

Evaluation of ICT as an Aid to Effective Teaching and Learning in Government Technical Colleges

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ABSTRACT The study sought to find the state of ICT as an aid to teaching and learning in the Government Technical Colleges in Oyo State, Nigeria. It is a non-experimental study, which involves the use of a simply survey research design where questionnaires were used to acquire necessary data for the research work. Simple random sampling techniques were utilized to select a sample of 75 instructors and 250 students from three Government Technical Colleges in Oyo state. The research findings revealed that sixty-eight percent of the instructors have had formal training of computer application and have average knowledge of new technologies although the findings further revealed that less than fifty percent of the instructors are able to use ICT instructional materials in teaching and learning due to the factors militating against the effective use of ICT as an aid to learning. Therefore, it is highly recommended that the federal, state and local governments as well as other stakeholders should be advised and involved in procurement of ICT materials as teaching and learning aids for technical colleges.

INTRODUCTION

Looking at the present age and time that the society is in, it is evident that the world has become a global village at a very fast rate, due to the daily development in ICT, which is particular to the developed countries. The key instrument in this world globalization process can be associated to the “computer”. “In the developed countries, ICT have influenced the way people learn, play, work and live” (Bergenfield 2005). With each passing day, the advancement in ICT is taking place at a rapid rate, which influences diverse aspects of human life and sectors of the country like the economy sector, health, industry, entertainment and most importantly the educational sector of the country are not exempted of this dynamic change. The potentials of ICT have been greatly exploited by most developed countries of the world as a tool of transformation of their education landscape at every level of education, especially the instructional process (Acoma 2012). ICT enhances the opportunity to transform pedagogical methods in expanding access to quality education systems (World Bank 2012). Hence, there is a need for Nigeria as a developing country to frequently evaluate and maximize its utilization of ICT as an effective aid in the teaching and learning process. The often utilized evolution in the characterization and appraisal of subject of interest in the wide range

of human enterprises is a valuable instrument for discovering where Nigeria stands among the developing countries worldwide, is the effective exploitation of the potentials embedded in ICT in the transformation of educational section of the country.

Evaluation is defined according to Wikipedia as a systematic determination of merit, significant and worth of a subject, with the use of criteria governed by a set of standards.

It is believed to help enhance the degree of values or as regards specificity of goals of an organization or a program. There are diverse purposes for evaluation, although the primary aim is to enable the reflection and assistance in the identification of future change or “purpose of a program evaluation can be used to determine the quality of a program by formulating a judgment” (Hurteau et al. 2009).

Although there are different types of evaluations, which depend on the object to be evaluated and the purpose of such evaluation, summarily the most important and basic distinction in evaluation types is between formative and summative evaluation. Formative evaluations enhance the object under evaluation, these forms of evaluation assist the formation of the object by examining the delivery of the program, the quality of its implementation, also the assessment of the organizational context, inputs, procedures, and personnel, while summative

evaluations, in contrast, deal with the effects or outcomes of some object.

This research work makes use of formative forms of evaluation in the evaluation of ICT as an aid in the teaching and learning process of vocational education. As it applies to this work, formative evaluation includes different evaluation types, which are:

- ♦ Needs assessment: This ascertains who needs the program, what might work to meet the need and how great the need is.
- ♦ Evaluation of assessment: This ascertains the feasibility of an evaluation and how stakeholders can help in shaping its usefulness.
- ♦ Structured conceptualization: Helps stakeholders define the program or technology, the target population, and the possible outcomes.
- ♦ Implementation evaluation: This monitors the integrity of the program or technology delivery.
- ♦ Process evaluation: Investigates the process of delivering the program or technology, which includes alternative delivery procedures (William 2006; Davenport 2013).

Between 1975-1980, the objectives of education, during the preparations for the Third National Development Plan were to streamline and strengthen the machinery for educational development nationwide and impact the areas of technological education in order to meet up with the growing needs of the economy in Nigeria. Technical Education is a strong strategic institution, which can assist the nation to accomplish her goals for education. The technical colleges serve as training ground for technicians and craft individuals, established for the purpose of the provision of functional technical and vocational education that would enhance technology advancement and alleviate poverty in Nigeria.

The National Board for Technical Education was established by the Federal government whose major functions include the accreditation of academic programs in Technical and Vocational Education institutions nationwide. In Nigeria, there are 19 federal technical colleges, 110 at the state level and three private technical colleges. In Oyo state, there are five technical colleges under the state government, and these include the Government Technical College Oyo, which is the oldest, GTC Ibadan, GTC Ogbomoso, GTC Iseyin and GTC Saki.

All five technical colleges are under the direct monitoring and supervision of the Board for Technical and Vocational Education (BOTAVED), which came into existence in March 15, 2000. This statutory body aids the formulation of policies and standard for technical and vocational education nationwide, management of technical colleges and vocational centers in the state is also part of her responsibility.

Literature Review

ICT in Education

In the educational system, teaching and learning processes are the major act that is carried out. Teaching can be described as an act of creating an environment of a life-like situation to enhance learning. It involves the demonstrating, informing, instructing and making someone understand an occurrence, for the purpose of learning. It involves the impacting of knowledge and skills required to master a subject matter. Effective teaching brings about the intended learning outcome. Learning is an act, which brings about change in any individuals' behavior caused by experiences or self-activity.

The act of learning implies that learning can only happen through the individual's activity or his own doing. The emergence of new concept of learning prompts teachers to facilitate learning and make it more meaningful and interesting to the learners rather than just to provide abstract knowledge and skill (Laurillard 2013). New possibilities for teaching professions have been provided through the modern development of innovations. However, these have placed more demands on teachers to learn the use and applications of these new technologies in their teaching.

These challenges make teachers constantly retrain themselves and acquire new skills and knowledge while maintaining their job (Adelabu and Adu 2014). Despite one of the national aims of education, which is to make an impact in this area of technological education in order to meet the growing needs of the country's economy, the country is still lacking in the use of ICT in achieving educational aims when compared to other nations of the world and the reality of the possibility of great achievements proffered by ICT remains a mirage in the technical colleges.

ICTs are increasingly deployed as tools to extend the learner's capacity, in the field of for-

mal education, to perceive, communicate and understand, as observed in the great increase in online learning programs and also the use of computer as a learning support tool in the classroom (Adu et al. 2014).

ICT is an electronic delivery and administration of learning opportunities and support through computer network and web-based technology (Adu et al. 2014), which covers a wide range of systems, from students using email to accessing course work online. It is unfortunate that in Nigerian classrooms, traditional patterns of teaching and learning of vocational subjects still remain largely unchanged. The typical pedagogical pattern projects an authoritarian, didactic approach to classroom management.

Nevertheless, this pedagogical pattern fails to prepare vocational students for the reality of this information era and globalization. In other words, students are not well prepared with enough knowledge to survive with the vocations in the modern age of science and technology (Adelabu and Adu 2014: 1440). ICT could also be described as all that is involved in gathering and processing information with the use of modern communication technologies such as computers and other related gadgets and their application to daily human activities so as to produce desired output, which is beneficial to diverse individual and mankind at large in good time (Adelabu and Adu 2014).

In spite of the widespread usage and the tremendous impact of ICT facilities in teaching and learning worldwide, it is pertinent to observe how prepared and involved are the Nigerian technical colleges, what is their stance and how are they utilizing ICT and the challenges posed by the application of ICT to their operations. The answers to these questions are not far-fetched. Analyzed within the context of global competitiveness of the information age, the state of ICT facilities in Nigerian schools shows that there is a slow pace of development (Walsham 2013).

Looking at the emphasis of the government on the importance and relevance of technical vocation education to the growth of the country and the trend of development experienced in the developed countries as a result of their application, utilization of ICT to the teaching and learning of vocational skills. It has been discovered that this has produced tremendous change and development in developing countries like China, Japan, which are making waves in ICT.

It is therefore paramount that there is need to improve the academic training of technical instructors especially the vocational teachers since they are saddled with the responsibilities of training students in diverse vocational skills and knowledge necessary for them to establish and survive in their vocational trades and to also contribute to the development of the their immediate environment and society at large. In view of this, ICT has been identified worldwide as an effective tool that brings about rapid change and development (Adu et al. 2014).

There is therefore the need to brace up the new challenges and systems of education through the development and use of ICT in the technical colleges. Although, the use of computer for teaching and learning in technical colleges in Nigeria is still lagging, there is need for technical colleges to improve in their productivity in terms of human resources and economic productivity and these can only be aided when the techniques use for teaching and learning is improved.

Many of the techniques which have been proven useful for supporting instruction even outside the classroom these are not necessarily imply that a particular technology or technique for teaching is the best suited for every lesson. The urgent need for greater efficiency in teaching and learning process has always been a matter of concern to many people who have a stake in education (Gibson 2002; Adeyemi 2011). Improved efficiency is therefore necessary if for no other reason than the increasing complexity of the knowledge skills for survival itself. Therefore, when ICT is properly incorporated into the education system at the technical level, this would be of most important pedagogical tool.

However, how ready are the vocational teachers (technical instructor) to use this tool? Determining the readiness of vocational teachers (technical instructor) will involve a needed assessment of the teachers to identify their level of literacy in computer, status of infrastructure and pedagogical application or utilization of ICT in their diverse vocation.

Purpose of the Study

The study aims to evaluate the level of ICT usage as an aid to teaching and learning of vocation subjects by examining the level of knowledge acquisition of ICT among educators, level

of availability of ICT infrastructures and how effective the educators are in utilizing ICT resources in teaching in the government technical colleges in Oyo state.

Research Questions

For the purpose of carrying this study, four research questions were formulated to guide the study.

1. Do technical instructors (teachers) have the knowledge of new technologies?
2. To what extent do teachers use ICT as an aid in teaching their vocational skills?
3. Are the students computer literate?
4. What is the status of infrastructure in technical colleges for the usage of ICT?

METHODOLOGY

Research Design

The design used for this study is ex-post facto. It involves the use of a simple survey research design where questionnaires were used to collect required data. This design is considered appropriate for the research because it allows the use of questionnaires to collect data pertaining to the opinion of the educators (teachers) and students in relation to their level of literacy in ICT, availability and utilization of ICT resources in teaching and learning of vocational subjects.

Population and Sample

Three government Technical Colleges in Oyo State constituted the population of the study. The simple random sampling technique was used to select seventy-five teachers and two hun-

dred and fifty students from these three government Technical Colleges in the State to participate in the study.

Research Instrument

ICT Assessment questionnaire was used to collect data for the study. The items sought information about their literacy level in ICT, availability of ICT and acquisition of ICT resources in the teaching and learning. The items were mainly of alternative choice variety except the items on utilization of ICT, which were rated on a 'very often, seldom, and never' scale.

Validation of Instrument

The draft of the questionnaire was submitted to the experts in educational technology who are computer literate. They went through the questions to ensure appropriateness of options and suitability of the language used.

Procedure for Data Collection

The instrument was administered to the educators in the sample schools personally by the researchers. The filled questionnaires were collected back on the spot and some were retrieved on a later day, depending on the situation in each of the sample school.

DATA ANALYSIS

Research Question 1

Do technical instructors (teachers) have the knowledge of new technologies?

Table 1 elicits the frequency distribution of the knowledge of new technologies by the tech-

Table 1: the percentage and frequency distribution of Instructors Awareness of ICT

	Yes	No	Total
Have you ever operated a computer system (laptop/desktop)	72 (96.0%)	3 (4.0)	75 (100)
Do you have formal training in any computer application	51 (68.0)	24 (32.0)	75 (100)
Have you attended any workshop /seminar on the use of ICT	45 (60.0)	30 (40.)	75 (100)
Do you know how to connect a system to the internet	57 (76.0)	18 (24.0)	75 (100)
Have you ever browsed any website before	69 (92.0)	6 (8.0)	75 (100)
Are you aware of the National Policy on Computer education	39 (52.0)	36 (48.0)	75 (100)
ICT implies the collection, processing, storing, retrieving and disseminating information using computer and telecommunication	72 (96.0)	3 (4.0)	75 (100)
Do you receive computer training/workshop and seminar on ICT from the government from time to time	57 (76.0)	18 (24.0)	75 (100)

nical instructors (teachers). It shows that about ninety-six percent of the instructors indicated that they have operated a computer system before. Sixty-eight percent of the instructors have had formal training in one computer application and about sixty percent have also attended some workshop or seminar on the use of ICT. About seventy-one percent of the technical instructors indicated that they could easily connect a system to the Internet while ninety-two percent indicated that they have browsed some websites before and they also believe that ICT implies the collection, processing, storing, retrieving and disseminating information using computer and telecommunication. All these findings imply that Government Technical college instructors have good knowledge of new technologies.

Research Question 2

To what extent do teachers use ICT as an aid in teaching their vocational skills?

Table 2 shows the extent to which technical instructors utilize ICT as an aid in teaching their vocational skills. It could be seen from the findings that seventy-six percent indicated that they

need ICT resources for effective teaching of their vocational subjects very often. In addition, fifty-six percent use ICT instructional material very often and about forty-eight percent of the instructors also indicated that they give assignments that require the use of ICT.

Research Question 3

Are the students computer literate?

Table 3 shows that forty percent have a personal computer, only twenty-five percent have a computer in their family houses and forty-six percent indicated that they use the computer for one purpose or the other.

Table 3: The percentage and frequency distribution of students' awareness of ICT

	Yes	No	Total
Do you own a computer	102(40.8)	148(59.2)	250(100)
How many computer does your family have	64(25.6)	186(74.4)	250(100)
Do you use computer	117(46.8)	133(53.2)	250(100)

Table 2: The percentage and frequency distribution of instructors' utilization of ICT

	Very often	Often	Seldom	Never	Total
I need ICT resources for effective teaching of my vocational subjects	57(76.0)	18(24.0)	0(0.0)	0(0.0)	75(100)
I use ICT instructional materials in teaching (TV, Videos, Computers, and projectors etc.)	42(56.0)	33(44.0)	0(0.0)	0(0.0)	75(100)
I do not use computer to teach my students because there is no opportunity of using computer	27(36.0)	48(64.0)	0(0.0)	0(0.0)	75(100)
Electricity constitutes a problem for maximum utilization of ICT in your school	75(100.0)	0(0.0)	0(0.0)	0(0.0)	75(100)
Students feel attracted and pay attention whenever I use any ICT facility in my teaching	66(88.0)	9(12.0)	0(0.0)	0(0.0)	75(100)
Number of students in my class hinders effective utilization of ICT in my teaching	60(80.0)	15(20.0)	0(0.0)	0(0.0)	75(100)
Computers are only used for administrative purpose in my school	18(24.0)	57(76.0)	0(0.0)	0(0.0)	75(100)
Computers are used for academic purposes	57(76.0)	18(24.0)	0(0.0)	0(0.0)	75(100)
Students are allowed to operate the computer(s) in my school	42(56.0)	33(44.0)	0(0.0)	0(0.0)	75(100)
I hesitate to use the computer for fear of making mistakes I cannot correct	18(24.0)	57(76.0)	0(0.0)	0(0.0)	75(100)
I need an experienced person nearby when I use a computer	9(12.0)	66(88.0)	0(0.0)	0(0.0)	75(100)
I give my students assignments that require the use of ICT	36(48.0)	39(52.0)	0(0.0)	0(0.0)	75(100)
my students can operate computers	66(88.0)	9(12.0)	0(0.0)	0(0.0)	75(100)
my students can operate TV/Video	75(100.0)	0(0.0)	0(0.0)	0(0.0)	75(100)
my students can operate compact disk player	75(100.0)	0(0.0)	0(0.0)	0(0.0)	75(100)
I give my students assignment(s) that requires the use of the internet	24(32.0)	51(68.0)	0(0.0)	0(0.0)	75(100)

Research Question 4

What is the status of infrastructure in technical colleges for the usage of ICT?

Table 4 shows the percentage frequency distribution of the status of infrastructure in technical colleges for the usage of ICT. It shows that the status of infrastructure in these technical colleges for the usage of ICT is highly inadequate. This can be seen from the Table as about ninety percent indicate that there is no regular electricity supply, no Internet facilities, no computer and no computer printer in their various schools.

DISCUSSION

The findings of this study reveal that a high percentage of the instructors have used ICT in one form or the other, which implies that Government Technical college instructors have good knowledge of new technologies (Table 1).

Table 2 shows the extent to which technical instructors utilize ICT as an aid in teaching their vocational skills. It could be seen from the findings that seventy-six percent indicated that they need ICT resources for effective teaching of their vocational subjects very often. This is in agreement with Adelabu and Adu (2014) who stated that the use of ICT resources in teaching can make the teaching process more effective as well as enhance the students' capabilities in understanding basic concepts, hence prepare them for the competition ahead in the various disciplines.

Table 3 reveals that only twenty-five percent have a computer in their family houses and forty-six percent indicated that they use computer for one purpose or the other. The inadequate

level of ICT resources in technical colleges in Oyo state also means that accessibility will be hindered for teaching and learning as revealed in Table 4. This confirms the observation of Ezeoba (2007) and Fakeye (2010) who also found that ICT resources were not available in primary and secondary schools.

CONCLUSION

The global trend in ICT around the world leaves no doubt that ICT promises to bring great relief to the hitherto conventional modes of teaching and learning in every area of human endeavor. The application of ICT gadgets as an aid to teaching and learning of vocational subjects is worthwhile at this time of knowledge explosions.

However, the glimpse the researchers extracted from the findings of this study about the use of ICT as an aid to teaching and learning of vocations is that of a gloomy picture. Despite the fact that majority of both teachers and students are aware of the importance and relevance of ICT to their academic effective use, it is apparently difficult to actualize this, since most schools do not have the necessary facilities for instruction, coupled with the fact that most of the students do not have personal computers, which do not help matters.

Above all, inadequacies in human and material resources, poor funding and poor implementation of policies remains some of the factors responsible for the unfriendly situation faced in the usage of ICT in the educational system. Against this background however, ICT should be encouraged, improved upon and be allowed to spread to all technical colleges in the state because of numerous advantages it emphasizes in the teaching and learning of vocational subjects.

Table 4: The percentage and frequency distribution of availability of ICT

	Yes		No	Total
Does your school have functional TV and video machines for learning	63	(84.0)	12 (16.0)	75 (100)
Does your school have computer	45	(60.0)	30 (40.)	75 (100)
Does you have a special room for TV/video and computer	15	(20.0)	60 (80.0)	75 (100)
Do you have a regular electricity supply	3	(4.0)	72 (96.0)	75 (100)
Does your school have internet facility	3	(4.0)	72 (96.0)	75 (100)
Does your school have audio tape player	63	(84.0)	12 (16.0)	75 (100)
Does your school have audio cassettes	57	(76.0)	18 (24.0)	75 (100)
Does your school have video	57	(76.0)	18 (24.0)	75 (100)
Does your school have overhead projector	63	(84.0)	12 (16.0)	75 (100)
Does your school have telephone	75	(100.0)	0 (0.0)	75 (100)
Does your school have computer printer	45	(60.0)	30 (40.)	75 (100)

RECOMMENDATIONS

Despite the drawbacks, which are still witnessed in the usage of ICT in the technical colleges, there is a future for the mastery of vocations with the effective use of ICT in learning in the technical colleges. The following recommendations are hereby put forward as the way out.

1. The federal, state and local governments as well as other stakeholders should be advised and involved in procurement of ICT materials as teaching and learning aids for technical colleges.
2. Training programs should be organized on a regular basis on the use of ICT gadgets in teaching and learning for Technical Instructors.
3. The issue of power outage should be addressed and fought to a standstill because without the supply of electricity the use of available ICT gadgets or materials will be impossible.

The government, through Ministries of Education, should come up with new ICT policies or improve on the existing policy. The policy should strive to integrate ICT as a part of teaching and learning process rather than focus on computer literacy.

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