

Skills Possessed and Needed in Universities in Nigeria for the Application of Information Communications Technology (ICT) in Teaching in Science Education

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Abstract

This paper is focused on a study on science students' teacher education programmes and practices in universities in south eastern states of Nigeria. a sample of 300 respondents composed of 40 Science Education Students and 20 Lecturers in each Department of each of the five Federal and State owned Universities in the South Eastern States were used. A total of 40 questionnaire items arranged in four clusters: Cluster A addressed extent of university's readiness to use ICT in teaching and learning; Cluster B centered on Extent of readiness of Lecturers and Students respectively to embrace ICT in teaching; C is the degree of knowledge of Lecturers and Students of different parts of computer; D is the extent of familiarity of Lectures and Students with ICT tools and their applications and E focused on the problems hindering the use of ICT in teaching and learning in each university

Introduction

In Nigeria, telecommunications started from Laulate Satellite Earth station which is Nigeria's first international satellite telecommunications gate way to the outside world.

Historically the development of telecommunication in Nigeria was characterized by unfulfilled objectives. Achievements were consistently short of demands for services. It has to be noted however that the present analogue system on which Nigeria's telecommunications network through efforts had been very very slow (Ogunsola and Aboyade in Journal of social science 11(1): 7:14 2008). In Nigeria Information Communications Technology (ICT) is rather a recent phenomenon with telecommunications being the oldest. It was not until the 1950's that substantial expansion began with the introduction of Very High Frequency (UHF) radio systems, 116 manual and 5 (five) automatic telephone exchanges. It is also worthy to note that it was from the period (2008) that Nigeria started experiencing changes for the better with regards to ICT in library operations.

It is also worthy of note that in Nigeria, some university libraries are now computerizing some of their library computer centres or are installing these computers in their own libraries. The private sectors are not also left out in this information technology revolution. University campuses in Nigeria, are now Jampacked with ICT facilities Ogunsol and Aboyade (2005) continuing opined also that it is no longer strange to see lecturers and students in universities carrying out their researches and other academic works using various Information Technology (IT) devices like e-mail and internets. Both the federal, state and other international agencies are now interested in the development of ICT in higher education in Nigeria. in effect, the adoption and development of ICT in Nigeria, especially in support of library development can be regarded as a revolution, Ogunsola and Aboyade (2005) finally concluded. This paper presents the results of an investigation about the skills possessed and needed in universities in Nigeria for the application of ICT facilities in teaching in science education departments of universities in the South Eastern zone of Nigeria. A random sample of 6 (six) out of the 8 (eight) Federal and State owned Universities in the region were used for the study. A total of 36 (thirty six) questionnaire items arranged into 3 (three) clusters according to 18 (eighteen) research questions and 18 research hypotheses (three clusters for research questions and three clusters for hypotheses for the each of the six universities sampled) were used. Cluster No 1 sought information from lecturers and students on the degree of availability of (ICT) facilities for use in teaching and learning in their department of science education (items 5-15). Cluster No 2 sought information from lecturers and students respectively on the skills they possess that will facilitate teaching and learning in their department (16-30 items). Cluster No 3 sought information from them on the problem areas that exist in the department that hinder the application of (ICT) facilities in teaching and learning (items 31-36). The design employed in the investigation was the descriptive survey that involved the opinions of randomly composed samples of 60 respondents, (20 lecturers and 40 students) from each science education department of each of the 6 (six) universities. This makes it a sample size of 360 (three hundred and sixty) respondents. Data collected were analyzed using Statistical Package for Social Sciences (SPSS) and some descriptive statistics like frequencies of responses obtained on a 4 point likert scale, weighted average responses, as well as t-test statistic for answering the hypotheses formulated.

Results obtained for the 18 research questions and 18 research hypotheses are as shown in tables (I-VI) that follow respectively for each of the research question clusters. Note that each research question has three

clusters and three hypotheses making it a total of 18 research questions and 18 hypotheses respectively on the whole.

TABLE 1: Mean and standard deviation of lecturers and students on the availability of ICT facilities for teaching and learning in science education in south east universities

S/N	Universities	Status	N	Mean	Standard deviation	Decision
1.	University of Nigeria Nsukka	Lecturers	20	2.57	0.47	Available
		Students	40	2.39	0.35	Not available
2.	Namadi Azikwe University Awka	Lecturers	20	2.43	0.45	Not available
		Students	40	2.32	0.52	Not available
3.	Federal University of Science and technology Owerri	Lecturers	20	2.56	0.70	Available
		Students	40	2.78	0.56	Available
4.	Enugu State University of Science and Technology	Lecturers	20	2.34	0.45	Not available
		Students	40	2.10	0.31	Not available
5.	Imo State University Owerri	Lecturers	20	2.13	0.32	Not available
		Students	40	2.40	0.36	Not available
6.	Anambra State University of Science and Technology	Lecturers	20	2.86	0.28	Available
		Students	40	3.09	0.28	Available

From the table number 1 above, in University of Nigeria, the lecturers opined that the (ICT) facilities are available for teaching and learning while students are of the opinion that they are not available. In Nnamdi Azikiwe University Awka lecturers and students are of the opinion that (ICT) facilities are available in the department. In Federal University of Science and Technology both lecturers and students have the same opinion that the ICT facilities are available in their department. In Enugu State University of Science and Technology lecturers and students are of the opinion that they don't have ICT facilities in their department. In Imo State University Owerri both lecturers and students are of the opinion that ICT facilities are not available. In Anambra State University of Science and Technology lecturers and students are of the opinion that they have ICT facilities for teaching and learning in their department.

TABLE 2: Mean and standard deviation of lecturers and students on the degree of ICT skills possessed

S/N	Universities	Status	N	Mean	Standard deviation	Decision
1.	University of Nigeria Nsukka	Lecturers	20	2.84	0.21	Skilled
		Students	40	2.99	0.44	Skilled
2.	Namadi Azikwe University Awka	Lecturers	20	2.72	0.36	Skilled
		Students	40	2.57	0.54	Skilled
3.	Federal University of Science and technology Owerri	Lecturers	20	2.76	0.55	Skilled
		Students	40	2.85	0.43	Skilled
4.	Enugu State University of Science and Technology	Lecturers	20	2.65	0.55	Skilled
		Students	40	2.76	0.55	Skilled
5.	Imo State University Owerri	Lecturers	20	2.73	0.36	Not skilled
		Students	40	2.44	0.44	Skilled
6.	Anambra State University of Science and Technology	Lecturers	20	2.38	0.31	Not skilled
		Students	40	2.39	0.43	Not skilled

Results from table 2 shows that lecturers and students are of the opinion that they are skilled in operating ICT facilities in their department. Lecturers and students in Nnamdi Azikiwe University Awka, Federal University of Science and Technology and Enugu State University of Science and Technology, as well as Anambra State University of Science and Technology have the opinion that the lecturers and the students are skilled in operating ICT facilities. Lecturers and students of Imo State University differer in their opinion.

TABLE 3: Mean and standard deviation of lecturers and students on the possible problem areas in the application of ICT in teaching and learning

S/N	Universities	Status	N	Mean	Standard deviation	Decision
1.	University of Nigeria Nsukka	Lecturers	20	2.88	0.51	Agree
		Students	40	2.46	0.31	Disagree
2.	Namadi Azikwe University Awka	Lecturers	20	3.05	0.59	Agree
		Students	40	2.72	0.55	Agree
3.	Federal University of Science and technology Owerri	Lecturers	20	2.74	0.62	Agree
		Students	40	2.97	0.49	Agree
4.	Enugu State University of Science and Technology	Lecturers	20	2.88	0.50	Agree
		Students	40	2.78	0.43	Agree
5.	Imo State University Owerri	Lecturers	20	2.54	0.53	Agree
		Students	40	2.26	0.66	Disagree
6.	Anambra State University of Science and Technology	Lecturers	20	2.03	0.56	Disagree
		Students	40	2.28	0.64	Disagree

In table three lecturers and student in University of Nigeria, Nsukka differ in their opinions about problems in ICT application. Lecturers agree that they are problems in ICT applications while students do not agree. In Nnamdi Azikiwe University Awka, Federal University of Science and Technology and Enugu State University of Science and Technology both lecturers and students are of the opinion that they are problems hindering ICT application in their departments. Lecturers and students in Imo State University differ in their opinions. While lecturers agree that there are problems, students disagree with the opinion. In Anambra State University of Science and Technology lecturers and students disagree that there are problems of ICT application in their department.

Results of Hypotheses

TABLE 4: 't' test analysis of lecturers and student on the availability of ICT for teaching and learning in science education in Universities in South Eastern Nigeria

S/N	Universities	N	Df	t(cal)	Sig	Decision
1.	University of Nigeria Nsukka	60	58	1.542	0.128	Not significant
2.	Namadi Azikwe University Awka	60	58	-0.817	0.418	Not significant
3.	Federal University of Science and technology Owerri	60	58	1.301	0.198	Not significant
4.	Enugu State University of Science and Technology	60	58	-2.459	0.017	Significant
5.	Imo State University Owerri	60	58	2.862	0.006	Significant
6.	Anambra State University of Science and Technology	60	58	2.999	0.004	Significant

In this table the opinions of lecturers and students in the extent to which there are ICT facilities available in their departments is not differ significantly for University of Nigeria Nsukka, Nnamdi Azikiwe University and Federal University of Science and Technology Owerri. However the opinion of lecturers and student in Enugu State University of Science and Technology, Imo State University and Anambra State University of Science and Technology differ significantly.

Table 5: t test analysis of lectures and student on the skills possessed for acquisition of ICT in science education

S/N	Universities	N	Df	t(cal)	Sig	Decision
1.	University of Nigeria Nsukka	60	58	1.493	0.141	Not significant
2.	Nnmadi Azikwe University Awka	60	58	-1.125	0.265	Not significant
3.	Federal University of Science and technology Owerri	60	58	0.703	0.455	Not significant
4.	Enugu State University of Science and Technology	60	58	0.748	0.458	Not significant
5.	Imo State University Owerri	60	58	-2.661	0.010	Significant
6.	Anambra State University of Science and Technology	60	58	0.148	0.883	Not significant

In this table there are no significant differences between the opinion of lecturers and students in University of Nigeria Nsukka, Anambra State University of Science and Technology, Federal University of Science and Technology, Enugu State University of Science and Technology and Nnamdi Azikiwe University Awka that lecturers and students possess ICT skills in the department. Only in Imo State University that lecturers and students showed that there are significant differences in their opinions of skills possessed.

Table 6: ‘t’ test analysis of lecturers and students on the possible problem areas in the application of ICT in teaching and learning in science education department

S/N	Universities	N	Df	t(cal)	Sig	Decision
1.	University of Nigeria Nsukka	60	58	3.427	0.001	Significant
2.	Namadi Azikwe University Awka	60	58	-2.092	0.041	Significant
3.	Federal University of Science and technology Owerri	60	58	1.557	0.125	Not significant
4.	Enugu State University of Science and Technology	60	58	-1.774	0.442	Not significant
5.	Imo State University Owerri	60	58	-1.670	0.100	Not significant
6.	Anambra State University of Science and Technology	60	58	1.513	0.136	Not significant

In this table lecturers and students differs in significantly in the opinion about problem areas hindering ICT applications in University of Nigeria Nsukka and Nnamdi Azikiwe University. However there are no significant differences in the opinion of lecturer and students in other University.

Recommendations

It is highly recommended that the ICT facilities that are available in University of Nigeria Nsukka should be put into use so that the students will feel their impacts. In the same vein, those other state Universities where lecturers and students lack ICT skills should sit up and embrace the computer age that is in vogue. Problem hindering application of ICT facilities in teaching and learning in the various Universities include

- (1) Lack of electricity supply which is a very common problem in the eight eastern states of Nigeria.
- (2) Lack of internet services for those Universities that have internet services for ICT applications.

Thanks.

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