

E- Classroom of the 21st Century: Information Gaps

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Abstract

The introduction of technology into the classroom has revolutionized teaching and learning process. The 21st century learning environment creates exciting learning for students to collaborate and learn at their own pace making them active participants in learning process. The teacher is no longer a dictator, pouring knowledge into passive learners like empty vessels ready to be filled but a facilitator of teaching and learning process. Teachers need to be well informed about the use technology and the benefits of ICT resources in teaching and learning process.

The study investigated E- Classroom of the 21st Century: Information Gaps. The study employed the quasi experimental research of the pre-test, post- test control group design. The population for the study consisted of all secondary school students in Ekiti State. The sample consisted of 80 students selected through purposive sampling technique. A 15 item research instrument titled 21st century E- Classroom Achievement Test (ECAT) was used for the study. The validity of the instrument was ascertained by ICT and test and measurement experts. The reliability was determined using test- retest method. The reliability co-efficient of 0.75 was obtained using Pearson Product Moment Correlation Analysis. The data collected were analysed using t-test and ANOVA. The hypothesis was tested at 0.05 level of significance. The study revealed that the students exposed to the ICT package performed better than those from the controlled group who were exposed to conventional method of teaching. Based on the findings, it was recommended that teachers should employ varieties of techniques using technology resources in their teaching repertoire to enhance students academic achievement.

Keywords: 21st century, E-classroom, ICT resources, Information Gaps

Introduction

In school, learning takes place naturally in the classroom in a traditional way. It is designed to facilitate students' learning and teachers present information by way of spoken words and at times use teaching aids drawn on the blackboard. Researchers have faulted excessive use of the lecture method in teaching especially science subjects in secondary schools. It is believed to lead to low and under achievements among secondary school students. Jegede and Seweje (2003) corroborated this statement. They believe slow learners do not cope with lecture method. According to Resnick (2002) new technologies are changing not only what students should learn but also what they can learn. He believes many ideas and topics that have been left out of school curricula because of the limitations of traditional instructional media and delivery methods such as blackboard, paper and pencils, and books. For instance computer simulations can be used to help students explore how systems work. In Resnick (2002) book, more entrepreneurial approach to learning has students' divided not according to their age but students of all ages are encouraged to work together on projects thereby encouraging collaborative learning which can be of benefit to them in the labour market. This will enable them to socialise and learn from one another solving problems together, engaging in critical thinking thereby gaining ideas that arise through such learning process. Instruction should focus on problem solving rather than the transmission of knowledge to students. The role of the teacher in the teaching and learning is apart from being a facilitator and a guide but also creating an enabling classroom environment for learning to meet the requirement of the 21st century.

A well designed 21st century e- classroom provides a conducive environment for learning. Students are more likely to be able to apply it to real life what they have practiced in simulated circumstances (Heinich, Molenda and Russell (2004). Today technology has made teaching and learning easier through the application of ICT. Computer simulations are vital to teaching and learning especially science subjects. Simulation offer new educational environments, which aims to enhance teachers' instructional potentialities and to facilitate students' active engagement.

According to Nwezi, (2009) and Umoren (2006), ICT resources in instructional delivery in schools will serve a dual purpose and more efficient classroom instruction. Little wonder then that in 2001, the Federal Government of Nigeria approved a national IT policy with the establishment of the National Information Technology Development Agency (NITDA), charged with the responsibility of kick-starting, coordinating and implementing the provision of the policy (Ajayi 2003) (NPE 2004). The Nigerian National ICT for Development (ICT4D) Strategic Action Plan Committee was said to have been set up develop a new ICT policy for development as the ICT action plan/roadmap for the nation, it is in pursuance of the need to access international best practices that Federal Government reviewed the National Policy On Education (1998) to the current one (NPE 2004) to accommodate the introduction of ICT into the school system in keeping the dynamics of social change and its demands on education.

The great quest in the field of media and technologies of instruction is to find ways of matching individual learner with the appropriate subject matter. The volume of data and information and knowledge sharing and ideas are too voluminous for conventional classroom environment to cope with hence the conventional method of teaching can no longer meet the academic needs of 'digital natives'.

Teachers are the gate keepers for the students access to educational technology resources hence they should be able to prepare students for the information age to avoid information gap. It is at this level that they should have their first encounter with technology in the classroom, which they will put in practice when they eventually leave school and are gainfully employed in the society. It is in this light that teachers' computer literacy is expected to drive the new ICT through their teaching and integration. Bamino and Liverpool (2002) observed that computer has already invaded and dominated schools in developed world while in Nigeria it has been "painfully" slow. Guardian editorial (2006), stresses that no real development has been made in ICT development both at the individual level and corporate level. Studies have shown that lack of computer literacy exists among teachers in secondary schools. As such, are unable to incorporate the benefits of computer technology in their teaching.

The great quest in the field of media and technologies of instruction is to find ways of matching individual learner with the appropriate subject matter. The volume of data and information generated by the human race and the need to survive through the sharing of knowledge and ideas have become too much for conventional classroom environment to cope with hence, the conventional method of teaching can no longer meet the demand of education adequately.

Research findings by scholars have shown that information and communication technology (ICT) help students to learn better and enhance performance. Researchers have highly rated ICT to be a great value in the teaching and learning process but it has been observed that a great number of Ekiti State teachers have not really appreciated the value of ICT in their teaching despite the claim of the State Government that computers and other gadgets have been supplied to both teachers and students and the teachers have been exposed to ICT training in order to cope with ICT use in schools.

Statement of the Problem

The rapid expansion and growth of technology is observed to have brought an unprecedented transformation and opportunities for students and teachers to achieve greater performance and productivity. Given this potential, it is imperative for it to be extended to the classroom to enhance easy access to information across the world and improve quality of learning. According to UBEC 2010 profile, 48, 100 primary school teachers and 22, 031 junior secondary schools teachers are computer literate in Nigeria. Despite this figure how much knowledge do the teachers have about technology? Are they well informed in the technical know how of the use of ICT resources in instructional delivery?

Observation has shown that many of our students are not taught in e- classrooms and many of the classrooms are devoid of technology resources. Today learners are natives of digital tools hence the yearning for a paradigm shift in learning which make them not just participants in learning process but co-learner with their teachers. The study is set to answer the following questions.

1. How equipped are the classrooms to meet the information age learning environment?
2. What are the mean scores of students' taught with ICT facilities and conventional technique?
3. What is the level of students' ICT knowledge and skills?

Purpose of the study

The purpose of the study is to examine the technological classroom of the 21st century and teachers' readiness to handle the digital natives of the 21st century. The study is also designed to compare the performance of the students taught with ICT facilities and conventional method of teaching. The study is set to find out if ICT is gender sensitive.

Hypothesis Testing

The undermentioned null hypothesis was tested at 0.05 level of significance to provide answers to the problems raised in the study.

There is no significant difference in the post-test mean scores of students instructed in an E- classroom and in the conventional classroom.

Methodology

The study used combination of quasi experimental and descriptive research design of survey type. They were used to compare the performance of students exposed to E-classroom and the conventional classroom teaching and the availability of technology resources.

Population

The population consisted of all the secondary school students in Ekiti state secondary schools.

Sample and Sampling Procedure

The sample consisted of 80 students selected through purposive sampling technique from 10 secondary schools. The students were taught in technology devices like computers, projectors, internet facilities, power point presentations and down loads on academic online applications from the internet for the period of 8 weeks.

Research Instruments

The research instruments used for the study were 21st century E- Classroom Achievement Test (ECAT) and 21ST Century E-classroom questionnaire (ECQ). They were designed to measure students' achievement in e-classroom and conventional classroom.

Administration of the Instruments

The students were tested with the package before the onset of the treatment. Thereafter they were exposed to various treatments ranging from how to use search engines to browse, open e-mail address, download materials from the net and upload materials. How to use PowerPoint to teach. Series of assignments were given at the end of each instruction. At the expiration of the eight weeks, the students were tested. Questionnaires were also given to authenticate the achievement test.

Data Collection

Data were collected through achievement test and questionnaire. The instruments titled 21st century e-Classroom Achievement Test (ECAT) and 21ST Century e-classroom questionnaire (ECQ) were used to collect data for the study.

Validity of the Instrument

The validity of the instrument was ascertained by ICT and test and measurement experts.

Reliability of the Instrument

The reliability of the instrument was determined using test- retest method. The reliability co-efficient of 0.75 was obtained using Pearson Product Moment Correlation Analysis.

Data Analysis

The data collected were analysed using both descriptive and inferential statistics (t-test and ANOVA). The hypotheses were all tested at 0.05 level of significance.

Results and Discussion

The results of data collection and discussion are presented below.

Research Question1

How adequately available are ICT resources in Ekiti State secondary schools?

S\N	Items	Adequately Available		Not Adequately		Not Available	
		N	%	N	%	N	%
1	Computers	12		20		08	
2	Computer laboratory	16		19		05	
3	Internet facilities	10		20		10	
4	Printers	08		12		20	
5	Modem	06		15		19	
6	Flash drive	04		08		28	

Research Question 2

What are the mean scores of students taught with ICT resources and those taught with conventional technique?

To answer the question, descriptive statistics was used. The pre-test and post-test mean scores and standard deviation of the students' achievement in the two groups were computed as seen below.

Table 2: Pre-test and Post-test Achievement Mean Scores in Control and Experimental Groups

Groups	N	Pre-test		N	Post –test	
		Mean scor	STD		Mean Scores	STD
Experimental (E-classroom)	40	1.28	6.42	40	32.07	1.95
Control(conventional)	40	20.57	4.91	40	25.87	6.34

Hypothesis 1: There is no significant difference in the post-test mean scores of students instructed in a technological classroom and those in the normal conventional classroom.

Table 3: t-test Post test Scores in the two groups

Groups	N	Mean scores	STD	Df	t-cal	t-table
Experimental (E-classroom)	40	32.07	1.95	78	5.91	1.66
Control (conventional)	40	25.87	6.34			

The table above shows that t-cal (5.91) is greater than t-table (1.66) implying that the hypothesis is rejected hence there is a significant difference between the performance of those instructed with technology and those taught in the conventional classroom

Results and Discussion

The findings of the study show though there is information gap, ICT facilities if appropriately applied to teaching and learning process can enhance students' performance. The implication of these findings is that technology enhances effective teaching and learning processes and the production of positive and effective changes noticed in the learners' performance corroborated Yusuf (2005) findings that the field of education has been affected by ICT which has undoubtedly affected teaching and research. According to Okoh (2011), recent publications by Educational Associations are advocating for a more meaningful use of technology in schools and integration of computer skills to be in the content areas.

ICT resources utilisation excites students and assist teachers to carry the students along unlike the conventional method of instruction which Seweje and Jegede (2003) stress that does not assist slow learners and are not being carried along hence the chances of passing their examination is very slim.

Summary

The rate of students' failure and the unserious attitude to their studies led to looking for solutions to bring back the book through the use of technology. The study examined e- classroom of the 21st century a shift in learning. It was quasi experimental study involving two groups -experimental group and control group. Those in the experimental group were exposed to a multimedia classroom while the control group was taught in the normal conventional classroom. There was a pretest before the treatment started.

The students in the experimental group were taught with multimedia materials for eight weeks after which test were administered to them while the control group was taught in a normal classroom with conventional method. The students in the experimental group outperform those in the control group though information gap was noticed. This is an indication that technology has positive effect on students' achievement.

Based on the findings, e- classroom was therefore recommended for schools and teachers and both Federal and State government should make technology resources available in schools. Since e-classroom promotes self learning, teachers should endeavor to engage students in self learning by providing array of technology resources. Also curriculum planners should also include technology in the curriculum and workshops and seminars should be organised for teachers to train and retrain them in the use of technology in teaching and learning process.

Conclusion

In conclusion, the use of technology in teaching and learning has been discovered to enhance students' performance and teachers' effectiveness therefore it should be incorporated into teaching and learning repertoire. This will assist in bridging information gap among both secondary schools teachers and students.

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