

BARRIERS TO THE USE OF ICT IN TEACHING AND LEARNING OF BASIC TECHNOLOGY IN THE JUNIOR SECONDARY SCHOOL IN LAGOS STATE EDUCATION DISTRICTS I, IV AND VI

By

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Abstract

In this era of globalization, the world at large is looking towards integrating information and communication technologies into the education sector to promote economic and technological advancements. Technology is the application of man's knowledge, information, and ideas at any given time in controlling and developing his environment. To achieve the technological development in Nigeria, the Nigerian Government introduced a change in the school system to 6-3-3-4 to include Introductory Technology at the junior secondary schools and now Basic Technology in the new 9-3-4 system. Despite changes in the school system, policy document and textbooks, Basic Technology Teachers are not adequate in the application and utilization of ICT in the classroom. Based on this, it is pertinent to explore the factors responsible for Basic Technology Teachers' under-utilization of ICT. The data for the study were collected through questionnaire and analyzed using descriptive statistics. Findings showed that Basic Technology Teachers' have not attended ICT utilization seminars and workshops which undermine utilization.

Keywords: Barriers, Basic Technology Teachers, ICT

Introduction

Teaching can be viewed from two broad perspectives: an art and also as a scientific process. Teaching as a scientific process takes into account the various learning theories, teaching methodologies and the observation of learning outcomes. Teaching as an art is involved with identifying the creative ways by which the scientific process can be used to retain student's attention in the classroom and promote retrieval for use. To this end of improving the teaching-learning process, various technologies have been introduced into the classroom yet some teachers still experience drawbacks in the utilization of these technologies. These drawbacks can be regarded as barriers.

Barriers against Basic Technology Teachers Use of Information and Communication Technology

Basic Technology is an integrated study of skilled subjects such as; wood work, metal work, building technology, auto-mechanics, electrical-electronics and technical

drawing. The teaching of these subjects has gone beyond the traditional teaching methods to the use of ICTs. ICTs are broad range of technologies that facilitate the acquisition, storage, process, transmission and dissemination of information in form of text, voice, graphics and video, (Bulent et al, 2009).

The use of ICT creates a new learning environment and transmutes teaching and learning process such that learners interact with knowledge medium in an active and constructive way. ICT should be seen as an important instrument to support new ways of teaching and learning, develop students' skills of cooperation, communication, problem solving and life-long learning, Afshari et al (2009). ICT integration is the amalgamation of ICTs into the whole school structure of the school system. As Karadeniz et al (2007) stated, integration of ICT means using ICT effectively and efficiently in all dimensions including necessary infrastructure, teaching programs and teaching-learning program. Integration of ICT into schools and school curricular has encountered certain complexities. These complexities could be known as barriers. Barrier is any difficult condition that makes it difficult to achieve an objective (Khalid, 2009). Researchers have identified barriers affecting ICT integration process (Afshari et al 2009, Khalid 2009, and Yusuf 2007). Different categorizations have been used by researchers to classify the barriers in classrooms. Afshari et al (2009) categorized barriers to Non-manipulative and Manipulative factors. Non- manipulative factors are those that cannot be influenced directly by the school such as age, teaching experience, computer experience, and financial position. On the other hand, manipulative factors are those that can be used to influence teachers' attitude towards the adoption of ICT. These factors are effective training, availability of time to experiment, reflect and interact, increase level of and accessibility to ICT infrastructures and the provision of technical support. ICT integration barriers could be categorized into teacher-level barriers and school level barriers (Khalid 2009, Anja et al 2006). According to these researchers, Teacher-level barriers are lack of ICT skills, lack of motivation and confidence in using ICT, inappropriate teacher training and resistance to change and negative attitude. School-level barriers are categorized into lack of time, lack of effective training, lack of accessibility, lack of technical support, absence and poor quality of ICT infrastructure, Anja et al went further to suggest system level barriers relating to educational system itself such as rigid structure of traditional education system, traditional assessment, restrictive curricula and restricted educational structure. Another categorization postulated (Yusuf 2007) is technical obstacles, non-technical obstacle, human-organizational technical obstacle and financial obstacles. Technical obstacle are related to poor communication infrastructure, absence of national information communication structure, problem of connectivity, lack of or limited bandwidth for ICT in teaching-learning process and poor reliability on power supply. Non-technical issues such as lack of professional development, human-organization, inadequate planning for ICT

integration and inadequate human resources while financial obstacles is related to inadequate funding of ICT infrastructure, poor maintenance of available facilities and lack of incentives for staff developments. Several research studies have indicated the various barriers inhibiting ICT integration into classroom processes. According to Pelgrum (2001) in Afshari *et al* (2009), the integration of innovations is largely dependent on teachers' skills and knowledge which is the most inhibiting obstacle to the use of computer and ICT in schools. Since the barriers are known it is expedient to come up with strategies that will ensure an enabling environment for ICT in Nigerian schools.

Methodology

The reliability of the test instrument was tested using test-retest methods. The scores obtained from two administrations in the period of three weeks intervals were analyzed using Pearson product correlation coefficient at 0.65 coefficient consistency.

$$R_{xy} = \frac{\sum (x - \bar{x})(y - \bar{y})}{\sqrt{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}}$$

$$\frac{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}{\sum (x - \bar{x})^2 \sum (y - \bar{y})^2}$$

The formula produce the consistency score of 0.91 to adjudge the instrument as reliable for the study. The data collected were analyzed using calculated mean scores to determine the degree of Agreement and Disagreement.

$$X = A + \frac{\sum (x - \bar{x})^2}{n}$$

Where:

X ----- Actual mean

A ----- Assumed mean

----- Total frequency

n ----- Number of items

$$\text{Mean score} = 0.5 + 3 = 3.5$$

Decision Rule

Hence, responses with a mean score of 3.5 and above will be regarded as agree while those below 3.5 will be regarded as disagree.

Table 1

Barriers to the Use of ICT in Teaching and Learning of Basic Technology in the Junior Secondary School

SN	STATEMENTS	Agree	Disagree	Undecided	X	Remark
1	Basic technology teachers may not have enough time for training in the use of ICT to teach	56 52.7%	47 44.2%	3 2.8%	3.12	Disagree
2	Teachers may not have technical skills in the use of ICT to teach Basic technology	61 61.5%	25 25.1%	13 13.1%	3.46	Disagree
3	Epileptic supply of electricity may affect the use of ICT to teach Basic technology	88 90.6	9 9.2%	0 0%	4.43	Agree
4	ICTs may be too expensive for Junior Secondary Schools to afford	57 58.7%	33 34%	7 7.2%	3.45	Disagree
5	Lack of proper planning and implementation programs affect ICT utilization in the teaching of Basic technology	93 93%	4 4%	3 3%	4.32	Agree
6	Basic technology teachers level of competence to operate computer and surf the internet affect the use of ICT to teach Basic technology	76 76%	19 19%	5 5%	3.82	Agree
7	Basic technology teachers have not been opportuned to attend ICT integration seminars and workshops	78 79.5%	14 14.2%	6 6.1%	3.97	Agree
8	Lack of feedback on teacher performance during ICT integration course and workshop affects Basic technology teachers use of ICT to teach	67 69%	10 9.2%	20 20.6%	3.85	Agree
9	Lack of communication between ICT facilitators and teacher during and after ICT integration workshops affect basic technology teachers use of ICT to teach	63 63.6%	22 22.1%	14 14.1%	3.60	Agree
10	There few computer and ICT literate teachers to assist Basic Technology Teachers in managing challenges faced in the utilization of ICT for teaching	86 86.8%	8 8.0%	5 5.0%	4.23	Agree

From the analysis, epileptic power supply, lack of proper planning and implementation of ICT utilization programmes, lack of competency, lack of ICT- integration seminars and workshop, lack of feedback on teacher performance during and after integration workshops constitute the major obstacles confronting ICT utilization to teach basic technology. This is buttressed in the study carried out by Chong et al (2008), insufficient training for ICT projects, inadequate technical support, lack of knowledge about ways to integrate ICT to enhance curriculum are barriers preventing ICT utilization among mathematics teachers in Malaysia. Other prominent factors hindering teachers' readiness and utilization of ICT during lessons are lack of technical support and expertise in ICT utilization. On the other hand, lack of time for training is not considered a barrier. This negates the finding of Khalid (2009) that, lack of time is a factor that hinders technology integration in schools. This may be attributed to the fact that, the basic technology teachers have not attended basic technology ICT integration seminar. The Nigeria IT policy brutal neglect of education as a sector of economic development and the total negligence of the basic technology curriculum to identify in specific terms what ICT tool is most suitable to teach the topics of the curriculum constitute the major barrier towards ICT utilization among basic technology teachers which has affected the provision of internet facilities in the classrooms and school laboratories at large.

Recommendations

Education is bringing about positive behavioral changes in an individual through the processes of information, communication of ideas and concepts. ICT is also about information, communication, storage, retrieval and lifelong learning bringing about new methodologies of passing across information and processing the information. To breach the barriers confronting ICT among the Basic Technology Teachers and the school system at large, the following factors should be considered;

- ICT policy: this is a statement by the federal and other tiers of the government stating their readiness, political will to move ahead into the digital era.
- ICT policy in Education: there is difference between ICT policy and ICT policy in education. ICT policy in education in specific term states the aim and objectives of ICT at every level of education. Cognizance is given to curriculum, subjects and topics to be taught across all levels of education. The education sector is recognized as a sector of its own not as a sub-sector of any economic development.
- School infrastructures should be built and old ones restructured to accept ICT and peripherals
- Training for teachers and trainee-teachers to promote their ICT utilization.
- School Principals should organize ICT training seminars and workshop for their teachers.
- Parent Teachers Association (PTA), in collaboration with the school management should raise fund for ICT training.

- Local Governments and Local Education Authorities should solicit for funds to sponsor teachers on ICT utilization skills.
- Companies should exercise their social responsibilities by sponsoring ICT training and seminars for teachers.
- Government at all tiers should constitute relevant monitoring committee to monitor judicious utilization of ICT funds.

Conclusion

Technology is the generation and application of ideas, knowledge and processes to design and develop systems capable of solving human problems and that of the nation he is a member. Today's knowledge has brought about ICT 'information and communication' super high way altering the way people communicate and conduct businesses and think. This technology has also changed the school pedagogy from within the four walls of the classroom to open- distance education and now mobile or M-learning. Countries all over the world are clamoring for how to use the "infocom" super highway to better educate their citizens and make education available for all. The advantages of basic technology, information and communication technology cannot be over-emphasized in this global village, where technology has transcended culture and geographical locations. The Lagos State Basic technology Teachers and Nigerian teachers in public schools cannot afford to be left behind in this era of globalization due to certain barriers that can be appropriately lifted. The untrained teachers should undergo proper training in order to improve teaching skills, ICT infrastructures should be made available and accessible to both students and teachers thus, will encourage quest for the more knowledge acquisition. When all of these are available across all levels of education and states of the federation, then we can boast of versatility, increased productivity in the economy, acceptance of cultural diversity which paves way for peaceful co-existence and overall development.

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