

## Through the Looking Glass of Globalization; Focus on ICT Competence and Science Teaching in College of Education, Ikere-Ekiti, Nigeria

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### **Abstract:**

*The groundswell of Interest in how computers and the Internet can be harnessed to improve the efficiency and effectiveness of Education at all levels and in both formal and informal settings is at crescendo recently. The experience of introducing different ICTs in the classroom and other Educational settings all over the world over the past several decades suggests that the full realization of the potential Educational benefits of ICTs into Educational system is a complex, multifaceted process that involves not just Technology indeed, given enough initial capital, getting the Technology but more importantly curriculum and pedagogy, Institutional readiness, Teacher Competencies, and long-term financing among others. This research however, investigated the prevailing level of ICT competence among lecturers in College of Education, Ikere-Ekiti, Nigeria. The study especially sought to find out what the subjects knew about ICT and whether there would be differences in Non- Science and Science based, and then between male and female lecturers. This study adopted a simple survey research method that involved the use of a questionnaire on a total of Ninety (90) lecturers. Among other things, the study found that majority of the sample is not fully disposed on the use of ICT. It is suggested that policy makers and governments should always consider educational policy and planning, language and content, infrastructure, capacity building and financing as the five key challenges of ICT integration in Education. In conclusion, the study defines a framework for the appropriate and effective use of ICTs in Education, such as effectiveness, equity and sustainability.*

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**Keywords:** *ICT Competence, globalization, Science curriculum and pedagogy*

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### **Introduction**

The reasons for the introduction of ICT at various levels of education in Nigeria and the gains that follows such practice cannot be over emphasized even though Abimbade, Aremu and Adedjoja( 2003) highlighted some curricular implications of the introduction of ICT to include: Development of competency and confidence in the use of computers and other peripheral in a range of contents, an awareness of the importance and limitations of computers and IT tools in the Society, an appreciation of the range of applications of IT, including using IT to communicate and handle information, Measure, control and model, an understanding of the contribution that IT can make to solving problems in a systematic and methodical manner.

This paradigm shift by the submission International Labour Organization ILO (2003) will

centre on the nature and purpose of educational institutions and as the half -life of information continues to shrink and that access to information continues to grow exponentially, schools cannot remain mere venues for the transmission of a prescribed set of information from teacher to student over a fixed period of time. However, Tinio (2002) opined that ICT- enhanced learning promotes a thematic integrative approach to teaching and learning. This approach eliminates the artificial separation between the different disciplines and between theory and practice, which characterizes the traditional approach.

In the same vein (Jekayinoluwa &Ojo 2010) in their work wrote that with the changes in the society, teacher trainer skills must also change to enhance sufficient basic literacy in reading, writing, Calculation, critical thinking and problem solving. A successful teacher trainer must also strive to acquire basic skills in information dissemination, inter-dependence and inter relatedness of information technology and telecommunication technology. Therefore, the challenges of school system in the 21st century will be incomplete if the demand of ICT is not met.

What then is ICT? Is it knowledge, machinery or electronic gadgets? ICT according to Obanya( 2002) is a broad term that has to do with the harnessing of process, the methods and the products of electronic and communication related technologies (and other related resources in today's knowledge driven society), for enhancing the productivity, the spread and efficiency of a set of program activities geared towards the achievement of a clearly determined goals. Having seen ICT as the lives and cry of the entire world which has posed serious challenges to the field of education with the submission of Tinio (2002), most especially the readiness of teachers and students to be equipped with skills and adequate knowledge in ICT so as to meet up with the global trends is necessary.

Attempt to meet these challenges should therefore stir up a desire in policy makers to critically investigate the level of ICT competence of the team among other things. Since teaching is a profession that requires specialised knowledge and skills, Teachers in order to do their jobs and perform their duties in this global society should possess certain competencies and these competencies as posited by Unver (2003) are that which will make a teacher effective. Also, according to International Labour Organization (2008), it is the knowledge, capabilities and behaviour which someone exhibits in doing his/her job and which are factors in achieving the set objectives pertinent to the job.

In relevance to this study, competency is the knowledge, skills and attitude acquire the teacher requires in order to perform his/her duties to meet the challenges of the present global society. And with the current trends in the educational sector and knowledge driven society modern day science and non-science based teachers irrespective of gender, race and so on at all levels are expected to learn, teach and be able to do so many things with the computer as the society expectation on them are increasing daily. In line with the submission of Jekayinoluwa and Ojo (2010), the functions of teachers in education process is considered prominent especially when we consider teaching and learning process as acquisition of knowledge and skills by individual to enable him or her become useful member of the society. This with the assertion of Science Teachers Association of Nigeria(2001) culminate one of the triumphs of science

which represent a cumulative process of increasing knowledge and a sequence of victories over ignorance and superstition.

From science flowed a stream of knowledge, skills and inventions for the improvement of human life. However Jekayinoluwa and ojo(2010)observed inconsistency and poor performance that reflect in our classrooms today to be indicative of inherent flaws in the competent and effective teachers, even though teacher education in Nigeria and in the global perspective remains all important programme which prompted various government and stakeholders over the years to focus on the improvement and provision of quality teachers which informed in this study a close look at the ICT competence of some non-science and science based male and female lecturers in a college of education south west Nigeria.

### **Statement of the Problem**

To prepare students for the globalized age, a complete exposure to a variety of tools and computer based applications are necessary and this have a serious implication on the level of competence of the teacher who is the most important resources in the teaching and learning process. In view of this, this study attempted to investigate the ICT Competence of some non-science and science based male and female lecturers in a college of education, south west Nigeria.

### **Research Questions**

1. Are lecturers in science based courses competence than their counterpart in non-science based courses in the usage of computer.
2. Are male lecturers in science based courses competent in the usage of computer than their female counterpart?
3. Are male lecturers in non -science based courses competent in the usage of computer than their female counterparts
4. What is the current level of practices of computer usage between science based and non-science based lecturers

### **Research Method and Sample**

This is a survey research type which sort for ICT competence of some non-science and science based male and female lecturers in a college of education south west Nigeria. The population comprises of ninety (90) lecturers as at the time of this investigation. The school of science with seven (7) departments has sixty four (64) lecturers in all while other schools categorised in this study as non-science based comprises of twenty six (26) departments formed the subject of this study. A total of fifty two (52) males and twelve (12) females were sampled from the school of science while twenty one (21) males and five (5) females were sampled from other school. The disparity in the samples was based on the fact that science constitutes the bed rock of any national development. This belief is based on the observations of (Olagunju, Adesoji, Iroegbu

and Ige 2003) that spectacular achievements in science and occasional breakthroughs have high potentials in boosting national prestige, military might, national income and international status of any nation. More importantly, the world is passing through an age which science has permeated almost all facets of human activities. As a consequence, science teaching had become an invaluable educational activity directed at promoting the learning of science for effective living in a modern society.

The science teacher requires the possession of specialized content knowledge, process skills high level of imaginative thinking capacity as well as prudence and organization. The training of teacher with such competence demands the provision of specialized resources such as Laboratories, workshops, libraries, as well as motivating the teaching and learning environment. Hence, it will obvious that training of high calibre science teachers is a costly venture which requires skilful planning and top level management.

### **Research Instrument and Administration**

The main instrument for the study was a self-designed College of Education Lecturers ICT Competency Questionnaire (CELTICCQ). The instrument is made up of two sections with section A of the questionnaire that sought for background information about the respondent. Section B sought for the competency of the respondent about the usage of the computer and ICT resources in teaching and learning process, while section C focused on level of practices by the respondents in the utilization of ICT resources in teaching and learning process.

### **Validity and Reliability of the Instrument**

The questionnaire was drafted and given to experts in computer education as well as those in educational technology for content and face validity with necessary corrections. Reliability of the instrument was done using cronbach alpha coefficient having tested the same on a set of lecturers in a college of education that is a bit far from the samples of the study

The researchers administered the questionnaire to the samples through the directorate of human resources and development of the school for seriousness and clarity. Data were collected and collated through the same source.

### **Results of the Study**

The data collected and collated in the course of this study were subjected to chi square analysis and frequency count to determine the competency of the respondent in the usage of resources as well as their level of practices in utilization of the same in teaching and learning.

### **Research Question (1)**

Are lecturers in science based courses competent than their counterparts in non-science based courses in the usage of computer.

### **Table (1)**

Contingency table comparing computer usage competency of science based and non-science based lecturers

FREQUENCY DISTRIBUTION			
GROUP	YES	NO	$\chi^2$
SCIENCE BASED	38	26	1.257
NON-SCIENCE BASED	14	12	

Significant at 0.05 levels.

Table 1 showed  $X^2$  calculated is 1.257 less than the table value of 3.84 at 0.05 level of significance which means a non-significant result and by implication means no competency differences between lecturers in science based courses and their counterparts in non-science based courses in the usage of computer.

**Research Question (2)**

Are male lecturers in science based courses competent in the usage of computer than their female counterparts?

**Table (2)**

Contingency table comparing computer usage competency of male and female lecturers in science based courses

FREQUENCY DISTRIBUTION			
GROUP	YES	NO	$\chi^2$
SCIENCE BASED	35	17	12.962
NON-SCIENCE BASED	08	04	

Significant at 0.05level.

Table 2 showed  $X^2$  calculated is 12.962 greater than the table value of 3.84 at 0.05 level of significance which means a significant result and by implication means competency differences between male lecturers in science based courses and their female counterparts in the usage of computer.

**Research questions (3)**

Are male lecturers in non-science based courses competent in the usage of computer than their female counterparts?

**Table (3)**

Contingency table comparing computer usage competency of male and female lecturers in non-science based courses.

FREQUENCY DISTRIBUTION			
GROUP	YES	NO	$\chi^2$
SCIENCE BASED	10	11	55.11
NON-SCIENCE BASED	02	03	

Significant at 0.05level.

Table 3 showed  $\chi^2$  calculated is 55.11 greater than the table value of 3.84 at 0.05 level of significance which means a significant result and by implication means competency differences between male lecturers in non- science based courses and their female counterparts in the usage of computer.

#### Research question (4)

What is the current practices level of the computer usage between science based and non-science based lecturers.

#### Table (4)

Contingency table comparing the level of computer usage by science based and non-science based lecturers.

FREQUENCY DISTRIBUTION			
GROUP	YES	NO	$\chi^2$
SCIENCE BASED	28	36	31.82
NON-SCIENCE BASED	07	19	

Significant at 0.05level.

Table 4 showed  $\chi^2$  calculated is 31.862 greater than the table value of 3.84 at 0.05 level of significance which means a significant result and by implication the practices level of computer usage by science based lecturers indicated there are differences with their counterparts in non-science based courses.

#### Discussions and Conclusions of results

The results above as indicated in Table 1 showed a non-significant result which depicted no significant difference(s) in the usage of Computer among science based and non-science based lecturers in the college. Also in Table 2 and Table 3 above, the significant results obtained showed level of difference(s) in the usage of computer among male and female lecturers either from the same department or different departments within the College. And then in Table four, the significant result shown suggested differences in practices level of computer usage by science based lecturers and non-science based lecturers.

In this case, the results obtained is very far from being believable in this kind of environment looking at the conclusion of Kozma (2005) that there is a common belief that ICTs have significant contributions to changes in teaching practices, school change and innovations, and community services. ICT according to Brosnan (2001) is a modern technology that simplifies human activities is not only advantageous in many respects, but also has many limitations. Many people from inside and outside the education system think of ICT as “panacea” or the most important solution to school problems and improvements. However, many conditions can be considered as limitations of ICT use in education. The limitations can be categorized as teacher related, student related and technology related. All of them potentially limit the benefits of ICT in education. Teachers’ attitude and self-efficacy plays an important role in the teaching-learning process that utilizes computers and internet connections.

The teachers’ attitude towards the use of technology is vital. Many observations reveal that teachers do not have clarity about how far technology can be beneficial for the facilitation and enhancement of learning. Of course some teachers may have positive attitudes to the technology, but refrain from using it in teaching due to low self-efficacy, lack of motivation which brings resistance and lack of enthusiasm as well as computer anxiety with tendency to consider themselves not qualified to teach with technology. Furthermore, many teachers may not have the required IT skills and feel uncomfortable, nor do they have trainings needed to use the technology in their teaching.

### **Recommendations**

Policy makers and project leaders should think in terms of input factors that can work together to observe the right impact of ICT in education. Matching the introduction of computers with national policies and programs related to changes in curriculum, pedagogy, assessment and teacher training is more likely to result in greater output. It is suggested therefore, that policy makers and governments should always consider the challenges of ICT integration in Education which involved, educational policy and planning, language and content, infrastructure, capacity building and financing. Conclusively, a framework for the appropriate and effective use of ICTs in Education should be re-defined in terms of effectiveness, equity and sustainability.

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