An Appraisal of Information and Communications Technology Application among Lecturers in Tertiary Institutions in Taraba State Nigeria

Cyril[1] Ubale & Amuche[2] Chris Igomu

1. Department of Vocational Technology, Modibbo Adama University of Technology, PMB 2076, Yola, Adamawa state, Nigeria. +234-8032573950
2. Faculty of Education, Taraba State University, Jalingo, P.M.B 1167, Jalingo, Taraba State, Nigeria. +234-7035868714

*E-mail of correspondence author:ciamuche@gmail.com

Abstract

The study investigated Information and Communication Technology (ICT) facilities use among lecturers in tertiary institutions in Nigeria with focus on Taraba state. A total of 500 lecturers were selected for the study using stratified random sampling technique. Three hypotheses were postulated to give direction to the study. Data collection was carried out with the instrument called ICT Utilization Questionnaire (IUQ.). Population t-test and independent t-test statistical analyses were used to test the hypotheses. Results obtained revealed that availability of ICT facilities in tertiary institutions in Taraba state, Nigeria is significantly low except internet-connected desktop computers and institutional cybercafés; lecturers' utilization of ICT facilities is significantly low; lecturers from federal-owned institutions in the Taraba state utilize ICT facilities more than their state counterparts. Thus, recommendations were made to enhance the provision and utilization of ICT facilities in Nigerian tertiary institutions.

Key words: ICT facilities, utilization, quality, instructional service, delivery, university lecturers.

1. Introduction

Information and communication technology has become the rave of the moment in global socio-economic affairs. It has become so important that every country, organization or institution no matter how highly or lowly placed want to identify and embrace it. The world presently is knowledge-driven and information age has taken the centre stage in virtually everything. Utilization of ICT facilities is therefore a sine qua non for qualitative instructional service delivery in universities.

Milken Exchange on Education Technology (1999) defines ICT as computer-based tools used by people to work with the information and communication processing needs of an organization. It encompasses the computer hardware and software, the network and several other devices (video, audio, photography camera, etc) that convert information (text), images, sound, motion and so on into common digital form. ICT has a wider spectrum of applications with enormous relevance to universities' teaching and learning activities. ICT utilization is, the presentation and distribution of

instructional content through web environment (e-teaching) or systems offering an integrated range of tools (stand-alone computer instruction, CD ROM amongst others) to support learning and communication (Yusuf, 2005). Instructional service delivery has to do with teaching/learning activities that take place in the classrooms. Therefore, quality of instructional service delivery entails the extent of effectiveness to which lecturers carry their classroom teaching/learning process.

According to Okebukola (2006), quality is judgement which determines the extent of preparation and efficiency of teachers, adequacy and accessibility of materials and facilities needed for effective teaching and learning, and how the teachers can cope with the challenges ahead of their job. The principal contribution of a university to society turns out on the quality of knowledge it generates and impacts, the habits of critical thought and problem-solving it institutionalizes and inculcates in its graduates, and the values of openness and democratic governance it promotes and demonstrates. The easiest way to ascertain these contributions is the caliber and commitment of lecturers to continuous improvement in teaching, research and community interactions; the range and quality of the curriculum and pedagogy; the quality and extent of educational facilities; commitment to evaluation and review of the activities to seek continuous improvements (Sawyer, 2004; Liston, 1999).

The utilization of ICT in instructional service delivery among lecturers in Nigerian universities has been more of a departmental affair, rather than institutional, and these departments are in sciences, medical and computer sciences where the synergy between research and teaching is strongest, and the essential infrastructure for course development and delivery were most accessible (Bassey, Akuegwu & Udida, 2009). Even at that, what was obtainable was the lowest aspects of ICT such as print, audio/video tapes and digital radios (World Bank, 2002).

The awareness of ICT started gathering momentum in universities in Taraba state in 2004 when University of Calabar entered into a partnership with Socket Works to process students' records in the aspects of registration and school charges. Thereafter, other universities followed suit and since then, the evolution of ICT has grown in leaps and bounds. To encourage this development, National Universities Commission (NUC), the government agency responsible for registering and regulating universities have prescribed personal computer ownership as follows: 1 PC to 2 lecturers below the rank of Lecturer I, 1 PC per lecturer I/senior lecturer, and 1 notebook per professor/reader (Okhiria, 2007). This is yet to be implemented in the universities under study.

Bamiro and Liverpool (2002) observe that the computer (ICT) has already invaded and dominated universities in the developed world, while in Nigeria it has been painfully slow. Akin to this is the report that no real effort has been made in ICT development both at the individual and corporate levels, and that most universities still process results manually (The Guardian Editorial, 2006). Moreso, most lecturers are yet to acquire the requisite ICT skills, and where opportunities exist for them to do so, they shun them because of the phobia they have developed over the ICT. Perhaps, this explains why Okogie (2008) the NUC Executive Secretary declared that most varsity teachers are incompetent. One may add that incompetent varsity teachers can only produce incompetent graduates (Akuegwu, Nwiue & Agba, 2008). Lecturers can only pass on skills and ideas to their students if they themselves are masters of their trade (Bamiro & Liverpool, 2002). The quality of lecturers' instructional service delivery cannot be divorced from their utilization of ICT in our

universities, which Aginam (2006) put at less than 5 percent. According to him, most Nigerian universities have little or no infrastructure for cyber centres, computer equipped classrooms or high speed internet and do not even have the funds to implement such infrastructures on their own. In addition to these are the problems of no regular power supply, dysfunctional telephone lines, lack of requisite telecommunications infrastructure, low level of internet connectivity amongst others. Worse still, Nigeria has no specific policy for ICT in education. It was in February 2007 that the Federal Ministry of Education created its ICT department (WikiEducator, 2007). All these act to play down the utilization of ICT in instructional service delivery of lecturers. However, there is a ray of hope with the Federal Government introduction of Universal Mandatory Information Technology Training (UMITT) which is being embraced by universities. The development in ICT in the last two years show that lecturers have access to a wide variety of ICT facilities, materials and texts to improve their content knowledge and instructional pedagogy. It is yet to be seen the extent this development has impacted on the quality of lecturers' instructional service delivery.

Given this background, this study is poised to examine the extent to which university lecturers' utilization of ICT facilities promote quality instructional service delivery in Taraba state of Nigeria.

2. Hypotheses

1. Availability of ICT facilities in tertiary institutions in Taraba state is not significantly low.

2. Lecturers' utilization of ICT facilities in tertiary institutions in Taraba state is not significantly low

3. Lecturers' utilization of ICT facilities in tertiary institutions in Taraba state does not significantly differ on the basis of school ownership.

3. Literature Review

Studies have confirmed that lack of computer skills exists among faculties at universities in Nigeria. As such, they are unable to incorporate the benefits of computer technology in their teaching, research and service to the university community. Less than 12 percent of the Nigerian academic curricula have digital content. This technology deficient therefore translates into a major handicap in effort to bridge Nigerian digital divide (Aniebonam, 2008).
A research carried out by Yusuf (2005) found that ICTs provide a variety of tools to support and facilitate teachers professional competence. ICTs transform teaching and helps teachers to be more efficient and effective, thereby increasing their interests in teaching. The use of ICTs can assist in the organization and the structure of the course and course materials, thereby promoting rethinking and revision of curriculum and instructional strategies. ICTs increase teachers' emphasis on individualized instruction, and as such enable them spend more time with individual students. This helps students to carry out more independent work and gives the teacher more time to focus on teaching higher level concepts in the classroom. ICTs provide teachers with opportunities for experimenting with emerging technologies, thereby aiding in the provision of interesting and creative presentation of content. Thus it engenders a multi-media presence in the classroom. ICTs

provide teachers with increased opportunities to collaborate and network with colleagues, thereby increasing communication and exchange of linkages among themselves.
In a study conducted by Okon and Jacob (2002) on the use of ICT by academics in selected universities in Nigeria they found that 61.30% of the respondents professed to use computers in their teaching and research works, which showed that the extent of computer usage was high. However, the findings indicated that the use of computers by academics was more on statistical analysis than on teaching. This implies that even though, ICT utilization was found to have existed in universities, it has been of more benefit to other areas especially research than in teaching/learning situations in the classroom.

Ololube (2006) in his study reported that ICT has the potential to accelerate, enrich and deepen teachers' skills; motivate and engage students in learning; helps to relate school experiences to work practices; contributes to radical changes in school and strengthens teaching. Similarly, Newhouse (2002) held that ICT literacy has enhanced teaching and learning through its dynamic, interactive and engaging content, and has provided real opportunities for individualized instruction.
A strategic study carried out on behalf of the EU commission showed that while the level of integration of ICT in teaching has increased greatly, considerably variations still exist between institutions in this regard (Ramboll, 2004). By implication the increase in the level of integration of ICT in teaching is not uniform. While some universities improve on their provisions of ICT facilities and consequently, their utilization in teaching/learning in the classrooms, others have remained stagnant and this has impacted negatively on their lecturers' utilization of ICT for instructional service delivery.

ICT has been found useful to all categories of university lecturers including the physically challenged ones in their classroom teaching/learning situations. Ntukidem and Ashi (2009) maintain that persons with visual impairment have variously benefited from the use of electronic device such as screen reader, which an increasing number of blind or low vision computer users use to listen to textual materials that appear on their computer screen. Accordingly, the more popular screen readers and Windows and Job Access with Speech for Windows (JAWS), both of which pass information to a Braille display or speech synthesizer. Geoffrey, Chisholm and Wendy (1999) confirmed in their survey that the use of screen readers by people using windows have tremendous gains.

4. Methodology

This study was conducted in Taraba state, Nigeria. The study covered 4 tertiary institutions comprising one state-owned university and one Federal Government university, One Federal Polytechnic and one state-owned College of Education. The design adopted for this study was ex post facto. The population was made up of 1,019 lecturers from the 4 tertiary institutions as at 2012/2013 session. The sample size consisted of 500 lecturers selected using stratified random sampling technique.

The instrument called "ICT Utilization for Instructional Questionnaire (IUQ) was used for data collection. This instrument had 2 sections A and B. Section A sought information on demographic variables while section B had 32 items, arranged on a 10 point rating scale. 17 of the items measured availability of ICT facilities, while the other 15 measured utilization of ICT facilities. The instrument was face-validated by experts in measurement and evaluation, while the trial testing gave a reliability coefficient estimate of 0.73, a confirmation that the instrument was reliable and suitable for the research study.

The administration of the instrument was personally carried out by the researchers and research assistants, a measure which yielded a 96% returns rate. Population t-test (test of single mean) and independent t-test statistical techniques were used to analyze data obtained for this study.

5. Results

5.1 Hypothesis 1

Availability of ICT facilities in tertiary institutions in Taraba state is not significantly low. The only variable in this hypothesis is availability of ICT facilities for quality instructional service delivery in tertiary institutions. Summaries of the results are presented in Table 1.

Table 1

Population t-test (test of single mean) analysis of availability of ICT facilities for quality instructional service delivery in universities

N = 480

Variables	**Expected mean**	**Observed mean**	**SD**	**t**
	U	**x**		
Internet-Connected Desktop Computers	5.50	5.40	2.11	-0.948
Internet-Connected Laptops	5.50	5.75	2.18	2.294*
CD-ROM Database	5.50	4.63	3.01	-5.781*
Institutional Cybercafé	5.50	5.56	3.10	0.387
Institutional Virtual Library (Digital Library)	5.50	5.98	2.76	3.478*
Institutional Website	5.50	3.87	2.53	-12.885*
Institutional Functional E-mail Address	5.50	4.79	2.90	-4.897*
Departmental Computer Laboratory	5.50	6.12	3.14	3.949*
Department Functional E-mail Address	5.50	6.06	2.70	4.148*
Computer Networking (Wide Area Network)	5.50	4.71	2.15	-7.349*
Computer Networking (Local Area Network)	5.50	5.13	2.81	-2.633*

Examination Scoring Machine (OMR)	5.50	6.04	2.72	3.971*
Electronics Class Roll (ECR)	5.50	3.95	2.68	-11.567*
Multimedia Classrooms (Audio Visual Centre)	5.50	6.18	2.83	4.806*
Computer Screen Reading Software	5.50	5.93	3.07	2.801*
Institutionally-produced Educational Software	5.50	5.89	3.11	2.508*
Departmental Website	5.50	3.99	3.13	-9.649*

***** p <.05; df = 399; critical t-value = 1.966

Results in this Table 1 showed that the calculated t-values were higher than the critical t-value of 1,966 at 0.05 alpha level of significance and 399 degrees of freedom in respect of internet-connected laptops (t = 2.294; p < .05); CD-ROM Database (t = -5.781, p <. 05); institutional virtual Library (t = 3.478, p <.05); institutional website (t = -12.885, p <.05); institutional functional e-mail address (t = 4.897, p <.05); departmental computer laboratory (t =3.949, p<.05); departmental functional e-mail address (t 4.148, p<.05); computer networking (wide area network (t = -7.349, p <.05); computer networking (local area network) (t = -2.633, p<.05); examination scoring machine (OMR))(t = 3.971, p<.05); electronics class roll (ECR) (t = -11.567, p<.05); multimedia classrooms (audio visual centre) (t = 4.806, p<.05); computer screen reading software (t = 2.801, p<.05); institutionally-produced educational software (t = 2.508, p<.05) and departmental website (t = -9.649, p<.05). The null hypothesis was therefore rejected on these 15 ICT facilities. This means that availability of these 15 ICT in tertiary institutions is significantly low. With regards to internet-connected desktop computers (t = -0.948, p<.05) and institutional cybercafé (t = 0.387, p <.05), the calculated t-value were lower than the same critical t-value, alpha level of significance and degrees of freedom. This implies that availability of these 2 ICT facilities in tertiary institutions is not significantly low.

Further observation of the results in Table 1 indicated that the observed mean availability of ICT facilities for quality instructional service delivery in universities was higher for 9 of the ICT facilities than the expected mean availability of ICT facilities of 5.50, whereas in the remaining 8, it was lower. Statistical comparison of these observed mean values and the expected mean value of 5.50 using population t-test analysis for single mean, positive t-values were obtained for the former, while negative t-values were obtained for the later. By implication, this finding revealed that availability of ICT facilities in tertiary institutions in significantly low except internet-connected desktop computers and institutional cybercafé.

5.2 Hypothesis 2

University lecturers' utilization of ICT facilities for quality instructional service delivery is not significantly low. This hypothesis has only one variable which is university lecturers' utilization of ICT facilities for quality instructional service delivery. Population t-test of single mean was used to analyze statistically, the data obtained. Summaries of the results are presented in Table 2.

Table 2

Population t-test (test of single mean) analysis of lecturers' utilization of ICT facilities in tertiary institutions in Taraba state

N = 480

Variables	**Expected mean**	**Observed mean**		
	u	**X**	**SD**	**t**
Internet-Connected Desktop computers	5.50	6.30	2.31	6.926*
Internet-Connected Laptops	5.50	5.92	2.27	3.700*
CD-ROM Database	5.50	5.84	2.43	2.798*
Institutional Cybercafé	5.50	3.88	3.00	-10.800*
Institutional Virtual Library (Digital Library)	5.50	3.73	3.24	-10.926*
Institutional Website	5.50	4.18	3.12	-8.462*
Institutional Functional E-mail Address	5.50	5.27	2.15	-2.140*
Departmental Computer Laboratory	5.50	6.02	3.08	3.377*
Department Functional E-mail Address	5.50	5.15	3.18	-2.201*
Computer Networking (Wide Area Network)	5.50	5.93	2.57	3.346*
Computer Networking (Local Area Network)	5.50	4.79	3.10	-4.581*
Examination Scoring Machine (OMR)	5.50	3.92	3.59	-8.802*
Electronics Class Roll (ECR)	5.50	4.63	3.21	-5.421*
Multimedia Classrooms (Audio Visual Centre)	5.50	4.58	3.46	-5.318*
Computer Screen Reading Software	5.50	5.16	2.17	-3.134*
Institutionally-produced Educational Software	5.50	4.72	3.25	-4.800*
Departmental Website	5.50	4.46	3.31	-6.284*

***** p <.05; df = 399; critical t-value = 1.966

Results in this Table 2 revealed that the calculated t-values were higher than the critical t-value of 1,966 at 0.05 alpha level of significance and 399 degrees of freedom in respect of internet-connected desktop computers (t = 6.926, p<.05); internet-connected laptops (t = 3.700; p < .05); CD-ROM Database (t = 2.798, p <.05); institutional cybercafé (t = -10.800, p<.05); institutional virtual library (Digital library) (t = -10.926, p <.05); institutional website (t = 8.462, p <.05); institutional functional e-mail address (t = 2.140, p <.05); departmental computer laboratory (t = 3.377, p<.05); departmental functional e-mail address (t = -2.201, p<.05); computer networking (wide area network (t = 3.346, p <.05); computer networking (local area network) (t = -4.581, p<.05); examination scoring machine (OMR))(t = -8.802, p<.05); electronics class roll (ECR) (t = -5.421, p<.05); multimedia classrooms (audio visual centre) (t = -5.318, p<.05); computer screen reading software (t = -3.134, p<.05); institutionally-produced educational software (t = 4.800, p<.05) and departmental website (t = 6.284, p<.05) . Thus, the null hypothesis was rejected and so, lecturers' utilization of ICT facilities in tertiary institutions in Taraba state is significantly low.

Further examination of the results disclosed that the observed mean utilization of ICT facilities in tertiary institutions was higher in 5 ICT facilities for quality instructional service delivery than the expected mean of 5.50, while in the remaining 12 it was lower. Statistical comparison of these observed mean values and expected mean value of 5.50 using population t-test analysis of single mean gave positive t-values for the former and negative t-values for the later. This implies that lecturers' utilization of ICT facilities in tertiary is significantly low.

5.3 Hypothesis 3

Lecturers' utilization of ICT facilities in tertiary institutions in Taraba state does not significantly differ on the basis of school type. With independent t-test statistical analysis, the mean scores from the two groups were compared. Summaries of the results are presented in Table 3.

Table 3

Independent t-test analysis of the difference in lecturers' utilization of ICT facilities in Federal and State-owned Institutions in Taraba state

Variables	Federal N = 240		State N = 240		
	x	SD	x	SD	t
Internet-Connected Desktop computers	10.21	3.08	8.67	2.93	5.116*
Internet-Connected Laptops	11.15	2.80	9.35	3.02	5.498*
CD-ROM Database	9.77	3.11	8.19	3.12	5.064*
Institutional Cybercafé	10.36	2.74	8.24	3.00	7.387*
Institutional Virtual Library (Digital Library)	12.01	3.19	11.32	2.82	2.292*
Institutional Website	9.21	2.89	8.42	2.95	2.705*
Institutional Functional E-mail Address	10.46	2.97	9.86	3.10	1.974*
Departmental Computer Laboratory	9.94	2.53	9.31	2.80	2.360*
Department Functional E-mail Address	11.26	2.91	9.97	3.13	4.272*
Computer Networking (Wide Area Network)	10.13	2.96	8.75	3.04	4.600*
Computer Networking (Local Area Network)	11.44	2.84	10.73	2.90	2.474*
Examination Scoring Machine (OMR)	9.54	2.85	8.57	2.94	3.345*
Electronics Class Roll (ECR)	10.50	3.05	9.81	3.07	2.255*
Multimedia Classrooms (Audio Visual Centre)	11.38	2.87	10.63	2.83	2.632*
Computer Screen Reading Software	10.19	2.66	9.39	3.09	2.778*
Institutionally-produced educational software	10.31	2.50	9.69	2.64	2.412*
Departmental Website	10.60	2.62	9.71	2.55	3.436*

***** $p < .05$; df = 398; critical t-value = 1.966

Results in Table 3 indicated that the calculated t-values were higher than the critical t-value of 1.966 at 0.05 alpha level of significance and 398 degrees of freedom with regards to internet-connected desktop computers ($t = 5.116$, $p < .05$); internet-connected laptops ($t = 5.498$, $p < .05$); CD-ROM

Database ($t = 5.064$, $p < .05$); institutional cybercafé ($t = 7.387$, $p < .05$); institutional virtual library (digital library) ($t = 2.292$, $p < .05$); institutional website ($t = 2.705$, $p < .05$); institutional functional e-mail address ($t = 1.974$, $p < .05$); departmental computer laboratory ($t = 2.360$, $p < .05$); departmental functional e-mail address ($t = 4.272$, $p < .05$); computer networking (wide area network) ($t = 4.600$, $p < .05$); computer networking (local area network) ($t = 2.474$, $p < .05$); examination scoring machine (OMR) ($t = 3.345$, $p < .05$); electronics class roll (ECR) ($t = 2.255$, $p < .05$); multimedia classrooms (audio visual centre) ($t = 2.632$, $p < .05$); computer screen reading software ($t = 2.778$, $p < .05$); institutionally-produced educational software ($t = 2.412$, $p < .05$) and departmental websites ($t = 3.436$, $p < .05$). Thus, the null hypothesis was rejected and as such, lecturers' utilization of ICT facilities in tertiary institutions in Taraba state differed significantly on the basis of ownership.

Further observation of the results in Table 3 disclosed that in all the ICT facilities, lecturers from Federal institutions had higher mean values in their utilization of ICT for quality instructional service delivery than their state university counterparts. This implies that lecturers from federal institutions utilize ICT facilities more than their state university counterparts.

6. Discussion of Results

The result of hypothesis one had it that the availability of ICT facilities in tertiary institutions in Taraba state is significantly low except internet-connected desktop computers and institutional cybercafé. With this finding, the null hypothesis was rejected in 15 of the ICT facilities and accepted in 2 of the ICT facilities' availability.

By implication this result suggests that the availability of internet-connected laptops, CD-ROM database, institutional virtual library (digital library), institutional website, institutional functional e-mail address, departmental computer laboratory, departmental functional e-mail address, computer networkings (wide area network and local area network), examination scoring machine (OMR), electronics class roll (ECR), multimedia classrooms (audio visual centre), computer screen reading software, institutionally-produced educational software and departmental website is very low for quality instructional service delivery in the classrooms. However, the availability of internet-connected desktop computers and institutional cybercafés in the universities in the two states was found not to be significantly low. This means that these two facilities are available in such a way that lecturers in tertiary institutions in Taraba state can utilize them to enhance the quality of their instructional service delivery.

The reason for this low availability of ICT facilities in tertiary institutions in Taraba state stems from inadequate provision of these facilities occasioned by poor funding of education by federal and state governments. The poor funding resulting from inadequate budgeting allocations to education which for years running are far below the 26 percent education funding benchmark espoused by UNESCO has contributed to low level of provision of these ICT facilities in schools (Onuma, 2007; Akubuilo, 2007). This poses serious problems in the universities where ICT facilities are needed not just for assisting in instruction but to supply global information which facilitates researches in different subject areas.

Conversely, the high availability of Internet-connected desktop Computers and institutional cybercafés in the universities in these two states can be attributed to the partnership they entered into with ICT providers such as AfriHUB, Zinox and SocketWorks. However, despite the developments in the last two years, which ensured the provision of a wide variety of ICT facilities, the universities studied are still lagging behind.

The result of hypothesis two held that university lecturers' utilization of ICT facilities for quality instructional service delivery in significantly low. This implies that utilization of ICT facilities in tertiary institutions in Taraba state is very low. This finding in consistent with the report of Aginam's (2006) study that ICT application in Nigerian universities is less than 5 percent. Similarly, this finding is in consonance with that of the Partnership for Higher Education in Africa (2007) that the utilization of ICT facilities in teaching and learning is very low in African universities. The reason for this finding predicates on the fact that most lecturers in Nigerian universities, those in Taraba state inclusive are ICT illiterates and lack basic training on ICT. As a result, they tend to distance themselves from any computer related activities both in and outside the classroom. ICT provides innovative opportunities for teaching and learning, creates advances in research which enable lecturers to improve their content knowledge in different subject areas, and concretize learning by enabling the students to manipulate the facilities. These help to improve the quality of instructional service delivery.

Hypothesis three disclosed that university lecturers' utilization of ICT in tertiary institutions in Taraba state differed on the basis of ownership and that lecturers from federal universities utilized ICT facilities more than their state universities counterparts. This result is in agreement with the findings of Bassey, Umoren, Akuegwu, Udida and Akpama's (2007) that academic staff in federal universities fared better in their job performance. A likely explanation for this result is that Federal universities are better funded despite low budgetary allocation to education in Nigeria, than their state counterparts, and as such they stand a better chance of enjoying the provision of more ICT facilities than the state-owned universities. In addition, lecturers in federal-owned universities have better opportunities for sponsorship to ICT training than their state-owned university counterparts. Therefore their more utilization of ICT facilities does not pose any surprise.

7. Conclusion and Recommendations

The findings of this study have clearly shown that the availability of ICT facilities and lecturers' utilization of ICT facilities in tertiary institutions in Taraba state are very low. This is a serious limitation to quality instructional service delivery in this ICT global age. With the impression ICT has created, it is yet to create significant impact in enhancing the quality of instructional service delivery of lecturers in in tertiary institutions in Taraba state Nigeria. It is thus recommended that:

1. ICT facilities should be made adequately available by university administration such that lecturers can utilize them in their offices and classroom. This is necessary because ICTs are regarded as integral parts of teaching and research in universities.
2. The governments at the federal and state levels, should as a matter of priority, fund in tertiary institutions in Taraba state very well according to the recommendations of

UNESCO. This will enable the university administrators to provide more of these ICT facilities and properly maintain the existing ones.

3. Modalities should be set in motion to enable lecturers in tertiary institutions in Taraba state acquire ICT skills through training. This has the tendency of enabling them to enrich their content knowledge through searching for more and new materials, make learning more meaningful and improve students' learning outcomes.
4. The financial outlay required in procuring ICT facilities is enormous to the extent that individual university administrators may not be able to provide it alone. It therefore becomes imperative for these institutions in Taraba state to enter into partnership with such ICT providing organizations as AfriHUB, Zinox, etc for the purpose of equipping their institutions with ICT facilities. This will enable the lecturers to acquire necessary ICT skills in order to enhance the quality of their instructional service delivery.

References

Aginam, E. (2006, October 18). *Nigerian higher education has less 5% ICT applications*. Retrieved from file http://www.vanguardngr.com/articles/html on 11/2/2007.

Akubuilo, D. U. (2007). Effective utilization of ICT in science instruction at the tertiary level: some inhibiting factors. In J. B. Babalola, G. O. Akpa, A. O. Ayeni & S. O. Adedeji (Eds), *Access, equity and quality in higher education* (pp 513-521). Lagos: NAEAP.

Akuegwu, B. A., Nwi-ue, F. D., & Agba, A. M. O. (2008). Quality assurance in teaching and learning in Cross River State higher institutions: Management applications for UBE teacher production. *Nigerians Journal of Curriculum Studies* (Sp. Ed), 355-367.

Aniebonam, M. (2008, May 22). *UNIBEN AfriHUB centre opens, students praise VC*. Retrieved from file *http://www.ngrguardiannews.com* on 10/3/2010

Bamiro, O., & Liverpool, S. (2002). ICT and university administration: The Ibadan and Jos examples. *The University Administrator*, 1(4), 29-39.

Bassey, U. U. Akuegwu, B. A. & Udida, L. A. (2009, August, 26). *ICT management for staff and students empowerment in University of Calabar*. Being a research grant proposal presented to Association of African Universities (AAU), Accra North, Ghana.

Bassey, U. U., Umoren, G. U., Akuegwu,. B. A., Udida, L. A., & Akpama, S. I. (2007). Impact of technological infrastructures on academic staff work performance in southern Nigerian universities. In A. W. Abdul-Ghani, T. J, Sulliwan, H. S. Dhindsa, A. Chamberlain, D. Boorer, K. Wood & A. Baimba (Eds). *Changing contours of education: Future trends* (pp. 113-126). Darussalam: Sultan Hassanal Bolkiah Institute of education, University Brunei Darussalam.

Godfrey, D., Chisholm, E. & Wendy, R. (1999). What is active accessibility? *Voice of Vision*, 7, 3-5.

Liston C. (1999) *Managing quality and standards*. Buckingham; Open University Press.

Milken Exchange on Education Technology (1999). *Will new teachers be prepared to teach in a digital age*? Santa Monica: Milken Family Foundation. Retrieved from file http://www.mf.org/puts/ME154.pdf on 25/6/2007.

Newhouse, C. O. (2002). *The impact of ICT on learning and teaching*. Perth: Special Education Service.

Ntukidem, E. P. & Ashi, M. M (2009). Assistive technology: Gateway to independence of persons with visual impairment. *The Exceptional Child*, 11(2), 345-353.

Okebukola, P. (2006, June 8). *Quality control in Nigerian university system*. Paper presented at the annual seminar of the Association of Vice Chancellors of Nigerian Universities (AVCNU) at Cross River State University of Technology, Calabar.

Okhiria, P. (2007). *ICT tertiary level education: Universities and colleges of education*. Retrieved from file http://www.wikieducator.org/ICT4 Africa/country report Nigeria on18/5/2010.

Okojie, J. A (2008, May19). *Varsity teachers are incompetent*. Retrieved from file http://www.vanguardngr.com/news/html on 20/5/2010.

Okon, A. & Jacob, E. (2002). Use of information technology by academic in selected universities in Nigeria. *Global Journal of Mathematics Science*, 2 (1), 57-63.

Ololube, N. P (2006). Appraising the relationship between ICT usage and integration and the standard of teacher education programmes in a developing economy. *International Journal of Education and Developing Using ICT (Online)*, 2 (3), 194-212. Retrieved from file *http://*www.ijedict.dec.uwo.edu.viewarticle.pho?id=194 on 23/4/2010.

Onuma, N. (2007). Utilization of ICT in schools: Problems and suggestions. In J. B. Babalola, G. O Akpa, A. O. Ayeni & S. O. Adedeji, (Eds), *Access, equity and quality in higher education* (pp.487-496). Lagos: NAEAP.

Ramboll, P. L. S. (2004). Studies in the context of the e-learning initiative. Virtual modes of European Universities. *Draft Final Report to the E. U. Commission*. Capenhagen: DF Education and culture.

Sawyerr. A. (2004). Challenges facing African universities: Selected issues. *African Studies Review*, 47 (1), 1-59.

The Guardian Editorial; (2006; August 1). The NUC verdict on Nigerian universities. *The Guardian*, p. 16.

The Partnership for Higher Education in Africa (2007). *Securing the linchpin: ICT for teaching, learning and research*. Retrieved from file http://ww.google.com on 26/4/2010.

WikiEducator (2007). *ICT in education in Nigeria: ICT 4 Africa/country report. Nigeria*. Retrieved from http://www.wikieducator.org on 18/5/2010.

World Bank (2002). *Enhancing learning opportunities in Africa*. Washington, D. C. International Bank for Reconstruction and Development.

Yusuf, M. O. (2005, June). Integrating ICTs in Nigerian tertiary education. *The African Symposium: An Online Journal of African Educational Research Networks*, 5 (2), 43-50.