immediate environment, provision of opportunities for the acquisition of physical and intellectual skills for individuals to be self-reliant and useful members of the society to which they belong.

The ICT policy identified ICT as the bedrock of national survival and development in a rapidly changing global environment. 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. In the last few decades, ICT has increasingly played a critical role in all fields of human endeavours. It is being used globally to translate ideas into realizable goals and develop same into concrete achievement. ICT is readily useful in the areas of agriculture, engineering, medicine, law, architecture, aviation, commerce, insurance, banking and finance as well as maritime activities. ICT has the potential to contribute to substantial improvements in the educational system (Moursund, 2005). However to date, relatively little of this potential has been achieved in spite of ICT having significant impact on traditional school system. They have provided innovation for teaching and learning, and have engendered advances in research about how people learn, thereby bringing about rethinking the structure of education (Lopez, 2003). It is also widely acknowledged that ICT can be used to improve the quality of teaching and learning in the school system (Yusuf, 2000). The prevalence and rapid development of ICT have transformed human society from the information age to the knowledge age (Galbreath, 2000). In fact, ICT is becoming a natural part of man's daily life. Thus its use in education is becoming a necessity. Moreover, the pace of change of ICT field currently exceeds the pace of progress of making effective use of ICT in education.

There is a lot of transformation through ICT. There is an international consensus on the importance of intellectual input in creating value, underlining the need for investment in education and skills in general with a special focus on ICT skills and research development. ICT has changed the face of modern researches, requiring research organizations to be linked to each other through advanced network that is connected to the rest of the world. ICT provides resources and services to support the education research and public services missions to universities. ICT also enhances the development and implementation of policies and procedures necessary to ensure the effective, secured and appropriate use of universities information resources and services.

ICT provides a lot of services for students including distance education programmes, inexpensive printing, cell phone plans, internet connection, free dial-up, technology equipment, rentals classroom media stations, etc. Lecturers and students get relevant materials needed through the Internet. Such quality materials are used in equipping the students and upgrading their knowledge in their field of study. Moursund (2005) stated that ICT brings some very powerful aids to translating theory into practice. Two of these aids are computer-assisted learning and distance education. These days, computers with Internet connectivity have become common household items. Students often have access to:

pure educational, designed specifically to provide instruction to help the user learn;

communication tools and reference materials including e-mail, web, encyclopaedia, books, and other reference materials;

pure entertainment, that is, games that are not designed to be educational;

tools such as word processor, graphics software, e.t.c.

Cellular phones, household computer games and toys, television, CD players and recorders, video tape players and recorders, are now commonplace. When students grow up in an ICT environment, they may gain many hours of experience using ICT facilities. ICT is an example of a technology that is a powerful change agent. In the view of Moursund (2005), ICT is a mind tool. Butcher (2003) & Ofojebe (2006) in Okeh & Opone (2007) viewed ICT as electronic technology for collecting, storing, processing (editing) and communicating (passing on of) information in various forms. It is an applied

technology of Science and Technology for effective and efficient generation, storage, organization, protection and dissemination of information (Adjaiho, 2006 in Okeh & Opone, 2007). It is evident that ICT incorporates and extends some of the power of reading, writing and arithmetic. It facilitates the automation of many mental activities. ICT has proven to be a valuable aid to solve problems and accomplishing task in education, business, industry, science and many other human endeavours.

The Science Of Teaching and Learning (SOTL) have made great progress in recent times. Braisford (1995) in Bamigboye, Aderibigbe & Buraimo (2007) described four important components of SOTL to include: Constructivism, Situated Learning, Motivation, and Transfer of Learning. Each of these is important to all teachers and students at all levels and in all academic discipline.

Today, ICT provides knowledge based system that includes knowledge acquisition, knowledge incubation, knowledge amplification and knowledge dissemination. It is evident that information is a key resource which permeates teaching, learning, research and publishing. To this end, Robinson (1991) in Okeh & Opone (2007) stated that the use of new information technology can serve three main functions in the national educational growth. These are to:

- a. deliver all or part of the learning experiences to learners;
- b. supplement and extend content provided in different forms other than printed (hard copy); and
- c. 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.

Other ways in which ICT can be used in education as stated by Ikelegbe (2006) in Okeh & Opone (2007) 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' 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. Makin 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.

ICT is now a global phenomenon. It has been embraced all over the world due to its importance. Governments all over the world are harnessing the rich potentials of ICT and are using ICT as a tool for educational developments, economic recovery and wealth creation (Okonta, 2006). It is very useful in tackling the ills and problems facing the educational system. Today, no nation can attain its height educationally, economically and socially without ICT. However, it is uncertain whether the two public universities in Edo State of Nigeria are utilizing ICT effectively to enhance teaching and learning ability of Education Students.

Purpose of the Study

The purpose of this study was to investigate the availability and effectiveness of utilization of ICT facilities in improving the quality of teaching and students' learning ability of Teacher Education programmes in Universities in Edo State of Nigeria. Specifically this study was designed to find out if ICT facilities are:

1. available for teaching and learning in teacher education programmes in Universities in Edo State of Nigeria.
2. adequately utilized for teaching and learning in teacher education programmes in Universities in Edo State of Nigeria.

Research Questions

1. What ICT facilities are available in the institutions for teaching and learning of teacher education programmes in Universities in Edo State of Nigeria?
2. Are ICT facilities adequately utilized in the teaching of teacher education programmes in Universities in Edo State of Nigeria?

Method

The design for this study is a descriptive survey on the Impact of Information and Communication Technology on Teaching and Learning Ability of Education Students in Nigerian Universities.

The study population consisted of all (128) Teacher Educators from the two public universities in Edo State of Nigeria. These are the University of Benin, Benin City and Ambrose Alli University, Ekpoma. In each University, a list of teacher educators was obtained from the Dean's office. Fifty teacher educators were randomly selected using the simple balloting technique from each university, yielding a total of 100 teacher educators that were used for the study. Of this number, 28 were Professors/Associate Professors; 39 were Senior Lecturers, 12 were Lecturer I; 8 were Lecturer II and 13 were Assistant Lecturers.

The instrument used to elicit information for this study was titled: "Availability and Utilization of Information and Communication Technology Facilities for Teaching/Learning of Teacher Education Programmes Questionnaire (AUICTFTLTEPQ)". It consisted of two sections. Section A was on the bio-data of the respondents, while Section B addressed the research questions with a four point scale which enabled the respondents to score their perception. The respondents made judgments upon the statements by ticking (X) in any of these scales: Strongly Agree (SA) – 4; Agree (A) – 3; Disagree (D) – 2, and Strongly Disagree (SD) – 1.

Two senior academic staff in Teacher Education and two computer experts in Ambrose Alli University and University of Benin read through the instrument, to ensure content validity. Their observations and corrections were duly effected. The split-half method using the Pearson 'r' was used to obtain a reliability coefficient of 0.82. The researchers personally administered and retrieved the questionnaires from the teacher educators. All the 100 questionnaires were received which formed a return rate of 100%.

In analyzing the data, simple percentage and chi-square were used.

Findings

Research Question 1: What ICT facilities are available in the institutions for teaching and learning of teacher education programmes in Universities in Edo State of Nigeria?

Table 1: Availability of ICT Facilities in Nigerian Universities

S/N	Item	Available		Not Available		Total No. and %	
		Frequency	%	Frequency	%	Frequency	%
1	Computer	10	10	90	0	100	100
2.	On-line Electronic Library	-	-	-	-	-	-
3.	Internet	3	3	97	97	100	100

	facilities in the offices						
4.	Telephone	100	100	-	-	100	100
5.	Video Recorder	4	4	96	96	100	100
6.	Multimedia Projector	2	2	98	98	100	100
7.	CD MP3	-	-	-	-	-	-
8.	Television	5	5	95	95	100	100

Table 1 shows the percentage of ICT facilities available for teaching/learning of teacher education programmes in public Universities in Edo State of Nigeria. It was revealed that only telephone facilities were adequately available and that other ICT facilities needed for the teaching/learning of teacher education programmes in public Universities in Edo State of Nigeria were not available.

Research Question 2: Are ICT facilities adequately utilized in the teaching of teacher education programmes in Universities in Edo State of Nigeria?

Table 2: Use of ICT facilities for teaching

Use of ICT	Frequency	%
Seldomly	18	18
Often	29	29
Very Often	53	53
Total	100	100

In response to research question 2, table 2 shows that most of the teacher educators make use of ICT facilities in the course of discharging their duties. 18 per cent of the teacher educators Seldomly used ICT facilities, 29 per cent often made use of ICT facilities while 53 percent used ICT regularly.

Table 3: Materials used in developing lecture notes

Materials	Frequency	%
Previous notes	6	6
Textbooks	20	20
Journals	22	22
Materials from the Internet	52	52
Total	100	100

In response to research question 2, table 3 reveals that majority of the lecturers used materials from the Internet. 52 % of the teacher educators used the Internet to develop and build the notes given to their students.

Table 4: Chi-square ratings of respondents on their Perception on the effects of using ICT facilities to teach

S/N	Items	χ^2	P
1.	Effective utilization of ICT facilities improves students' performance.	30.20	P<.05

2.	The use of ICT facilities for teaching and learning give better understanding to education students.	50.10	P<.05
3.	Effective teaching will improve if all teacher educators have access to Internet facilities in their offices.	38.30	P<.05
4.	Teaching is very interesting when performed with any ICT equipment such as laptops and power point projector.	45.70	P<.05
5.	The practical approach of ICT in teaching and learning increases students' learning/achievement.	40.80	P<.05
6.	ICT gives room for easy access to materials needed by students.	24.60	P<.05
7.	ICT facilities provide all the materials needed for the students at the right time.	38.70	P<.05
8.	Most of the ICT facilities are available in my institution.	38.30	P<.05
9.	The materials retrieved from the Internet are adequate enough to impact good knowledge to students.	27.47	P<.05
10.	ICT facilities are adequately available in my institution.	50.10	P<.05
11.	ICT facilities are not adequately used because no standard ICT centre	44.70	P<.05
12.	There are well equipped ICT centres for teaching/learning of teacher education programmes.	21.50	P<.05
13.	The availability of ICT facilities will encourage the students to participate well in the programme	67.80	P<.05
14.	Teacher educators often neglect the use of ICT facilities in teaching because students don't understand when using them	38.70	P<.05
15.	The institution authority does not cooperate with teacher educators in the supply and use of ICT facilities.	48.10	P<.05

In response to research question 2, table 4 reveals that all the respondents rated all the items as agreed, with chi-square ranging from 21.50 to 67.80. This table shows that the chi-square (x^2) calculated are significant at 5% level. In other words, all the respondents agreed that ICT facilities help the students in learning fast and also boost their performance.

Discussion of Findings

Table 1 shows that major ICT facilities were not available. This is in line with the findings of Yusuf (2005) who reported that challenges facing the application of ICT in teaching and learning were those related to limited infrastructures such as non existence of Internet connectivity, computers and poor power supply. The findings of this study is also supported by that of Ibiam (2006) in Okeh & Opone (2007), who reported that educational institutions in Nigeria lack computers and other related ICT facilities for effective teaching and learning.

Tables 2, 3 and 4 reveal that the use of ICT facilities such as the Internet, CD-Rom services, projectors and other facilities aid the teaching and learning of education students and also boost their performance. In response to research question 2, table 2 showed that most of the teacher educators made use of ICT facilities in the course of discharging their duties. It was found that 18 per cent of the teacher educators Seldomly utilized ICT facilities, 29 per cent often made use of ICT facilities, while 53 percent used ICT regularly. Table 3 revealed that majority of the lecturers use materials from the Internet. 52 % of the teacher educators used the Internet to develop and build the notes given to their students. Okeh & Opone (2007) reported that the use of ICT facilities in Nigeria will lead to the production of quality graduates from our educational institutions. It helps the students to be current and know what is going on around the world.

Table 4 revealed that all the respondents rated all the items as agreed, with chi-square ranging from 21.50 to 67.80. In other words, all the respondents agreed that ICT facilities helped the students in learning fast and also boosting their performance. The roles of ICT in effective impartation of knowledge have been widely reported (Lansen & Vincent-Lancrin, 2005; Moursund, 2005; & Magbagbeola, 2004). Magbagbeola (2004) reported that students with access to the Internet are more likely to perform better than students without access. Findings from this study are in conformity with those of Okeh & Opone (2007), who reported that ICT are powerful tools that can link schools in the western world with those in Nigeria and make the teaching procedures less strenuous as it will be used to support the conventional classroom work. Particularly, findings from this study emphasized that effective utilization of ICT facilities by teacher educators of University of Benin, Benin City (Uniben) and Ambrose Alli University, Ekpoma (AAU) significantly contributed to understanding and teaching of teacher education programmes. Table 4 reveals that the chi-square calculated of 48.10, 27.57 and 38.30 are significant at .05 level of significance ($P < .05$).

The use of ICT in studying and sourcing for materials for research/class work helps the students in their effective learning. Findings from this study show that there is a wide opportunities for teacher educators to be creative in their teaching and in the students' learning. The findings of this study is in line with that of Okeh & Opone (2007) who stated that ICT gives room for effective learning and creates a fast and better method of collecting, processing, compiling and disseminating information to support students and researchers in both inside and outside institutions. Consequently, with the use of ICT facilities, students are more engaged in activities, show more interest and demonstrate a longer attention span.

Conclusion and Recommendations

This study has provided some empirical evidence to support the non-availability of ICT facilities for teaching and learning in teacher education programmes. The findings from this study revealed that most teacher educators in Nigerian universities particularly AAU and Uniben utilize ICT facilities in sourcing for materials/resources needed to impact knowledge on their students. CD-ROM services, projectors and power point presentation are witnessing a growing use elsewhere, howbeit at a slow pace in teaching and learning of teacher education programmes in public universities in Edo State. All these have contributed in no small way to effective teaching and learning. This study therefore recommends that:

1. a lot of scientific information is now available in electronic formats (e.g. CD-ROM database). University authorities should acquire these ICT facilities and new technologies so as to empower and meet the information needs of teacher educators and their students.
2. a functioning cyber café should be made available for the faculty use and all the lecturers and students should have easy access.
3. the knowledge of science and technology is indispensable to the development of any nation and teacher educators play active roles in imparting such knowledge. Thus, the government should make efforts in assisting the universities to provide for the information needs of teacher educators so that they can give quality teaching to students.

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