

# Methods and Areas of Application of Information and Communication Technology (ICT) in Teaching and Learning of Economics in Colleges of Education in North Central States, Nigeria

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## Abstract

The main purpose of this study was to find out the methods and areas of application of Information and Communication Technology in teaching and learning of Economics in Colleges of Education in North Central States, Nigeria. The study was guided by two purposes, two research questions and two null hypotheses. The researcher adopted descriptive survey research design. The study was carried out in North Central States, Nigeria. The population comprised 140 Economics Lecturers and 87) NCE III students from selected Colleges of Education in North Central States. Stratified sampling technique was used to draw a sample size of 114 NCE III students and the 140 lecturers were retained. Observation Checklist on Available ICT Facilities for Teaching and learning Economics and a structured questionnaire were used for data collection. The reliability of the instrument was ascertained using Cronbach Alpha and an overall reliability coefficient of .97 was ascertained. Frequency, percentage, mean and standard deviation were used to answer research questions while independent sampled t-test was used to test null hypotheses at 0.05 level of significant. The Findings of this study showed that Lecturers and students agreed that expository/transmission method, inquiry method, simulation method, problem solving method and discussion method are use in teaching and learning of Economics at colleges of education. recommendation and suggestion for further studies were made.

**Keywords:** Methods, Information And Communication Technology (ICT), Teaching, Learning, Economics.

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## Introduction

Education is an essential agent of transformation and the foundation of industrial development as well as socio-economic growth. Education can be said to be the greatest venture a country can undertake for the swift growth of its socio-political, technology, human and material resources. The unique power of education acts as a catalyst for wider development goal of any nation. The development goal can only be fully realized, if education is equitable beyond mere enrollment or completion rates but to meet the Sustainable Development Goals (SDGs). It is therefore vital that nations' priority should be on the quality of learning and instruction in the classroom throughout the education lifecycle (Global Monitoring Report, World Bank, 2015). To meet up with the SDGs through the power of education is a serious financial investment which is currently beyond the reach of developing country like Nigeria but innovative solutions such as those offered by Information and communication technology (ICT) can help in closing the gap (United Nations Educational, Scientific and Cultural Organization((UNESCO, 2014).

In the past, teachers have been considered as reservoir of knowledge. This implies that students sitting in the class and listening to the teacher who is directing and passing the information to the audience (students) via the chalkboard, while the student may take their own note and listen passively. This mode of teaching is not encouraging anymore. Nowadays teachers are regarded as facilitator and their major role is to help the student to learn on their own with little guidance. Students are organized in groups and each group doing something different from the other, while some are engaged in writing tasks, some are engaged in practical activities, some may be in the class and some outside the class using professional equipment, finding something in the library. This learning process is individualized because students may be at different stages in the task which suit individual abilities and competence. However, with advancement in science and technology, the world is moving at a very fast speed (Zare-ee, 2011). Importantly, technology involves information and communication which may be seen as the gathering and processing of information for use by way of communication and electrical equipments such as computer, cameras, telephones, etc (Ozaji, 2003). Akbay (2005) defined Information and communication technology as a broad term that encompasses any communication equipment or appliances/application ranging from radio tape, hardware and software, satellite system, television, phones, network and computer etc, also the different activities and functions related with them, such as distance education and use of video-conferencing. These electronic systems can be employed for transmitting, telecommunications and various types of computer assisted communications including teaching and learning in a classroom. Adoni (2010) noted that Information and communication technology centered education covers the application of computers, optical fiber technologies, on-line self-learning packages, satellites, radio, interactive CDs, tele-presence systems and all types of information technology hardware and software in learning and instruction.

In this context Information and Communication Technologies: refers to electronic devices which including computers, telecommunication and audio-visual systems that help in the collection, processing, transportation and delivery of information and communication services to users.

The use of technologies to information management, production, amassing, processing, recollecting, transmitting and so on. is essential in this digital era. Hence, the use and application of information and communication technology in the learning and teaching is at the centre stage of discussion and issues of concern in current day educational programme and policies. (Thierer, 2002). The need for the application of information and communication technology in learning and instruction is helpful for training students and staff to be totally engaged and be creative members of a globe that has been in existence and will keep on moving by technology (Gregorian, 2002). In relation, Gregorian states that roughly every facet of learning, from investigation to distribution of information or ideas has been affected by technology in the humankind of tertiary education. It means that through information and communication technology, it is likely to immediately view important ideas and information that will improve learning and teaching of Economics through internet (Bakac 2011).

Economics is among the subjects offered in Colleges of Education in Nigeria by students. According to Dwivedi (2004) Economics is the study of how people make a choice on what is to be produced, how it should be produced and for whom to produce goods which are material commodities like steel, strawberries and render services which are activities such as message or life performance guzzled or take pleasure in only at the moment they are manufactured or produced. He went further to say that the question of what, how and for who to produce is either answered by a central planning agency or the price mechanism depending on the economic system practiced by a country. Also, Davies (2003) sees economics as the study of how man allocates limited resources among alternative wants. The specific objectives of Economics as outlined by The Federal Republic of Nigeria (FRN, 2004), include furnishing students with the basic ethics of Economics necessary for useful living and higher education; preparing/encouraging students to be wise, efficient and clever in the administration of limited resources; and increase value for the dignity of effort and their admiration of socio-economic, and cultural value of the society. In view of this research work

Economics is the study and management of scarce resources. While Economics teacher is a person who studies Economics at university level and teaches economics subject, especially one employed by a school.

The College of Education is the unit of tertiary education in Nigeria saddled with the responsibility of training teachers to obtain non-degree but qualitative professional certificate in education. The origin of Nigeria Colleges of Education dates back to the 1950s. In the report of Ashby Commission of 1959, it is evident that there was a need to provide middle level teacher to meet Nigerian desires in the area of teaching manpower. It was observed that many teachers were not certificated and trained. This observation was followed by a suggestion for greater expansion of intermediate education for intermediate teachers, which was targeted at upgrading the existing teaching force (Isiyaku, 2007). The commission recommended the establishment of Advanced Teacher Training Colleges (A.T.T.C's) in Nigeria. The recommendation led to the founding of ATTC'S at Owerri, Ondo, Lagos and Zaria between 1961 and 1962; Kano in 1964 and Abakain 1968, with both institutions named Colleges of Education (Isiyaku, 2007). The Advanced Teachers Colleges (ATCs) according to Isiyaku (2007) turned out graduates who obtain Nigeria Certificate in Education (NCE), a nondegree but qualitative professional certificate in education.

The review of the NCE curriculum has selected computer education as mandatory. In the new national curriculum that was launched in October 2010, all Colleges of Education students are expected to achieve minimum technology standards as a mandatory component in pre-service programmes. However, lecturers in the colleges of education has been identify as key players in developing ICT skills in students by the National Commission for Colleges of Education. Hence, literacy and proficiency in ICT have been made compulsory for all lecturers in Nigerian Colleges of Education since 2004/2005 academic session. Lecturers in these colleges are required to incorporate ICT into their classroom activities. ICT proficiency is the ability of lecturers to use ICT properly to access, administer, incorporate and appraise information, develop new understanding, and communicates with other in orders to contribute effectively in the society (Ministerial Council on Education, Employment, Development, and Youth Affairs, MCEECDYA, 2008).

Evidences abound that ICT facilities can be used to effectively facilitate teaching and learning. Report on effective use of ICT facilities in teaching and learning of Economics in colleges of education in north central states however remains unknown. Noteworthy, the presence of ICT technology and facilities alone will not stimulate significant changes in learners without a teacher. Teachers are important in the implementation of ICT policies in education. Without the teachers, students may not be able to effectively enjoy available potentials inherent in ICT on their own.

Also, there is dearth of evidence on ability of Economics teachers and learners to teach and learn using ICT facilities. Gains inherent in using ICT facilities to support learning (of Economics) in the classroom are many. On the basis of the foregoing, the researcher is concerned with finding out the methods and areas of application of information and communication technology equipment in teaching and learning of Economics courses in Colleges of Education in North Central State, Nigeria.

### **Purpose of the Study**

The specific objectives are to:

1. Identify the methods used for teaching and learning of Economics in Colleges of Education in North Central States,
2. To find out areas of application of ICT facilities for teaching and learning of Economics in Colleges of Education in North Central States, Nigeria

### Research Questions

The following research questions guided the study:

1. What are the method used in teaching and learning of Economics Courses in colleges of Education in North Central States, Nigeria?
2. What are the areas of Economics in which ICT is applied in teaching and learning in colleges of Education in North Central States, Nigeria?

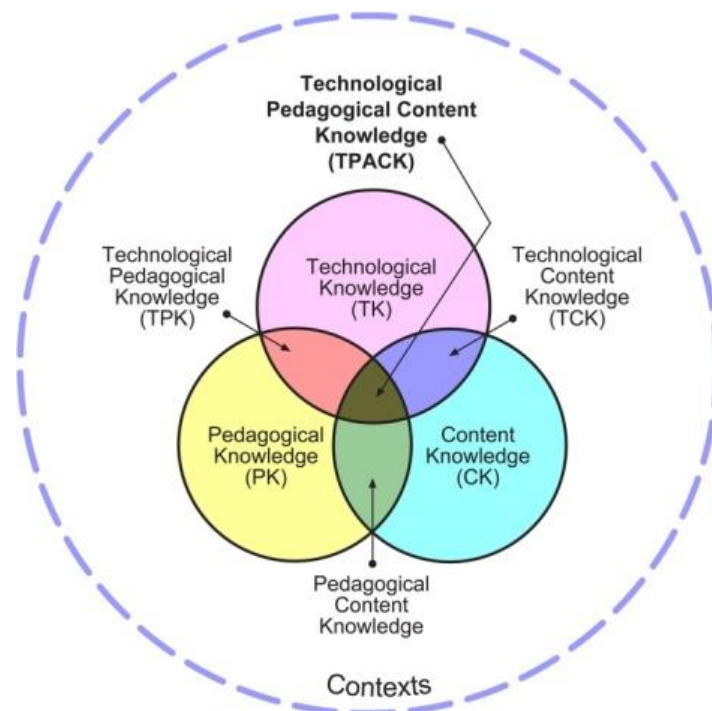
### Research Hypothesis

1. There is no significant difference in opinion of Economics students and lecturers on the method used in teaching and learning of Economics courses in colleges of education in North Central State, Nigeria.
2. There is no significant difference in opinion of Economics students and lecturers on the ICT facilities applied for teaching and learning Economics in colleges of education in North Central State, Nigeria

### Theoretical Framework

**The Technological Pedagogical and Content Knowledge (Mishra and Koehler, 2006).** This study shall therefore, be based on the theory of “Technological Pedagogical and Content Knowledge” (TPACK) developed by Mishra and Koehler (2006). The TPACK framework is based on the principle that while addressing the complex multifaceted and situated nature of teacher’s knowledge, proper integration of technology in teaching by teachers required essential qualities of knowledge (Mishra and Koehler, 2006). Evidence are abound that computer can not make any meaningful difference in teaching and, rather, the pedagogical method the teacher applied when instructing the computer will made the difference. (Clark, 2001). Therefore, TPACK provides a better feedback for incorporating technology in classroom teaching and learning process than the Sensory Stimulation Theory (SST) which has some limitations as stated above. The TPACK diagram is shown below:

#### TPACK Theory Diagram



*The TPACK Model (Koehler & Mishra, 2006)* Technological Pedagogical and Content Knowledge (TPACK) emerged from understanding the interaction of content, pedagogy and technology

knowledge, underlying true meaningful and deeply skilled teaching with technology. TPACK is the basis of effective teaching with technology and requires an understanding of the representation of concepts using technologies, pedagogical techniques that use technology in constructive ways to teach content; knowledge of what makes concepts difficult or easy to learn and how technology can help redress some of the problems that students face, such as students prior knowledge (Koehler and Mishra, 2006).

**Methodology:**

The researcher adopted a descriptive survey design. The area of study consist of all the North Central State comprising of Plateau, Niger, Kwara, Benue, Kogi, Nassarawa, and Federal Capital Territory. Within the state the study is also delimited to Colleges of Education in North Central State, Nigeria. The population of this study comprised all the Economics lecturers and the NCE III students in six Colleges of Education in the North Central State of the Nigeria, The population consist of One Hundred and Eighty Nine(189) Economics Lecturers and One Thousand Two Hundred and Three (1203) NCE III students from six (6) Colleges of Education in North Central State with a sample size of three hundred and nine (309) respondents which are 189 lecturers and 120 NCE III students. The 189 lecturers in the population were retained, while ten percent (10%) of the NCE III students was used.

The instruments used in gathering data for this study is a structured questionnaire. The questionnaire was adapted and necessary modification made to suit the study area. Section A of the instrument contain personal information of the respondents, while section B contain thirty (30) items aim at enquiring about different issues on the research questions. The items will be closed ended. They are placed in 4-point rating scale and two point rating scale of Strongly Agree (SA), Agree (A), Disagree (D) and Strongly Disagree (SD), Very High Extent (VHE), High Extent(HE), Low Extent (LE) Very Low Extent (VLE) and Available (A), Not Available (NA) respectively which will be scored as follows: SA=4, A=3, D=2, SD=1. And A=2, B=1

To ensure the face validity of the questionnaire, the researcher submitted the drafted questionnaire items to two senior lecturers in Measurement and Evaluation department and one senior lecturer in Social Science Education Department of University of Nigeria, Nsukka. The questionnaire items were subjected to thorough scrutiny and proof reading by these experts to ensure that its contents were in line with the research questions.

In order to ascertain the reliability of the questionnaire, a pilot study was conducted. A pilot study was carried out with fifteen (15) lecturers and Fifteen (15) NCE III students of Economics Department, College of Education Osugbe, Enugu State. The internal consistency of the instrument was ascertained by using Cronbach Alpha. an overall reliability of .97 for the two clusters used for the research work was found, indicating that the instrument is reliable. Cronbach Alpha reliability coefficient was desired appropriate to establish the reliability of the instrument because the items were dichotomously scored.

**Results**

**Research question 1:** What are the method used in teaching and learning in colleges of Education in North Central States, Nigeria?

**Table 1: Mean ratings and standard deviations responses of Lecturers and students on the method used in teaching and learning in colleges of education.**

S/N	Items	Respondents	Mean	Std. Deviation	Remarks
1	Expository/transmission method	Lecturers	3.04	.804	Agreed
		Students	3.00	.831	Agreed
2	Inquiry method	Lecturers	3.21	.818	Agreed
		Students	3.11	.824	Agreed

3	Simulation method	Lecturers	3.51	.651	Agreed
		Students	3.46	.680	Agreed
4	Problem solving method	Lecturers	3.53	.714	Agreed
		Students	3.52	.719	Agreed
5	Discussion method	Lecturers	3.27	.677	Agreed
		Students	3.18	.686	Agreed
6	Dramatization method	Lecturers	1.56	.499	Disagree
		Students	1.56	.498	Disagree

The table showed the responses of Lecturers and students on the method used in teaching and learning Economics in colleges of education. In this, six questionnaire items were administered to respondents. Item 1-5 mean ratings were above 2.50 with moderate standard deviation shows that Lecturers and students agreed that the methods are used for teaching Economics. While item 6 with mean ratings below 2.50 with low standard deviation indicates that Lecturers and students disagreed on the item. Hence, Lecturers and students agreed that expository/transmission method, inquiry method, simulation method, problem solving method are discussion method are method use in teaching and learning of Economics in colleges of education.

**Research question 2:** What are the areas of Economics in ICT applied in teaching and learning in colleges of Education in North Central States, Nigeria?

**Table 2: mean ratings and standard deviation of respondents on the areas of Economics ICT applied in teaching and learning in colleges of education.**

S/N		Respondents	Mean	Std. Deviation	Remarks
1	Monetary Economics	Lecturers	2.62	.680	Agreed
		Students	2.60	.666	Agreed
2	Public Finance and Public Policy	Lecturers	3.36	.937	Agreed
		Students	3.40	.920	Agreed
3	Econometrics	Lecturers	3.24	.835	Agreed
		Students	3.25	.833	Agreed
4	Demography	Lecturers	2.94	1.045	Agreed
		Students	2.90	1.048	Agreed
5	Health Economics	Lecturers	3.44	.688	Agreed
		Students	3.40	.666	Agreed
6	Development Economics	Lecturers	3.10	.833	Agreed
		Students	3.00	.840	Agreed
7	Macro-Economics	Lecturers	3.58	.646	Agreed
		Students	3.55	.672	Agreed
8	Micro-Economics	Lecturers	3.28	.790	Agreed
		Students	3.30	.784	Agreed

Table above shows the responses of respondents on the areas ICT can be applied in teaching and learning of Economics in colleges of education. In this cluster, six item questionnaires were administered to respondents in which all the item mean rating were above 2.50 benchmark with respective moderate and high standard deviation. Therefore, Lecturers and students agreed that ICTs can be applied in teaching and learning monetary, public finance and public policy, Econometrics, demography, health economics, development economics, macroeconomics and microeconomics.

## **Discussion**

### **Method used in teaching and learning in colleges of Education in North Central States, Nigeria**

The Findings of this study showed that Lecturers and students agreed that expository/transmission method, inquiry method, simulation method, problem solving method and discussion method are use in teaching and learning of Economics at colleges of education. All these method respondents agreed on can be effectively used with the aid of computer. In support of this finding, Ezekoka and Okoli (2012), Anyamene, Nwokolo, Anyachebelu and Anemelu (2012) findings indicated that students taught using computer assisted instruction package performed significantly better than their counterparts taught using the conventional method of instruction in the retention test. Yusuf, Kajuru and Musa (2013) findings indicated that students taught mathematics using the CMSTA significantly outperformed those not taught with the same approach. Secondly, the result revealed that the male students taught mathematics using the CMSTA significantly outperformed their female counterparts.

### **Areas of Economics ICT are applied in teaching and learning in colleges of Education in North Central States, Nigeria**

The Findings of this study showed that Lecturers and students agreed that ICTs can be applied in teaching and learning monetary, public finance and public policy, Econometrics, demography, health economics, development economics, macroeconomics and microeconomics. The application of ICT like Power Point programme and smart board in implementation of Economics contents in monetary, public finance and public policy has been found helpful by the respondents. The application of software programmes like E-view, Stata and SPSS in teaching and learning of Econometrics, demography, health Economics, development, macroeconomics and microeconomics have been found helpful by respondents. The responses of the respondents indicated that application of ICT in teaching pedagogies of economics contents are not only stress-free for lecturers but motivates the students to learn economics with high interest.

## **Conclusion**

Information and Communication Technologies plays vital role in teaching and learning process in different colleges of education. It refers to all electronic devices which including computers, telecommunication and audio-visual systems that help in the collection, processing, transmission and delivery of information and communication services to Lecturers and students. The Findings of this study showed that Lecturers and students agreed that expository/transmission method, inquiry method, simulation method, problem solving method and discussion method are use in teaching and learning of Economics at colleges of education. Also, Lecturers and students agreed that ICTs can be applied in teaching and learning monetary economics, public finance and public policy, Econometrics, demography, health economics, development economics, macroeconomics and microeconomics.

## **Recommendation**

Based on the findings, the following recommendations were made:

1. Curriculum planners should emphasis more on integration of ICT facilities on instructional delivery of Economics contents.
2. States and federal government should recruit teachers who have ICT skill in teaching and learning of Economics at colleges of education in North Central.

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