
**Discipline and Educational Qualification as Determinants of Differences in ICT Skill
Acquisition among Biology Academic Staff of Akwa Ibom State Based Universities**

BY

Mary BILLY
Department of Microbiology
Faculty of Science
Ahmadu Bello University, Zaria

ABSTRACT

Knowledge is a critical determinant of competitiveness in the world economy and with the information revolution and increasing demands for a highly skilled workforce; nations must accord high priority to building the capacity to effectively utilize technology in education. This emphasizes the critical importance of effectively utilizing new information and communication technologies (ICTs) in universities to meet the growing need for a more sophisticated labor force, better management of information systems, and more effective contribution to poverty reduction around the world. Apart from acquisition and absorption of knowledge, ICT could offer developing countries unprecedented opportunities to change educational systems, improve policy formulation and execution, and widen the range of opportunities for business and for the poor.

KEYWORDS: Information and communication technologies (ICTs), Academic staff, Universities

Introduction

Education is widely accepted as a major instrument for promoting socio economic, political and cultural development in Nigeria. Ibukun (1997) posited that the main purpose and relevance of university education in Nigeria is the provision of much needed man-power to accelerate the socio-economic development of the nation. Higher education is regarded as an instrument of social change and economic development. According to Ibukun (1997), the main objective of the National University Commission (NUC) is to ensure the orderly development of university education in Nigeria, to maintain its high standards and to ensure its adequate funding.

The overview of University development in Nigeria is incomplete without unveiling the fundamental functions of the NUC in relation to academic planning system. National Universities Commission statutory is mandated to provide quality assurance for University Education in Nigeria with the mission to ensure orderly development of a well-coordinated and productive University system that guarantees quality and relevant education for national development, and global competitiveness. Okojie (2007) posited that the NUC activities in improving quality of university education in the country include: Accreditation of courses, Approval of courses and programs and Maintenance of minimum academic standard.

The overview of University development in Nigeria is incomplete without unveiling the fundamental functions of the NUC in relation to academic planning system. National Universities Commission statutory is mandated to provide quality assurance for University Education in Nigeria with the mission to ensure orderly development of a well-coordinated and productive University system that guarantees quality and relevant education for national development, and global competitiveness. Okojie (2007) posited that the NUC activities in improving quality of university education in the country include: Accreditation of courses, Approval of courses and programs and Maintenance of minimum academic standard.

The Internet has become an invaluable tool for learning, teaching and research (including collaborative research) in Nigeria. Universities have facilitated and contributed to societal development. There is therefore the need for teachers to acquire innovative resources that will enable them carry out their functions effectively. One of such innovations is ICT skills. Information and Communication Technologies (ICT) education is basically society's efforts to teach its current and emerging citizens valuable knowledge and skills around computing and communication devices, software that operates them, applications that run on them and systems that are built with them. It is widely observed that people of various ranks embrace it differently. Among the teaching staff of the university, some acquire the skill while some do not see the importance of acquiring it. Adeogun (2003) emphasized that ICTs have broken the barriers of time, distance and location which used to impede the growth of formal education. Information and communication technologies have also had profound impact on the tasks and skills of teachers in both the pattern and quality of lecture delivery (Mogbo 2002).

Statement of the Problem

There is pressure on academic staff to respond to changes produced by the increasing globalisation of education markets, and the capacities of Information and Communication Technologies (ICTs) to transform the ways education is delivered. This presents a serious challenge for many academics whose own formative educational experiences and professional orientations were shaped under different circumstances. The advances in electronic based information and communication technologies (ICTs) have rapidly transformed the social and economic conditions across the globe which has brought a great improvement in the educational sector. This has provided new tools for enhancing access to information and knowledge management as well as sharing. The internet which is one aspect of this transformation has made a dramatic impact on our society, particularly in the field of education.

Yes, it is true that even though the aforementioned facilities are very useful in the work performed by the academic staff, in most cases these facilities are not readily made available for effective use. On the other hand, the facilities may be available but the academic staff do not have the needed skill to use these facilities in their work. When these barriers are there the academic staff hardly perform and deliver as expected. Therefore, this study seeks to demonstrate how ICT skills acquisition among academic staff in Akwa Ibom State based Universities is influenced by such teaching staff status as discipline and qualification.

Objective of the Study

The main objective of this study is to determine discipline and educational qualification as determinants of differences in ICT skill acquisition among biology academic staff of Akwa Ibom State based universities, while the following are the specific objectives of the study:

- 1 To examine how Biology academic staff of Akwa Ibom State based Universities differ in ICT skill acquisition based on their discipline.
- 2 To assess how Biology academic staff of Akwa Ibom State based Universities differ in ICT skill acquisition based on their educational qualification.

Literature Review

Extent of ICT Skills Acquisition

The digital age has changed the way we access information, knowledge and education in this era. Information is meant to inspire people to imbibe the right attitude for sound reasoning and quality decision making. The digital platform makes this system faster and easily accessible. It is however very alarming that many people do not know that the online world has come to stay. Jones and Flannigan (2006) opined that digital literacy represents a person's ability to perform tasks effectively in a digital environment, with "digital" meaning information represented in numeric form and is primarily for use by a computer. Kennedy (2008) in an empirical study on high-schools, university students and adults (over age 30) identified five literacies that contributed to digital literacy as Photo-visual literacy, Reproductive literacy, Information literacy, Branching literacy, and Socio-emotional literacy. 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).

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).

A research carried out by Yusuf (2005) found that ICTs provide a variety of tools to support and facilitate teacher's 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.

Discipline and ICT skill Acquisition

Teaching should be understood as a polymorphous activity. Many think of it as an activity which ends up in the classroom (Offorma, 2002), but in the modern time and of its sincerity, teaching is beyond that. Therefore, teaching involves the process of impartation of appropriate, functional and related skills to learners, in any form, place and/or time, to enable them function effectively towards meeting the demands of the dynamic society. The central purpose of teaching is to effect desirable changes in the learner's behaviour (Ogwo and Oranu, 2006). This desirable change is termed learning.

According to Farrant in Aleburu and Olunsanya (2007) learning is a process by which we acquire and retain attitude, knowledge, understanding, skills and capabilities that cannot be attributed to inherent behavioural patterns of physical growth. Learning thus is the process of change in behaviour of an individual through the acquisition of appropriate and related functional skills to enable him or her function in and explore the society he or she lives. Skills learnt in various discipline programme enable the learner to exhibit such related skills when the need arises for electrical and electronics tasks or challenges. For example, the teaching and learning of skills or contents in electrical and electronic technology programme of TVET cannot be achieved only through the traditional classroom setting. In Nigeria there are insufficient human and material resources to acquire desirable skills in electrical and electronic technology programme of TVET. For this reason, other means such as ICTs are very necessary because it helps learners irrespective of location and time. In addition, many electrical and electronics devices, tools, equipment and appliances are not produced in Nigeria, hence the need to support learners with ICTs without waiting until there is sufficient human and material resources to facilitate teaching of the programme.

Networking of computers gave birth to information technology (IT), and UNESCO considered IT as scientific, technological and engineering disciplines and management techniques used in information handling and processing, their applications, computers and their interaction with men and machines, and associated social, economic and cultural matters (Sansanwal, 2009). IT was only limited to the textual mode of transmission of information (Sansanwal, 2009), and it is usually done with ease and fast. ICTs have their application in different areas of life. Oladipupo and Ilaboye (2006) identified areas where ICTs are applicable in human endeavours, and such areas include business, science, research, engineering, office automation, accounting, medicine and education.

In the field of education, ICTs have played significant roles in virtual libraries, teaching, learning and research. Ogunsola (2005) asserted that apart from acquisition and absorption of knowledge, ICT could offer developing countries unprecedented opportunities to change educational systems, improve policy formulation and execution, and widen the range of opportunities for business and for the poor. The teaching-learning process classification of skills is usually based

on cognitive, psychomotor and affective. Skills can however be classified as basic, cognitive, psychomotor or manipulative, technical, human, conceptual, marketable, adaptive, occupational, transferable and/or process. Ogbuanya and Ohanu (2010) stated that when one possesses adequate skill in carrying out a task, he/she does the work accurately within the minimum possible time and the work will always attract the attention of people. The acquisition of skills in academics should be supported with sufficient ICTs in order to widen the skill-horizon of both teachers and students.

The dramatic nature of application of ICTs in education has made teaching and learning accessible anywhere, any place and any time. These technologies have made teaching and learning very flexible, irrespective of the nature of the learners, regarding their cognitive and learning styles (Chinien, 2003). Imel (1998) identified four different applications of ICTs in adult education, and these are technology as curriculum, technology as delivery mechanism, technology as a complement to instruction and technology as instructional tool. These applications of ICTs in education indicate their abilities to be used for teaching and learning cognitive, affective and psychomotor skills. Ogbuanya and Ohanu (2010) stated that when one possesses adequate skill in carrying out a task, he/she does the work accurately within the minimum possible time and the work will always attract the attention of people. The acquisition of skills in electrical and electronic technology programme should be supported with sufficient ICTs in order to widen the skill-horizon of both teachers and students.

Educational Qualification and ICT skill Acquisition

In Nigeria, the need for well qualified teachers has gained pre-eminence because it is considered that teacher education is a means of not only providing teachers with the necessary skills and knowledge needed to adequately carry out their teaching jobs but also for professional growth (Osunde and Omoruyi, 2004). Teacher education is the process of training that deals with the art of acquiring professional competencies and professional growth. It is an essential exercise that enhances the skills of learning and teaching. Teacher education is designed to produce highly motivated, sensitive, conscientious and successful classroom teachers who will handle students effectively and professionally for better educational achievement (Ololube, 2005).

According to Amedeker (2005), inadequate teacher preparation programs results in majority of teachers' inability to demonstrate adequate knowledge and understanding of the structure, function and the development of their disciplines. Therefore, an effective teacher education program is a prerequisite for a reliant education which leads to a good level of confidence to both the teachers and their students as a result of which learning is coordinated effectively and professionally, and problems inherent in the teacher education rectified and solved (Lawal, 2003). Teacher education programs in Nigeria are under the supervision and control of governmental organizations. The National Commission for Colleges of Education (NCCE) has responsibility for teacher education in Nigeria with respect to Colleges of Education. While the universities are under the National Universities commission (NUC), as the Polytechnics are under the National Board for Vocational Colleges and Technical Education (NABTECH), off which 9 of the total number of Polytechnics run NCE programs (JAMB, 2006/2007; Mac and Ikemenjima, 2005).

Ololube, (2006) said that many Nigerian teachers have been unable to find effective ways to use technology in their classrooms or any other aspect of their teaching and learning life. The

possible explanation for this lack of success by teachers is that the use of technology in the classroom has not been encouraging and teachers are not well trained in using ICTs in teaching as a means for educational sustainability, notwithstanding the specifications in the National Policy of Education by the Federal Government of Nigeria (2004). In a changing environment when most of the library services are ICT based, it is important for library professionals to be well informed and updated regarding developments in ICT. Nigeria as a nation came late and slowly into the use of ICT in all sectors of the nation's existence more especially in teacher education. This is as a result of chronic limitations brought about by economic disadvantages and government policies. These factors have direct consequences on the nation's educational development.

Nonetheless, in recent times the integration of information and communication technologies (ICTs) in university teaching and particularly in teacher training programs has been the topic of much debate (Larose et al., 1999), because educational systems around the world are under increased pressure to use the new information and communication technologies (ICTs) to teach students knowledge and skills they need in the 21st century. Teacher education institutions are faced with the challenges of preparing a new generation of teachers to effectively use the new learning tools in their teaching practices (UNESCO, 2002). As a result, teacher education programs has not been unaffected by the penetrating influence of information and communication technology (ICT). Certainly, ICT has impacted on the quality and quantity of teaching, learning, and research in traditional and distance education institutions around the world. In concrete terms, ICT literacy has enhanced teaching and learning through its dynamic, interactive, and engaging content; and has provided real opportunities for individualized instruction (Newhouse, 2002).

Fundamentally, the slow access to basic ICT equipments, low internet connectivity and computers, and the inadequacies in the use of audiovisual materials and equipments including films, slides, transparencies, projectors, globes, charts, maps, bulletin boards, plus programmed materials, information retrieval systems, and instructional television in teacher education programs are barrier to the effective and professional development of teachers in Nigeria (Ololube, 2006). Therefore, administrators and trainers need to make educational technology an integral part of teaching and learning to provide a clear demonstration of how the use of instructional technology tools can address the personal and general concerns of teaching and learning in Nigeria. Information and communication technology has the potential to accelerate, enrich, and deepen skills; motivate and engage students in learning; helps to relate school experiences to work practices; helps to create economic viability for tomorrow's workers; contributes to radical changes in school; strengthens teaching, and provides opportunities for connection between the institutions and the world. Information and communication technology can make education more efficient and productive, thereby engendering a variety of tools to enhance and facilitate teachers' professional activities (Yusuf, 2005).

Conclusion

From the study, it was concluded that ICTs have played significant roles in the field of education especially in virtual libraries, teaching, learning and research. There is a growing need for academicians to adopt information and communication technologies (ICT) in teaching Biology in universities to enhance teaching and learning.

Recommendation

1. The management of universities should ensure that academic staff offices are provided with ICT facilities and also connected to the internet. This would enable the lecturers to access and download information or materials quickly and easily for lecture preparation, teaching, research and other allied duties. This would enhance lecturers' job efficacy.
2. Qualified lecturers that have a base in ICT should be employed, this will facilitate teaching and learning and would improve student performance.

REFERENCES

- Adeogun, H. (2003) *Handbook of research in library and information science*. London: IGI publications.
- Aleburu, J. O. & Olusanya R. N. (2007). *Use of ICT to Enhance Teaching and Learning of Technical and Vocational Trades in Primary Schools*. Available at <http://www.devilfinder.com>
- Amedeker, M. K. (2005). "Reforming Ghanaian Teacher Education Towards Preparing an Effective Pre-service Teacher". *Journal of Education for teaching Vol. 31(2)*, 99- 110.
- Bassey, C., Akuegwu, J. & Udida, F. (2009) Using information and communication technology in secondary schools in Nigeria. *Educational Technology and Society*, 8 (1): 104-112.
- Chinien, C. O. (2003). *Analysis Survey: The Use of ICTs in Technical and Vocational Education Training*. UNESCO Institute for Information Technologies in Education. Available at <http://www.devilfinder.com>
- Ibukun, H. (1997) Information Technology in Developing Countries. *Newsletter of IFIP Working Group 9.4 and Centre for Electronic Governance, Indian Institute of Management. Ahmedabad. Vol. 12, No.2.*
- Imel, I. (1998) Information technology potentials for inter-library loan and cooperation. *Lagos Journal of Library and Information science*, 1(2): 106-107.
- JAMB, (2006/2007). "Joint Admissions and Matriculation Board: Polytechnics, and Colleges of Education and the programs/courses offered". Retrieved 17/04/2006 from http://www.jambng.com/pce_institution1.php
- Jones, B. & Flannigan, M. (2006) 'Digital literacy in a lifelong learning programme for adults: Educators' experiences and perceptions on teaching practices', *International Journal of Digital Literacy and Digital Competence*, 1(1), 40-60
- Kennedy, D. M. (2008) in Tomei, Lawrence A. *Encyclopedia of Information Technology Curriculum Integration. Volume I A-Interactive Videoconferencing*, Hershey, Information Science Reference. p. 228-233 Librarian Career and Job Description (2013): <http://www.careeroverview.com/librarian-careers.html> accessed 13/05/13
- Larose, F., David, R., Dirand, J., Karsenti, T., Vincent Grenon, V., Lafrance, S. & Judith Cantin, J. (1999). "Information and Communication Technologies in University Teaching and in Teacher Education: Journey in a Major Québec University's Reality". *Electronic Journal of Sociology*. Available at: <<http://www.sociology.org/content/vol004.003/francois.html>>
- Lawal, H. S. (2003). "Teacher Education and the Professional Growth of the 21st Century Nigeria Teacher". *The African Symposium, Vol. 3(2)*.

- Liston, K. M., (1999). Designing and evaluating visualization techniques for construction planning, Proceedings. of the 8th International Conference on Computing in Civil and Building Engineering (ICCCBE-VIII), Stanford University, Stanford, CA, 1293-300.
- Mac, D. & Ikemenjima, F. (2005) Use of search engines for research by postgraduate students of the University of Ibadan, Nigeria. *African Journal of Library, Achieves and Information Science* 7(2):103-115.
- Mogbo, P. (2002) Information and communication technology (ICT) literacy among the staff of Nigerian university libraries. *Library Review*, 54 (4), 257-266. 67
- National Policy of Education by the Federal Government of Nigeria (2004) *Nigerian Journal of Educational Administration and Planning* 11(3) 91-104
- Newhouse, C. P. (2002a). "The Impact of ICT on Learning and Teaching". Perth: Special Educational Service.
- Offorma, G. C. (2002) *Use of ICT to Enhance Teaching and Learning of Technical and Vocational Trades in Primary Schools*. Available at <http://www.devilfinder.com>.
- Ogbuanya, T. C, Ohanu I. B (2010). Entry level Skills Required by Technical College Electrical Graduates in Electrical Installation Trade. *Nigerian Vocational Association J.* 15(1): 342-352.
- Ogunsola, L. A. (2005). Information and Communication Technologies and The Effect of Globalization: Twenty-first Century "Digital Slavery" for Developing Country- Myth or Reality? *Electronic Journal of Academic and Special Librarianshi*, 6(1-2). Available at <http://www.devilfinder.com>.
- Ogwo B. A. & Oranu, R. N. (2006). Methodology in Formal and Non-formal Technical/vocational Education. Nsukka: University of Nigeria Press Ltd.
- Okebukola, P. (2006) Teaching Psychomotor Skills with E-sports Courseware. *International Journal of e-Education, e-Business, e-Management and e-Learning*, 1(4). Available at <http://www.ijieeee.org/papers/048-Z0045.pdf>
- Okojie, H. (2007) "Information and Communication Technologies and Education: Analyzing the Nigerian National Policy for Information Technology". *International Education Journal Vol 6, No 3, pp. 316-321*.
- Oladipupo, A. O. & Ilaboye, O. J. (2006). *Information and Processing System: Theory and Practices*. Benin City: Mindex Press.
- Ololube, N. P. (2005a). "Benchmarking the Motivational Competencies of Academically Qualified Teachers and Professionally Qualified Teachers in Nigerian Secondary Schools". *The African Symposium, Vol. 5(3), pp. 17-37*.
- Ololube, N. P. (2006). "Teachers Instructional Material Utilization Competencies in Secondary Schools in Sub-Saharan Africa: Professional and non-professional teachers' perspective".

In Conference Proceedings of the 6th International Educational Technology Conference EMU, 19-21 April 2006 North Cyprus.

Osunde, A. U. & Omoruyi, O. (2004). "An Evaluation of the National Teachers Institute's Manpower Training Program for Teaching Personnel in Mid-western Nigeria". *International Education Journal Vol 5, No 3, pp. 405-409.*

Sansanwal D. N (2009). Use of ICT in Teaching - Learning & Evaluation. Available at <http://www.devilfinder.com>.

Sawyer, R. D. (2004). Situating teacher development: The view from two teachers' perspectives. *International Journal of Educational Research, 37, 733-753.*

UNESCO (2002). "Information and Communication Technologies in Teacher education: A Planning Guide". Paris. UNESCO.

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

Yusuf, M. O. (2005). Information and Communication Technology and education: analyzing the Nigerian national policy for information technology. *International Education Journal 6(3): 316-410.*