INCLUSION OF COMPUTER-BASED ASSESSMENTS AND PEDAGOGIES INTO NIGERIAN TEACHER EDUCATION CURRICULUM: IMPERATIVES FOR GLOBALIZATION INTERPLAY WITH EDUCATION

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Abstract

There is the urgent need for the teachers to be trained and developed in a process (Teacher Education) that will increase their knowledge, skills, capacities and competences so they can cope with the challenges and realities of the present century wherein the world is now a global village. To achieve this, Inclusion of Computer-Based Assessment and Pedagogies into Nigerian Teacher Education Curriculum is very apt. Computer in its various forms has become an essential part of the learning process. Computer can efficiently serve as a convergence facilitator, a bridge builder between the machines, the humans, the society and the organizational objectives. Computer can effectively connect the learners, teachers and administrators and indeed all staff even when they are physically apart. At present, our work life is mainly based on national and international trade which will become more global. This paper, therefore, is a deliberate advocacy for inclusion of Computer-Based Assessments and Pedagogies into the Nigerian Teacher Education Curriculum. The discussion covers Concept of Education, teacher education, Curriculum, computer-based assessments, computer-based pedagogies and imperatives for globalization interplay with education. It was concluded that the application of computers in Virtual Reality, Electronic commerce and electronic marketplaces are creating a strong change factor behind the structure of work life. Consequently, Nigerian Teacher Education Curriculum should not be left behind. Veritable recommendations were articulated including inclusion of Computer-Based Tests, online and web-based assessments as well as computer aided instruction into Nigerian Teacher Education Curriculum.

Keywords: *inclusion, Computer, Assessment, Pedagogy, Curriculum, Globalization, Education.*

Introduction

Education unarguably fosters the worth and development of the individual, for each individual's sake and for the general development of the society. Perhaps, this fact informed the belief of the Nigerian nation that education is an instrument "par excellence" for achieving national development. Ojim and Nyim (2012) defined education as the processes of giving intellectual, moral and social instructions or a process involving training or giving information on a particular subject. Ojim and Nyim asserted that education prepares the recipients for a long valuable life through the values, knowledge, attitudes, competences and skills imparted on the recipients. Clauss (2012) added that the rapid socio-economic development of a nation has a strong positive relationship with the caliber of human capital, developed through functional education, in that country.

Development of human capital is essential in all spheres of human endeavor. This is because with human capital in place, every other resource of development can be substantially harnessed. Even virtual economics runs on programs written by humans. In the educational sector, all activities hinge on the teacher. Hence, teacher education is very pivotal in attaining functional education. According to King (2017), teacher education or teacher training refers to programs, policies, procedures and provision designed to equip (prospective) teachers with the knowledge, attitudes, behaviors, approaches, methodologies and skills they require to perform their tasks effectively in the classroom, school and wider community.

To be relevant today, the teacher must be trained with the realities of the computer based high-tech generation in which we found ourselves. There is the urgent need for the teachers to be trained and developed in a process (Teacher Education) that will increase their knowledge, skills, capacities and competences so they can cope with the challenges and realities of the present century wherein the world is now a global village. To achieve this, Inclusion of Computer-Based Assessment and Pedagogies into Nigerian Teacher Education Curriculum is very apt. Computer in its various forms has become an essential part of the learning process. Computers can efficiently serve as a convergence facilitator, a bridge builder between the machines, the humans, the society and the organizational objectives. Computers can effectively connect the learners, teachers and administrators and indeed all staff even when they are physically apart. At present, our work life is mainly based on national and international trade, which will become more global. This paper, therefore, is a deliberate advocacy for inclusion of Computer-Based Assessments and Pedagogies into the Nigerian Teacher Education Curriculum.

Concept of Education

Education is a commonly used term which has various meanings to various people, yet it is a very important concept to the society. Various educators and educationists have offered series of definitions to education. Amusan (2012) posits that education is the process by which every society attempts to preserve and upgrade the accumulated knowledge, skills and attitudes in its cultural setting and heritage to foster continuously the well-being of mankind and guarantee its survival against the unpredictable, at times hostile and destructive elements and forces of man and nature. Davidson (2011) averred that education is the process of shaping individual's behavior for adequate adjustment in the society. Dunga (2011) added that education is the aggregate of all the processes through which a child develops abilities, attitudes and other forms of behavior which are of positive value to society. From these definitions, the focus of education is to equip the individuals with the knowledge, abilities, skills or behavior to enable them function in their immediate environment and the society at large.

Education, in general terms, is the process of transmitting societal norms, values and desirable attitudes from one generation to another. Education seeks to socialize individuals so as to equip them with the desired mode of behavior that is in conformity with the way of life of the society in which they live. Education is the process of teaching, training and learning in schools and colleges for the development of knowledge and skills so as to prepare individuals to live happily with themselves and others in the society where they live, (Lee, 2018).

The Nigeria nation recognizes the vital role of education in achieving her national objectives. Hence, in the National Policy on Education it is stated that the Nigeria's philosophy of education is based on the following set of beliefs:

a. Education is an instrument for national development and social change:
b. Education is vital for the promotion of a progressive and united Nigeria:
c. Education maximizes the creative potentials and skills of the individual for self-fulfillment and general development of the society:
d. Education is compulsory and a right of every Nigerian irrespective of gender, social status, religion, ethnic background and any peculiar individual challenges; and
e. Education is to be qualitative, comprehensive, functional and relevant to the needs of the society (Federal Republic of Nigeria, (FRN), 2013).

Undoubtedly, these laudable beliefs can only be achieved through a vibrant and pragmatic teacher education.

Teacher Education

As defined earlier, teacher education or teacher training refers to programs, policies, procedures and provision designed to equip (prospective) teachers with the knowledge, attitudes, behaviors, approaches, methodologies and skills they require to perform their tasks effectively in the classroom, school and wider community, (King, 2017). Harlord (2018) observed that due to the fact that education systems consume significant financial resources, the process by which teachers are educated is the subject of political discussion in many countries, reflecting both the value attached by societies and cultures to the preparations of young people for life. In recognition of the pivotal role of quality teachers in the provision of quality education at all levels, teacher education shall continue to be emphasized in educational planning and development.

In Nigeria, the goals of teacher education shall be to:

a. Produce highly motivated, conscientious and efficient classroom teachers for all levels of the educational system
b. Further encourage the spirit of enquiry and creativity in teachers
c. Help teachers fit into the social life of the community and the society at large and enhance their commitment to national goals
d. Provide teachers with the intellectual and professional background adequate for their assignment and to make them adaptable to changing situations and
e. Enhance teachers commitment to the teaching profession

The policy further stated that all teachers in educational institutions shall be professionally trained. Teacher education programs shall be structured to equip teachers for the effective performance of their duties. Information Technology (IT) training shall be incorporated into all teacher training programs. At the Nigeria Certificate in Education (NCE) and Degree levels, education programs shall be "expanded to cater for the requirements of technical, vocational, business and special education." Teacher education shall continue to take cognizance of changes in methodology and in the curriculum. Teachers shall be regularly exposed to innovations in the profession. From the foregoing, it is expedient to include computer-based assessment and computer-based pedagogies into Nigeria's teacher education curriculum so as to bring it (teacher education curriculum up to date with the computer-based innovations of our present generation).

Curriculum

Curriculum is a term in education which is broadly defined as the totality of student experience that occur in the educational process. The term often refers specifically to a planned sequence of instruction, or to a view of the student's experiences in terms of the educator's or schools instructional goals, (Edwin, 2014). A curriculum may incorporate the planned interaction of pupils with instructional content, materials, resources and processes for evaluating the attainment of educational objectives. According to Grant (2015), curricula are split into several categories: the explicit, the implicit, the hidden and the excluded.

- **Explicit curriculum:** subjects that will be taught, the identified "mission" of the school and the knowledge and skills that the school expects successful students to acquire.
- **Implicit curriculum:** lessons that arise from the culture of the school and the behaviors, attitudes and expectations that characterize that culture, the unintended curriculum.
- **Hidden curriculum:** things which students learn, 'because of the way in which the work of the school is planned and organized but which are not in themselves overtly included in the planning or even in the consciousness of those responsible for the school arrangements.'
- **Excluded curriculum:** topics or perspectives that are specifically excluded from the curriculum. It may also come in the form of extracurricular/co-curricular activities. This may include school-sponsored programs which are intended to supplement the academic aspect of the school experience or community-based programs and activities.

According to Akubuilo (2014), the general view of what curriculum should mean had changed with time and according to social conditions (that is changes in the society, conception or nature of knowledge, the nature of the learner and indeed the total experiences offered to the learner by the schools). Eya (1999) maintains that this view recognizes the inclusion of needs and interests of the learner in the curriculum. The progressivity' view of the curriculum is broad and embracive of all experiences/changes in behavior of the learners while schooling. Regarding our topic of discourse, there is need to redesign Nigeria's teacher education curriculum in such a way to include computer base assessment and computer-based pedagogies. These will help the training institution to produce a teacher that can function in this computer driven society, a teacher who can maximize the benefits of computerization and apply same to training learners under his watch.

Computer-Based Assessments

The term "computer" will undoubtedly suggest a machine used for computations, that is, mathematical calculations. This is certainly one of the functions of a computer, but to think of computers only as rather powerful calculating machines would seriously underestimate the range of their possible applications. In addition to mathematical computations, computers today handle many tasks that involve little or no mathematical computations, and it is better to think of them as machines which handle information in logical ways. This fact about computer may have led to the various definitions of the term computer. For instance, Osaka (2017) defined computer as an electronic device which can receive information (data) and performing a sequence of logical operations in accordance with a predetermined but variable set of procedural instructions (program) to produce a result in the form of information or signals. Ezeliora (2017) described a computer as an electronic machine which can receive, storing, recalling or retrieving information put in it.

Still on definitions of computer, Tambo (2017) defined computer as a device for storing large amount of information called data and processing these data in specified ways in very short period of time. This implies that, computer is a machine specifically designed for the manipulation of coded information; an automatic electronic machine for performing simple and complex operation far beyond the capacities of man. Computers in its various forms has become an essential part of the learning process such that computer base assessment is fast becoming a household term in recent times. Computer based assessment is a type of test in which the computer is used. The assessor uses the computer to communicate the assessment materials (tests) to the testees who in turn responds (answers the questions) through the computer also. Computer based assessment can be classified into two, namely offline and online (web based). Olinya (2018) explained that offline computer-based assessment is those that do not require internet connections, rather the assessor loads the test items (questions) into the computer system while the testees solves the required problems using the same computer.

On the other hand, online computer-based assessment requires internet connections. In online or web-based computer assessment, the assessor and the testees may be far apart as distance is no barrier to internet communication. Computer based assessment according to Smith (2016) have come under criticisms for their lapses in control of malpractice especially in cases where the assessors and the testees are far apart. To address this weakness, modern day computer-based assessments have innovative features. These features include an automatic time regulator, which ensures strict enforcement of time allotted for a particular test. Some computer-based assessment security facilities also include access restrictions. In some, the testees sign in through fingerprint while others have advanced features such as voice or face recognition. Other advantages of computer-based assessments include time saving, cost effectiveness, reduction or even elimination of human errors and biases as well as ability to handle large quantity of data. It is therefore necessary that computer-based assessments be included in Nigeria's' Teacher Education Curriculum.

Computer-Based Pedagogies

Use of computers in education was broadly categorized into two by Buckie (2016) as; class use of computers and supportive use of computers. Class use of computers include computer as tool for presentation, encouraging pupils to train skills and instructing learners on the possibilities of computers, while supportive use of computers include administration, preparing work sheet for the learners, looking for information on the internet for lesson preparation.

Computer in Education and computer through Education were differentiated by Onah (2019) as follows; computer in Education is about the use of computer or Information and Communication Technology (ICT) to facilitate education. This involves the application of computers to teaching and learning, from planning through implementation and up to the point of achieving learning objectives. Computer or ICT Education refers to computer or ICT as a subject of study. This requires proper planning for designing and implementing the curriculum that will have a broader perception of computers from the foundation to all levels of learners. Computer through Education refers to computer knowledge and skills acquired through education or acquiring computer knowledge and skills through the learning of other subjects.

Udoh (2020) identified three applications associated with computer-based pedagogies, namely, computer Aided Instruction (CAI), computer managed learning (CML) and Computer- Based

Training (CBT). Computer- Aided Instruction (CAI) is the general term used to describe virtually all teaching and learning activities that is promoted by computer or in which a computer is involved (Shehu, 2015). Okeke (2018) listed the various modes and functions of CAI as follows;

CAI functions are;

(i)   Management of learning,
(ii)   Testing
(iii)   Tutoring
(iv)   Exercising
(v)   Use of a computer for producing teaching materials
(vi)   Dissemination of materials and
(vii)   Medium of expression.

CAI modes include;

i.   Problem solving
ii.   Drill and practice
iii.   Simulations and games
iv.   Tutorial modes
v.   Dialogue modes and
vi.   Enquiring modes.

Depending upon the relative degree of involvement by the learner, two basic types of CAI were identified by Phum (2015) as CAI which involves the use of computer as teaching/learning aid, but there is no direct involvement by the learners. In contrast, interactive CAI promotes active learning in which there are high degree of learner's participation and involvement. Here the learners' behaviour and responses to instructional materials can be used to help determine the most appropriate pathway through the body of knowledge coded in the CAI, (Fame, 2014).

Lee (2018) prescribed that each of the two categories of CAI may be used at different levels, for instance, at the initial stage of introducing a new topic, passive CAI could be useful. On the other hand, interactive CAI could be useful in learning by discovery situation. Lee described three applications of computer Aided instruction (CAI) under the following headings; computer-based learning, computer-based training and computer-supported collaborative learning. Computer based learning (CBL) according to Samuelson (2015) refers to the use of computers as a key component of the educational environment while this can refer to the use of computers in a classroom, the term more broadly refers to a structured environment in which computers are used for teaching purposes. Dunga (2018) explained that computer-based training (CBTs) are self-paced learning activities accessible via a computer or handheld device. CBTs typically present content in a linear fashion, much like reading an online book or manual. For this reason, they are often used to teach static processes, such as using software or completing mathematical equations. From the above, computer-based pedagogies are needed in training the 21st century teacher else, the products of our schools will not survive the competitiveness of the modern global village.

Imperatives for Globalization Interplay with Education

In the Convergence Theory on ICT, Society and Human Beings Gunilla Bradley in 2010 posited that all technologies is for humans and should facilitate and improve our wellbeing and quality of life. The Convergence Model could be seen as a synthesis or aggregation of Gunilla Bradley's initial theoretical models. Gunilla Bradley gave the convergence model the subtitle "ICT and the

Psychosocial Life Environment". The convergence model is primarily a graphical illustration of ongoing changes in the Net Society. However, the theoretical model goes back and synthesizes the theoretical framework in his research on psychosocial work environment and computerization, with roots back to the 1970th research and research programs during various phases of the history of computerization. Both Convergence and Interactions are important features in the model. *Convergence* here means a move towards a common content. *Interaction* means that technology interacts with the social world with values and beliefs. There is also an ongoing interaction between the "clusters of circles". There are *four levels of analysis* – individual, organizational, communal, and societal, (Nick, 2014).

The individual is affected by computers, the life environment with its three sub environments, the Life Role with its three sub roles, and Globalization with its three components of values, technology and labour market. The individual can also influence the technology, the environment, and his/her own roles and phenomena on the organizational and societal level and the new virtual reality. According to Tambo (2017), complexity characterizes society and its structures. It is also mirrored by the fact that effects on the individual become more multi-faceted and complex. The way humans handle his/her situation can roughly be categorized as either active or passive reactions. Teachers can in their professional role, private role and citizen's role influence learners' life environment on various levels of analyses, but an awareness of the speed of change is required. Closely connected to the convergence model is ongoing change in the educational sector where the professional role, private role, citizen's role, and learning role are converging. No doubt, for computers, society and human beings to interplay through education, or simply, for computer and human beings to interact through education, the role of the human person (teacher) cannot be neglected, (Smith, 2016). It is the teacher that will facilitate the interplay (or interaction). Thus, the teacher must be trained properly through inclusion of computer-based assessment and computer-based pedagogies in the teacher education curriculum. Computer becomes an interplay facilitator, a bridge builder between the machines, the humans, the society and the organizational objectives, (Erkson, 2014). Computers can effectively connect the teacher with all learners even when they are physically apart, separated or far from one another. Information can be generated, processed and communicated effectively via computer even after normal working hours. Urgencies and emergencies can effectively be taken care of through the interplay nature of computers. A good example of emergencies is the outbreak of the COVID 19 Pandemic. At the peak of the outbreak, a few teachers from Nigeria were meant to teach right from their homes. They were able to work from home using computer. However, many other teachers who could not do the same either because they lacked the knowledge or because they lacked the required facilities. Computer based assessment and pedagogies should not be optional in Nigeria's teacher education curriculum. All teachers must be trained and empowered in necessary computer application technology if we must attain our laudable national objectives.

Conclusion

The following conclusions are deemed necessary:

1. Nigeria's Teacher Education Curriculum need to be upgraded to cope with the new age globalization requirements.

2. Computer base assessment, computer base pedagogies and indeed all forms of computer applications in the educational sector is required to maximize the gains of the interplay of globalization with education.

Recommendations

It is hereby recommended as follows:

1. Computer-Based Assessments should be included in Nigeria's teacher education curriculum.
2. Computer-Based Pedagogy should be included in Nigeria's teacher education curriculum.
3. In-service training on computer-based assessment and pedagogy should be an integral part of continuing teacher education.

References

Akubuilo, D.U. (2014). *Curriculum Development: Theoretical and Practical Perspectives*. Enugu: Cecta Nigeria Ltd.

Clauss, G.E. (2012). An overview of personal functions in tertiary institutions in Nigeria. *Journal of national institute for educational planning and administration 4 (1).* Pg 110-125.

Dunga, C.H (2018). Extent of application of computer to management of secondary schools in shendam L.G.A of plateau state. Proceedings of 2011 educational management conference. Ekiti state university. Pg 30-49

Edwin, R.C. (2014). The Human Problems of an industrialized Civilization. *http://www.Amazon Books.com.* Retrieved 12/8/15

Erkson, P.D. (2014). An overview of organizational behaviour. Newsletter/*http://www.business world/newsletter. Org. Retrieved 12/12/2016.*

Eya, P.E. (1999). *Fundamentals of curriculum Development for Beginners*. Enugu: J.T.C. Publishers

Fame, R.A. (2014). *Principles and practice of education.* Ontario: Zenith publishing company Inc.

Federal Republic of Nigeria (2013) *National policy on education.* Abuja: NERDC press.

Grant, B.F. (2015). Strategies for cordial industrial relations in educational institutions in Sweden. *Journal of School Administration 3(5).www. jsa/mini.edu.uk. Retrieved 12/12/16. Pg 10-28*

Harold, H.K. (2015). Human resource management: a paradigm shift. *Journal of School Administration 3(5).www. jsa/mini.edu.uk. Retrieved 12/12/16. Pg 118-130*

Lee, J.H. (2018). ICT skills possessed by Singaporean secondary school principals and application to personnel management practices. International journal of inter-disciplinary studies 17(1) pg 601-619.www.ijids/monographs/42200738.net. Retrieved 06/03/19.

Nick, L.H. (2014). Efficient promotion interview practices. *http://www.business world/newsletter. Org. Retrieved 12/12/2016.*

Ojim, B. & Nyim, H. (2012). *Applications of Information and Communication Technology in education.* Ikeja: zebra press ltd.

Plum, N.A. (2015). ICT application in staff recruitment: In-depth appraisal. *Journal of School Administration 3(5).www. jsa/mini.edu.uk. Retrieved 12/12/16. Pg 240-257*

Samuelson, O.T. (2015). *Information and Communication Technology for personnel Management*. Copenhagen: wagezty publishers.

Shehu, U.A. (2015). Application of ICT personnel management by secondary school principals in Kano state. www.edudiscourse/ABSTRACTS.org. Retrieved 11/02/15

Smith, S.T. (2016). Effective performance appraisal techniques. *Havard Business Review 80(7). www.hbr.org.* retrieved 01/08/17. Pg 40-62.

Tambo, J.S. (2017) personnel management issues in sub-Saharan Africa. *Journal of national institute for educational planning and administration 4 (1).* Pg 63-79.