

**EFFECTS OF INFORMATION AND COMMUNICATION TECHNOLOGY TOOLS ON
ACADEMIC PERFORMANCE OF ECONOMICS STUDENTS
IN AMINU SALEH COLLEGE OF EDUCATION AZARE,
BAUCHI STATE, NIGERIA**

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Abstract

This study investigated the effects of Information and Communication Technology (ICT) tools on academic performance of Economics students in Aminu Saleh College of Education Azare in Bauchi state, Nigeria. The study adopted the experimental design. The population of the study was 1,146, comprising of 15 Economics lecturers and 1,131 Economics students. The sample of the study was 291 which comprised of 15 Economics lecturers and 276 Economics students selected using simple random sampling. A Structured questionnaire and Achievement Test were used for data collection. The instruments were validated by experts and have a reliability coefficient of 0.84 and 0.78 for the questionnaire and Achievement test respectively. Non parametric statistics was used to analyze the data using SPSS. The non parametric was the t-statistics. The finding of the study revealed that there is a significant difference in the academic performance of students taught Economics using ICT tools and those taught without ICT tools. The study concluded that non availability of ICT tools had negatively affected the academic performance of Economics students in the study area. The study therefore recommended among others that for the academic performance of students to be improved in Economics, ICT tools should be provided by the authorities concerned.

Keywords: Academic Performance, Economics, Information and Communication Technology (ICT).

Introduction

It has been recognized that most sectors all over the world use Information and Communication Technology (ICT) to perform their day to day operations. This has made ICT an agent of globalization in transforming the world into a global village. The field of education has also been affected by the penetrating influence of ICT worldwide and in developed countries in particular (Comi, Argentin, Gui, Origo, & Pagani, 2016).

Gusen (2017) defined ICT as a diverse set of technological tools and resources used to communicate, and to create, disseminate, store and manage information. ICT implies that technology consists of electronic devices and associated human interactive materials that enable the user to employ them for wide range of teaching-learning processes in addition to personal use.

Information and Communication Technology (ICT) tool according to Olowoyeye (2016) is an umbrella term that includes any communication device or application, encompassing but not limited to radio, television, cellular phones, computer and network digital cameras, video cameras and others. Based on these definitions, ICT tools refer to technology tools which include digital infrastructure such as computers, laptops, desktops, projectors, software programs, printers, scanners, interactive whiteboard (IWB), internet, handheld device, radios, television sets and so on. There are many ICT tools that economics teachers can use to enhance teaching and learning.

Teaching-learning process especially in modern time involves the use of organized combination and utilization of people, materials and procedure to achieve the stated instructional objectives. In any teaching and learning process, there is the need to utilize instructional materials in order to make teaching and learning more effective.

The widely accepted and comprehensive definition of economics is that given by Lionel Robbins in 1933 where economics is defined as a science which studies human behaviour as a relationship between ends and scarce means which have alternative uses (Ogwumike & Ekpenyong, 2015). Economics refer to how man utilizes his limited resources at his disposal in order to derive maximum satisfaction.

According to Loko (2016), attempt has been made to integrate the theoretical foundation of economics with its practical application in teaching the subject in school curriculum under the new National Policy on Education. The guiding principle of this curriculum is the need to equip graduates with the basic knowledge and skills that will enable them to better appreciate the nature of economic problem in any society.

The prospect of any nation depends to a large extent on the quality of education offered to its citizens. Educational activities are geared towards ensuring that students achieve mastery of educational objectives. In school, the extent to which these objectives have been achieved is determined by their level of academic performance (Nkem, 2014).

The issue of declining academic performance of students in Nigerian Colleges of Education has generated much interest among stakeholders in the educational sector (Tijjani, 2017). The problem of poor performance is attributed to lack of Information and Communication Technology (ICT) integration where most of the teachers do not use it in their teaching (Laleye, 2015).

Teachers generally relied on few or no aids in their teaching because they believed that they could force knowledge no matter how unpleasant into supposedly empty brains of their students. Modern teachers believe that learning should consist of measureable activities for the learners while at the same time teachers try to appeal to their senses of seeing, hearing,

smelling, testing and touching. Based on these statements, how to prepare teachers to utilize ICT tools in their classroom teaching has been a major subject of concern.

There is no universally acceptable definition of performance (Haruna, 2016). Haruna maintained that academic performance has to do with how well a student is accomplishing his tasks and studies. Academic performance is seen in terms of the outcome of education; the extent to which the student, teacher or institution have achieved their educational goals. Furthermore, Students' academic performance has been described by Aliyu (2016) as the knowledge obtained in the school subject usually designed by test score or marks assigned by the teacher. Based on the foregoing, we can conclude that students' academic performance is the knowledge gained, skills developed or excellence in all academic discipline, be it in the class as well as extracurricular activities from the school. Academic performance of students is the yardstick for testing educational quality of a Nation.

In Nigeria, the utilization of Information and Communication Technology (ICT) into its educational system is still at infancy stage (Sylvester, 2015). It has been realized that the use of ICT has the potential of transforming teacher education in teaching in developing Nations. Despite the significant investment in training and resources by the Nigerian government, in reality, Nigerian Colleges of education are still far below the level of ICT use especially in teaching and learning (Sylvester).

Most of the studies on Information and Communication Technology (ICT) and Economics were based on the roles, implementation, competencies and evaluation of ICT in teaching Economics. However the present study investigated the effects of ICT tools on academic performance of Economics students in Aminu Saleh College of Education Azare in Bauchi state, Nigeria.

Purpose of the study

The purpose of this study was to investigate the effects of Information Communication and Technology (ICT) tools on academic performance of Economics students in Aminu Saleh College of Education Azare-Bauchi State, Nigeria.

Research Hypothesis

This study tested the following null hypotheses at 0.05 level of significance:

HO: There is no significant difference in the performance of students taught Economics using Information and Communication Technology (ICT) tools and those taught without ICT.

Theoretical Framework

This study adopted the Sensory Stimulation Theory (SST) propounded by Laird in 1985. The theory states that effective learning occurs when the human senses are stimulated (Laird, 1985). If these senses are stimulated, greater learning takes place. Stimulation through the senses is achieved through a greater variety of colours, volume levels, strong statements, facts presented visually, use of variety of techniques and media.

This theory is relevant with the present study because Economics concepts if presented visually through the use of Information, Communication and Technology (ICT) can help in bringing students together on a common platform for exchange of views, presentation of ideas

and increase interaction between students, teachers and technologies and hence students' academic performance in learning Economics would be enhanced. This theory was supported by Savic (2012) who found that students' academic performance has increased by stimulating the senses, especially the visual sense.

Literature Review

The role of Information and Communication Technology (ICT) in teaching and learning is rapidly becoming one of the most important and widely discussed issues in contemporary educational policy (Aliyu, 2016). In the developed world such as United States of America (USA), France, Germany, China and Japan, there has been a staggering amount of research and publication related to ICT use for educational purposes in such a way that nearly everyone in these developed Nations gained access to ICT and the purchase of computer and for higher institutions to use (Aliyu).

According Global Information Technology Report (2012), South Africa occupied the top spot on global index with Mauritius ranking a distant 71st as the best performing African Nation in terms of accessibility and utilization of Information and Communication Technology (ICT) in schools followed by Rwanda 82nd, Botswana 89th, Kenya 93rd, Senegal 100th and Nigeria 112th position. The report further stated that African countries suffered from severe weaknesses in all components of the index from poor connectivity caused by expensive and poor-quality ICT infrastructure to very low levels of basic skills and weak framework for technology-niche activities to flourish. This means that African countries are left behind in terms of ICT usage in teaching and learning. Concerted efforts have however been put in place by many governments to utilize ICT in their educational system (Dantamas, Babi &Yelwa, 2016). Unfortunately, Nigeria is on the wrong side of digital divide in the educational use of ICT.

Saqibkhan, Khan, Siraj-u-din and Ismail (2015) carried out a research on the impact of Information and Communication Technology (ICT) on students' academic performance in Gomal University, Pakistan. The study adopted survey design with a sample of 50 respondents. The research instruments used were questionnaire and interview which was statistically analyzed with contingency Tables while the hypotheses were tested using mean statistics. The findings showed that there is a diverse response of students regarding the impact of ICT on students and their access to information. The research did not show the targeted population and the type of sampling technique used. The present study disclosed its population and type of sampling technique used.

In a study conducted by Adelabu and Adu (2015) on the review of the usage of E- learning facilities by Economics teachers in Eastern Cape Secondary School in South Africa, the study adopted survey research design. A total of 100 questionnaires were distributed across the study area. The data were analyzed using descriptive statistics. The findings of the study revealed that most Secondary Schools in the study area lacked the necessary device for teaching and learning Economics. The reviewed study adopted survey research design while the present study adopted the experimental design.

Similarly, Olowoyeye (2016) carried out a research on the role of Information and Communication Technology (ICT) towards teachers' Education in South West Nigeria. The study considered a descriptive survey research design with a population of 1,500 respondents

and a sample of 105 respondents using questionnaire and interview. The data were analyzed using simple percentage. The study found out that only 35 percent of the pre-service teachers have personal computers and 45 percent of the lecture rooms have ICT facilities. The reviewed study was conducted in South- West Nigeria while the present study was conducted in North-East Nigeria.

Lawal, Sheidu and Dike (2015) conducted a research on the impact of Information and Communication Technology (ICT) on the teaching and learning of Economics in Senior Secondary Schools in Lagos State. Descriptive survey research design was adopted for the study with a sample of 203 Economics teachers through stratified random sampling. The data for the study was collected with the aid of a structured questionnaire. Pearson Product Moment Correlation was used to analyze the data. The findings of the study revealed that the use of ICT in the classroom by Economics teachers has a significant impact in learning outcomes in Economics. The reviewed study was conducted in a secondary school while the present study was conducted in a College of Education.

What emerged from the existing studies showed that none of the reviewed studies was on the effects of Information and Communication Technology (ICT) tools on the academic performance of Economics students in a College of Education. Furthermore, none of the reviewed studies adopted the experimental research design.

Methodology

This study adopted the true experimental design using randomized control groups. This design involves the formation of two groups drawn from the same population. One of the groups (experimental group) is exposed to treatment and the other group (control group) is not exposed to any treatment. True experimental research design was used by Adeniyi (2015), who investigated the effects of Information and Communication Technology (ICT) on Secondary School students' performance in Economics in Kaduna state, Nigeria. This is similar to the present study in finding the effects of ICT tools on the academic performance of Economics students so as to ascertain whether there is a significant difference between the mean achievement score of students taught Economics using ICT tools and those taught without ICT tools.

The population of the study comprised of 1,131 Economics students and 15 academic staff from the study area. This made the entire population of the study to be 1,146. The sample size of the study was drawn from the population using Research Advisors (2006). The recommended sample size by the Research Advisors of a population of 1,146 with a coefficient level of 95 percent and a margin error (degree of accuracy) of 0.05 was 291. Out of this sample, 15 were academic staff while 276 were students. The study adopted simple random sampling in selecting the elements from the population.

The instruments for data collection were questionnaire and an achievement test. Two sets of questionnaires and one achievement test were used by the researchers to generate the needed data. The questionnaire used to collect data from Academic staff is referred to as Economics lecturers ICT questionnaire (EL-ICT-Q) and Economics students ICT questionnaire (ES- ICT-Q), Multiple Choice Economics Achievement Test (MCEAT) is the prôt-test and post-test

instrument that was used to determine the performance level of both the treatment and control groups.

The researchers administered the questionnaires to the respondents with the help of two trained research assistants, while Multiple Choice Economics Achievement Test was administered before the actual commencement of the experiment to both the treatment and the control groups. The test was made up of 50 multiples choice questions. The objective of conducting the experiment among others was to find out what effects do Information and Communication Technology (ICT) tools have on the treatment group on the teaching and learning of Economics.

The instruments were face validated by three experts from Test and Measurement from Abubakar Tafawa Balewa University (ATBU) Bauchi and Economics from Aminu Saleh College of Education, Azare in Bauchi state. The instruments had a reliability coefficient of 0.84 and 0.78 for questionnaire and achievement test respectively using Cronbachs' Alpha reliability test.

To determine if there is a significant difference in the performance of Economics students when taught with Information and Communication Technology (ICT) and when taught without ICT, non parametric t-test was used to test for significance at 0.5 percent level of significance using SPSS. The decision rule is that if the t- calculated is greater than the t- tabulated at 0.05% level of significance, then we reject the null hypothesis and accept the alternative hypothesis and vice-versa.

Results

Research Hypothesis: There is no significant difference in the performance of students taught Economics using Information and Communication Technology (ICT) tools and those taught without ICT tools. The result was computed using SPSS and presented in Table 1.

Table 1: Analysis of Independent Samples Test for the Hypothesis

Levene's Test for Equality of variances					t-test for Equality of means	
					95% confidence interval of the difference	
F	Sig	t	Df	Sig (2-tail)	Lower	Upper
0.636	0.428	9.915	58	0.000	19.76636	29.7669

Data in Table 1 which presented the results of independent samples test for the hypothesis for this study indicated that the Levene's test for equality of variances showed a probability value of 0.428 which is greater than the 0.05 significant level. This indicated that there is no equality of variances between the control and the experiment group. Table 1 further showed the t-test for equality of means between the two groups. The 2-tailed test showed that there were two groups while probability value of 0.000 which is less than the 0.05 significant level revealed

that there was no equality of means where the 95 percent confidence interval of difference in the means revolved around 19.76636 to 29.76697; the result indicated that the difference in the lower and the upper bound are positive and up to 10 which shows a significant difference between the means of the two groups. This result implied that the post-test result showed difference in the performance of Economics students between the two groups (control and experiment group). Thus, we reject H_0 and accept H_1 meaning that experimental group perform higher than the control group.

Discussion of Findings

The finding from the hypothesis which states that there is no significant difference in the performance of students taught Economics using Information and Communication Technology (ICT) tools and those taught without ICT tools indicated that academic performance in the experimental group is significantly higher than those from the control group. This finding confirmed with the work of Adeniyi (2015) who revealed that the performance of students taught with ICT is significantly higher than those taught without ICT tools. This implies that Economics teachers who could not access and effectively utilize ICT tools such as computer, internet, power point, digital projectors and public address systems in teaching, will find the performance of their students significantly low.

Conclusion and Recommendations

The study found that there was a significant difference in the academic performance of students taught Economics using Information and Communication Technology (ICT) tools and those taught without ICT tools. The study then concluded that utilization of ICT tools in teaching Economics increases students' academic performance. This is because from the experiment, we found that students who were introduced with ICT tools in teaching and learning performed better than students who could not have the access to the use of such tools. This implies that ICT tools are an important element in the teaching and learning of Economics.

Based on the findings of this study, it was recommended that Economics teachers should intensify teaching of Economics concepts using Information and Communication Technology (ICT) tools and expose students to a wide range of practical tasks so that they can become more aware and competent in the utilization of ICT tools in learning Economics. This can be done by giving students tasks on some Economic concepts such as assigning Economics students to draw graphs, charts, maps, diagrams, statistical tables and so on using Microsoft office word or perform some Economic calculations using Microsoft excel or any other statistical software. This will enhance students' ICT skills and improve their academic performance.

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