ICT COMPETENCE AMONG TRAINEES ON ONLINE ASSESSMENT IN AFRICA: A CASE STUDY OF THE UNIVERSITY OF CALABAR, NIGERIA

By

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Abstract

This paper advocates for competence of ICT trainees on online assessment in the University of Calabar, Nigeria. A quasi-experimental design was used for the study. The population consisted of all the staff trained on ICT in the University of Calabar, Nigeria. A total of two hundred and fifty (250) staff trainees and five instructors were involved in the study. Purposive sampling technique was used to sample forty-six (46) staff trainees for the study. One instructor served as a study assistant. A 20-item Questionnaire on ICT Training ADAPT QUIZ (QOITAQ) was used as instrument for the study. The data collected were analysed using percentages. Findings revealed that ICT trainees, through online assessment, performed better than untrained staff in educational assessment. The study recommended ICT training and online assessment of trainees at least once or twice annually in institutions to assess performance of staff not only in Nigeria but also in Africa to catch-up with the trends in Global Education.

Introduction

It is often said that no nation can develop or civilize above its level of education. Education is a veritable tool for any assessment, the yardstick to measure the individual and the nation's progress and advancement. Wikipedia (2013) defined it as a force that has positive effect on human lives, as it affects every facet of life. It is through education that people can gain knowledge and enlarge their world. Education helps people to become useful, civilised and live worthwhile lives in the society.

Ekpo (2010) asserts that research scholars are quite conscious of what they lose by not being connected with the rest of the world. Once internet access is in place, the creation of digital content stimulates a rapid use of ICT. If all the communities in Africa are ICT compliant, it will enhance accessing education through effective ICT resources to connect globally. ICT compliance will enhance educational sustainability to reduce challenges in educational assessment. Therefore, education is a tool for change and development globally. Catching up with the global trends in educating the African child involves current issues in the super highway as a road map to achievement.

According to Ojerinde (2013), education should not be left entirely to the government. This is because government alone cannot fund education adequately. The organised private sector and stakeholders must be actively involved in providing education. The role of private participation in the education sector will ensure diversity of opportunities, healthy competition as well as provide and strengthen infrastructure. In the case of the use of ICT, for example, the private

sector can build test centres and donate computers and audio-visual gadgets for teaching and learning.

He opines that, to ensure the full automation of educational assessment, governments at all levels should, among others, invite more private participation in the ICT industry, train and re-train ICT staff members, ensure adequate and stable power supply, encourage network providers to improve on their services, etc. All these are properly mediated with relevant technologies. Hence, every aspect of human endeavour is now ICT compliant. Recently, ICT facilities are introduced to the school system in Nigeria and Africa. Efforts should, therefore, be geared towards bridging the gap between ICT competence and educational assessment in Africa. Educational assessment can be achieved in line with the objectives of ICT in Africa.

Objectives of ICT in Africa

The objectives of ICT in Africa include the following:

- To provide policy guidelines and coordinate key information and media development processes within government.
- To provide efficient and cost-effective information, communication and technology services.
- To provide advice and direction on national communication policies, licensing regimes and regulatory frameworks designed to support the socio-economic wellbeing of Africa and,
- To promote lifelong learning.

ICT Policy, Vision and Mission in Africa

Information and Communication Technology (ICT) policy in Africa should be enunciated to clarify issues about its intentions and practice. This should address sensitive areas as education (including educational assessment), economic development, poverty reduction and governance, to mention but a few.

Laying a Sustainable Foundation for ICTs in Africa

Information and Communication Technology (ICT) has become the hallmark for the sustainable development nations, including Africa. The world is a global village trying to bridge the dichotomy between developed and underdeveloped countries. Taking the bull by the horn in Africa, ICTs are now exerting pressure on the orthodox structures of the educational systems. Many countries in Africa are now advocating a review of their curricula to facilitate infusion of ICT from early level of education to tertiary levels including distance education.

Information and Communication Technology (ICT) Challenges in Africa

Most African countries are aware of the benefits derived through the adoption and application of ICTs, but there are challenges. According to Ekpo (2010), the low percentage of teachers who have ICT skills and the massive ICT education drive needed to correct and develop the required human resources based at the national, state or institutional level is worrisome. She added, 'however, electric power supply has been very sporadic and several urban cities lack electricity supply'. These and other challenges below must be tackled to enhance effective management of ICT resources in Africa:

i. Shortage of ICT facilities and skills;
ii. Inadequate communication and power infrastructure;
iii. Limited financial resources;
iv. Inadequate institutional arrangement;
v. Limited data management capacity;
vi. Inadequate horizontal and vertical communication, and

vii. Inadequate public private partnership policy to strengthen the ICT sector of Africa.

Information and Communication Technology (ICT) Capacity Building in Africa - UNESCO

International Institute for Capacity Building in Africa (UCBA), as quoted by Trucono (2012), states that, for quality teaching to materialise itself in the 21st century, we in UNESCO-UCBA believe that there is a need for teacher education programmes to work towards high standard in terms of the pedagogical integration of ICTs.

Therefore, capacity building is an indispensable tool for effective management of ICTs resources in Africa. There is need for debates, publicity campaigns and exposure to ICTs in all the nooks and crannies of Africa.

Efforts should be focused on the following areas:

i. Building ICTs capacity skills;
ii. Promoting e-learning and use of e-learning materials;
iii. Standardising ICTs in the educational sector;
iv. Embedding ICTs literacy in the pedagogy of African schools, colleges and universities;
v. Providing equitable access to ICTs for training and education in advantaged and disadvantaged countries in Africa;
vi. Promoting training in software, resources development and ICTs service;
vii. Facilitating acquisition of basic applicable and affordable ICTs equipment;
viii. Promoting stakeholders' participation and partnerships at local, national and international levels and above all,
ix. Solid foundation.

Policy Thrust to Empower the ICT Sector in Africa

The ICT policy should provide for the under listed:

1. Develop and improve ICTs infrastructure for all sectors of the economy (communications, electricity and transport);
2. Encourage full utilisation of existing communications infrastructure to reduce resource wastage;
3. Implement an integrated and equitable framework for accelerated ICTs development and uptake;
4. Increase bandwidth on the national backbone and international gateway(s) systems to enhance speed and efficiency of operations;
5. Develop supportive and enabling infrastructure to ensure equitable access to ICTs by all citizens including disadvantaged groups and rural communities;
6. Promote local production of ICTs products to ensure relevance of content and use of appropriate technologies that meet international standards;
7. Establish institutional mechanisms to co-ordinate inter-organisational planning, policymaking and implementation of strategies to develop ICTs taking into account the convergence of broadcasting telecommunications and on-line computer services;
8. Implement measures to develop and retain skilled human resources in the ICTs sector;
9. Rationalise the ICTs tariff structure to make ICTs more affordable and accessible;
10. Introduce and enforce stringent quality of service standards in the provision of ICTs;
11. Create a conducive environment for investment through PPP in the ICTs sector;
12. Promote local research and development in software and hardware relevant to all sectors of the economy; and
13. Promote awareness and use of ICTs

The Requirements for Sustainable Implementation of ICT in Africa

There is no gainsaying that the development and management of ICT resources are crucial to national and international assessment and development in Africa. The umbrella to achieving this is through policy objectives including:

- Embarking on extensive educational and training programmes for qualified ICTs manpower and skillful personnel in all fields of human endeavours;
- Adequate provision and maintenance of infrastructural facilities such as uninterrupted power supply, transportation and telecommunications for ICTs development;
- Encouraging and promoting relevant and sustainable ICTs development;
- Establishment of structures for ICTs strategies implementation;
- Establishment of appropriate instructional mechanisms and procedures to determine adequate application of ICTs; and
- Ensuring the development, use and equitable access to ICTs across gender, youths, the disabled and the elderly. These, among others, will reduce ignorance, illiteracy, poverty via ICTs in Africa.

Unarguably, educational assessment is a yardstick for the progress, achievement and advancement of any nation. In the light of this statement, this study advocates empowering educational assessment through ICT in Africa.

Assessment in education refers to any procedure or activity that is designed to obtain information about the knowledge, attitudes, or skills of a learner or group of learners. Assessment, including online, could be Internal, External, National or International. Information derived from an assessment can be used for a variety of purposes as follows:

To make educational decisions about students or learners on promotion, certifications, grade and retention of knowledge;

To give feedback to students or learners about their progress, strength, weakness;

To motivate students by providing goals or targets;

To judge instructional effectiveness and curricula adequacy;

To describe the achievements of an educational system;

To assess the effectiveness of schools;

To monitor learners' or students' achievements over time; and

To guide policy formulation and decision making.

To achieve these, educational policy plays a vital role in Nigeria and in all nations of Africa. Educational policy on assessment is very crucial in Nigeria and Africa as a whole and it is pertinent to focus on online assessment in every facet of life. Before now, assessment used to be on the quality of educational input such as physical facilities, curriculum materials, textbooks, and teacher training. That was when schools inspection was the order of the business in the educational sector. In 90s there was concern about what learners and students learn in schools. Despite the world declaration on Education for All (EFA) by UNESCO (1990). It cannot be assumed that every school child acquired useful knowledge, sustainable skills, values, reasoning ability, good behaviour and attitude for sustainable life in the society. There are occasions when autonomous and decentralised services are provided by service providers who may not deliver their services up to expectations in educational system. It requires a great deal and focus on online assessment in all examinations including interview by policymakers and stake-holders to make corrupt-free educational policy on examinations and assessment before certificates and jobs are given in Nigeria and all nations in Africa to encourage Internal, Regional, National and International competition at all levels of education.

ICT enhancing learning motivation

ICT provides opportunities to access an array of information using multiple information resources and viewing information from

multiple perspectives, thus fostering the authenticity of the learning environments. ICT may also make complex processes easier to understand through simulations that, again, contribute to authentic learning environments. Thus, ICT may function as a facilitator of active learning and higher-order thinking (Asuquo, & Onasanya, 2007).

ICTs can enhance the quality of education in several ways, by increasing learner motivation and engagement, by facilitating the acquisition of basic skills, and by enhancing teacher training. ICTs are also transformational tools which, when used appropriately, can promote the shift to a learner centred environment. ICTs, especially computers and internet technologies, enable new ways of teaching and learning rather than simply allowing teachers and students to do what they have done before in a better way. ICT has an impact not only on what students should learn, but it also plays a major role on how the students should learn. Along with a shift of curricula from "content-centred" to "competence-based", the mode of curricula delivery has now shifted from "teacher centred" forms of delivery to "student-centred" forms of delivery.

ICT provides Motivation to Learn. ICTs such as videos, television and multimedia computer software that combine text, sound, and colourful moving images can be used to provide challenging and authentic content that will engage the student in the learning process. Interactive radio likewise makes use of sound effects, songs, dramatisations, comic skits, and other performance conventions to compel the students to listen and become more involved in the lessons being delivered. This is confirmed by Asuquo & Babalola (2019), in their study on ICT empowerment in reading and writing in Nigerian schools and colleges, that learners feel more motivated than before in such type of teaching in the classroom rather than the stereotype 45 minutes' lecture. They are of the view that this type of learning process is much more effective than the monotonous monologue classroom situation where the teacher just lectures from a raised platform and the students just listen to the teacher.

ICT changes the characteristics of problems and learning tasks, hence plays an important task as mediator of cognitive development, enhancing the acquisition of generic cognitive competencies as essential for life in our knowledge society. Students using ICTs for learning purposes become immersed in the process of learning and, as more and more students use computers as information sources and cognitive tools (Reeves & Jonassen, 1996), the influence of the technology on supporting how students learn will continue to increase. Learning approaches using contemporary ICTs provide many opportunities for constructivist learning through their provision and support for resource-based, student-centred settings and by enabling learning to be related to context and to practice (Berge, 1998; Barron, 1998). Teachers could make their lecture more attractive and lively by using multi-media. On the other hand, students are able to capture the lessons taught to them easily as they find the class very interesting. The lessons are also retained in their minds for a longer span. And this supports them during the time of examination. More than any other type of ICT, networked computers, with internet connectivity, can increase learner motivation as it combines the media richness and interactivity of other ICTs with the opportunity to connect with real people and to participate in real world events. ICT-enhanced learning is student-directed and diagnostic. Unlike static, text- or print-based educational technologies, ICT-enhanced learning recognises that there are many different learning pathways and many different articulations of knowledge. ICTs allow learners to explore and discover rather than merely listen and remember. The World Wide Web (WWW) also provides a virtual international gallery for students' work (Loveless, 2003). ICT can engage and inspire students, and this has been cited as a factor influencing ready adaptors of ICT.

Statement of Problem

Education is the greatest weapon of self-confidence and civilisation of any nation. No wonder many children and parents are all

out to get involved in examination malpractices. A child who has been to school is expected to have acquired useful knowledge, reasoning ability, skills, attitudes, good behaviours and values, especially those with short term educational careers like below one year programme for certificate and diploma courses. On course completion, these graduates, in addition to O'Level certificates in WAEC and NECO examinations, are employed in various departments to work. Another group of staff are experts and graduates as well as post-graduates in various disciplines, but they do not have competency in ICT. Those with basic knowledge of ICT lack the system to operate and function positively even as teachers or lecturers.

The high cost of technologies, including computers and infrastructures, pose serious handicap to ICT competency in Africa and all developing countries including Nigeria, the 'giant' of Africa. The high cost of living, economic and foreign exchange rate now also contribute to ICT incompetency in Nigeria and Africa as a whole. These, among others, influence those who seek white collar jobs to go for certificates rather than acquisition of useful knowledge, skills, attitudes, and values for sustainable living.

A situation where favoritism places many even in high places for unmerited jobs is of great concern in Nigeria and other developing countries. The need for online assessment, training and re-training to catch up with new trends as the world is now a global village through technology is advocated. Fast tracking through implementation by policy in Nigeria and Africa will strengthen training and re-training incompetence of staff spontaneously and reduce challenges, unnecessary delays, self-assessment on ICT through online test and examinations in Nigeria and Africa as a whole.

Purpose of the Study

This study was designed to:

1 To identify staff members that were not competent in ICT.

2 To find out if age has any effect on competency of trainees on ICT online assessment.

3 To assess male and female performances on ICT in online Quiz on Introduction of computers, Microsoft Word, Microsoft PowerPoint, Microsoft Excel and Introduction to internet.

Research Questions

1 What is the competency level of the staff in ICT?

2 Has age any effect on trainees' competency on ICT in online assessment?

3 What is the difference in performance of male and female in online Quiz on ICT?

Significance of the Study

This study would add to reference pool on materials for assessment in schools, especially tertiary institutions in Nigeria and Africa for global competitiveness. Researchers would find the study useful in online assessment at all levels of education. Government at all levels would find the study useful for internal and external assessment of candidates to embrace the world class standard in Nigeria and Africa as a whole.

Examiners and Examinees would adopt this study as a veritable tool for group, individual and self-assessment and as a yardstick for judging standard in the educational system. Examination bodies including: NECO, WAEC, NABTEB, JAMB, among others, would find the study as a guide for assessment of candidates to catch up with the world-class standard in assessment.

Methodology

A quasi-experimental design was used for the study. The international ICT centre of the University of Calabar in Nigeria was the area of study. A preliminary survey of staff who were not ICT competent was done by heads of departments who sent letters to such staff to attend the foundation training on ICT. The population for the study was two hundred and fifty (250) staff trainees and five (5)

teachers of trainers for the first batch of ICT foundation training. Two weeks later, one hundred and ten (110) of the trainees where trained by four teachers or trainers of Advanced Digital Appreciation Programme for Tertiary Institutions (ADAPTI), in the University of Calabar e-Library. At the end of the training, class assessment was administered to test trainees' knowledge, skills, attitudes and competency on ICT in five basic areas taught as follows: Introduction to computers, Microsoft Word, Microsoft PowerPoint, Microsoft Excel and Introduction to internet. A 10-minute ADAPT-QUIZ of twenty questions through content validation by experts was administered ONLINE in an intact class. One teacher or instructor was used to administer the quiz while others observed the smooth conduct of the test. The data collected were analysed using descriptive statistics of percentages. Recommendations and suggestions for further studies were made.

Results

Competency Level of the Respondents in ICT

Table 1: Competency Level of the Respondents in ICT

S/N	QUESTIONS	GOT IT RIGHT	GOT IT WRONG	DECISION
1	MS Word 2002 can be considered as…	11 (23.9)	35 (76.1)	Low extent
2	A browser is …	45 (97.8)	1 (2.2)	Great extent
3	The most popular Web browser for personal computers are Microsoft Internet Explorer, Netscape and _____	46 (100.0)	0	Great extent
4	In order to protect computer systems from viruses we use __ software	45 (97.8)	1 (2.2)	Great extent
5	An antivirus is a software; true or false?	46 (100.0)	0	Great extent
6	Antivirus is an application software; True or False?	9 (19.6)	37 (80.4)	Low extent
7	An example of an optical storage device is:	16 (34.8)	30 (65.2)	Moderate
8	Which of the following is an example of an Operating System?	43 (93.5)	3 (6.5)	Great extent
9	The type of education in which students learn by using and completing exercise with instructional software is called	36 (78.3)	10 (21.7)	Great extent
10	The columns in a database are called	14 (30.4)	32 (69.6)	Low extent
11	Which of the following statements are not true?	22 (47.8)	24 (52.2)	Moderate
12	Which tab is not available on the left panel when you open a presentation?	12 (26.1)	34 (73.9)	Low extent
13	Powerpoint presentations are widely used as	8 (17.4)	38 (82.6)	Low extent
14	Which of the following section does not exist in a slide layout	17 (37.0)	29 (63.0)	Moderate
15	Which of the following pane is not available in a task pane?	10 (21.7)	36 (78.3)	Low extent
16	_____ must precede or start a formula while typing in excel	44 (95.7)	2 (4.3)	Great extent
17	_____is referred to as a block of cells	14 (30.4)	32 (69.6)	Low extent

18	The Grid line of a worksheet always prints along with the data automatically, T/F	42 (91.3)	4 (8.7)	Great extent
19	The act of copying from the internet is called_____	31 (67.4)	15 (32.6)	Moderate
20	WWW stand for _____	46 (100.0	0	Great extent

Key: Numbers in parenthesis represent percentages while numbers outside the parenthesis represent frequencies.

Table 1 shows the beneficiaries' response to the computer-based test on their competency in ICT. The key used in determining the extent of their competency is the number of people that got the questions right as presented below:

16 - 20 - Great extent
10 -15 - Moderate
9-0 - Little extent

Table 1 indicates that a sizeable number of the beneficiaries had moderate knowledge of programme objectives. With regard to question 1, only 11 (23.9%) got it correctly. This means that the programme beneficiaries had low knowledge of question 1. In the case of objective 2, 45 (97.8%) got it correctly. This also means that the beneficiaries had great knowledge of question 2. All the beneficiaries (100.0%) got question 3 correctly. Only 12 of the programme beneficiaries (26.1%) got question 12 correctly. This implies that majority of the programme beneficiaries had no knowledge of question 12. The inference that can be drawn here is that programme beneficiaries had moderate to great extent of competency of most of the questions in general.

Variation in the competency of trainees on ICT based on Age Group

Table 2: ANOVA results on the variation in the competency of trainees on ICT based on Age Group

Variable	**Mean**	**F-Value**	**Sign 2-tailed**	**P-Value**	**Remarks**
Age		1.737	0.130	0.05	Not Significant
25 – 30 years	12.28				
31- 35 years	13.42				
36-40 years	11.90				
41-45years	12.13				
46-50 years	11.00				
51-55 years	11.50				
56-60 years	9.00				
61 & above yrs	10.00				

Source: Computed from field survey, 2016

Table 2 below presents results of analysis of variance done to examine if there is any significant difference in the competency of trainees on ICT based on age group of the respondents. The results revealed that there is no significant difference in the competency of trainees on ICT based on age group of the respondents, $F=1.882$; $P>0.05$.

Variation in the competency of trainees on ICT based on gender

Table 3 shows that there is no significant difference in the competency of trainees on ICT based on gender. The mean competency for males is 12.63, SD =1.57, while that of females is 11.74, SD = 1.65. The mean difference of 0.89084 observed, is not statistically significant at $t_{(44)} = 0.073$, $P > 0.05$.

Table 3: Variation in the competency of trainees on ICT based on gender

Gender	N	Mean	SD	df	t-value	t-critical	P.value	Remark
Male	19	12.63	1.57	44	0.073	1.960	0.05	Not Significant
Female	27	11.74	1.66					

Source: Computed from field survey, 2016

Summary

Conclusively, competency through ICT training on online assessment in Nigeria and Africa will enhance sustainable education and reduce challenges in the Internal, External, Regional, National and International Examinations, hence catching up with the trends in global education.

Recommendations

Based on the results of findings, the following recommendations are made: the government at all levels', private organisations and stakeholders should build test centres and donate computers, multi-media/audio-visual gadgets to institutions for training and re-training of both students and staff.

The objectives of ICT and educational assessment should emphasise online assessment and be widely published and accessed in the educational system in Nigeria and Africa to reduce delay and challenges in the system.

There should be a solid foundation in ICT and educational assessment in Nigeria and Africa for sustainability through structured curricula and training/re-training programmes.

Provision should be made for those who left the educational mainstream before the advent of ICTs including those at workplaces and the lifelong learners.

Nigeria and the whole of Africa should focus on online assessment in Internal, External, Regional, National, International and direct contribution to the pool of world information to enhance item banking for standardized and sustainability in educational assessment.

Suggestion for Further Studies

This study should be replicated in all institutions for students and staff for online assessment through ICT in Nigeria and Africa to fast track catching-up with the trends in global education.

References

Asuquo, E. N. & Onasanya, S. A. (2007). Using computer Technology to develop learning skills in English Language. *Journal of Research and Development in Education (J0RDE).* A publication of the Institute of Education. University of Uyo 3, (2) 56-61.

Asuquo Eno, (2018). Multimedia: Tools for effective teaching and learning in secondary schools in Nigeria.. *Journal of the Department of Special Education* University of Calabar, Nigeria 4. 150 - 158.

Asuquo Eno Ndarake, & Temitayo Omolara Babalola (2019). Towards an enhanced information and communication technology empowerment in reading and writing in the Nigerian schools and colleges. *Journal of Educational Technology*. Ilorin: Department of Educational Technology, University of Ilorin, Kwara State-Nigeria. **(in press)**

Barron, A. (1998). Designing Web-based training. *British Journal of Educational Technology*, 29 (4) 355-371.

Berge, Z. (1998). Guiding principles in Web-based instructional design. *Education Media International*, 35 (2), 72-76.

Ekpo, C.M, (2010). ICTs in Nigerian School systems shifting from the to practice. A key Note Address presented at the 31st Annual Conference and convention of Nigeria Association of Educational Media and Technology, Minna, Niger State, Nigeria.

Eno Asuquo (2014). Accessing education through effective management of Information and Communication Technology (ICT) resources in Africa. In M. Afolabi & J.A. Ushie (Eds.). Harvest from the Grown. A festschrift honour of professor Comfort M. Ekpo. Uyo: Flypapers Printing Press.

Long, S. (2001), "Multimedia in the art curriculum: Crossing boundaries". *Journal of Art and Design Education, 20*(3) 255-263.

Loveless, A. (2003), "Making a difference? An evaluation of professional knowledge and pedagogy in art and ICT". Journal of Art and Design Education, 22 (2) 145154,

Mason, R. (2000), 'From distance education to online education', *The Internet and Higher Education 3*(1-2) 63-74.

Ojerinde, D.J. (2013). The Use Of ICT in Educational Assessment: Challenges and prospects being a paper delivered at the first public lecture for the 2012/2013 Academic session of the Tansian University, Oba, Anambra State on Wednesday 12 , June, 2013.

UNESCO (2002). Open and Distance Learning trends, policy and Strategy consideration, Paris: UNESCO

Wikipedia, the Free Encyclopedia (2013); Reference work; a compendium holding a summary of information from all branches of knowledge.