

## ***Educational Assessment in a Digital Era and Future Workforce in Nigeria***

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### **Abstract**

*Education is very indispensable to the socio-cultural and technological advancement of any nation because it serves as pre-requisite for quality manpower development. Educational assessment is also very essential for quality and functional education. Automation of educational assessment makes it more authentic to produce quality manpower. To thrive well in the digital era, future workforce needs to be competent in some skills. The driver of these skills is Information and Communication Technology (ICT). Integration of ICT into assessment practices for the development of 21<sup>st</sup> century skills in Nigeria is still riddled with some challenges and not satisfactory enough. Production of competent and quality future workforce therefore in Nigeria could still be a mirage. This paper therefore reflects on the trends of educational assessment, 21<sup>st</sup> century skills needed by students and future workers to survive in a digital economy, challenges of educational assessment in a digital era and automation of educational assessment practice and future of workforce in Nigeria. To guarantee quality, credible and competent future workforce in Nigeria, it was recommended, among others, that schools should be equipped with computers and internet facilities for the use of teachers and students.*

**Keywords:** Educational, assessment, digital, era, workforce, automation

### **Introduction**

Education can be defined as the transmission of worthwhile values in any society to the younger generation. According to Yekini (2013), education is observed as the process of acquiring knowledge, skills, attitudes, interests, abilities, competence and cultural norms of a society by people and to transmit their life to the coming generations so as to enhance perpetual development of the society. Education could be said to be very indispensable to the economic, socio-cultural and technological advancement of any nation, since it is being recognized as the prerequisite for quality manpower development and creation of wealth (Okobia, 2011). Education is seen by Oyekan in Okobia (2011) as the bedrock of societal development because functional

education remains the veritable instrument and strength of positive change for sustainable national development. Synthesizing the preceding definitions of education, it is glaring that education is very necessary for quality workforce of any nation.

The three fundamental components of education are Curriculum, Instruction and Assessment (Biggs, 2002). The three components are very necessary for the students to acquire basic skills and knowledge for them to learn effectively in school and be successful in life. Curriculum refers to the body of knowledge for students to learn, instruction (teaching) refers to the methodologies to be employed by teachers for students to learn the body of knowledge and assessment is the veritable tools in the hands of teachers to ascertain whether the students have really learnt the body of knowledge. These three components of education are interrelated and inseparable.

Educational assessment is very central to education as no meaningful teaching and learning process would take place without proper assessment. Since education is a purposeful human endeavour, that is usually directed towards achieving one goal or the other, educational assessment is very useful in knowing whether the goals of education have been achieved or not. Educational assessment, according to Nitko and Brookhart (2011), is the process of collecting information for making decisions about students, curricula, programmes and educational policy. Assessment data could facilitate decision made on students such as instructional management decisions, selection, placement, classification, guidance and counselling, credentialing and certification. Educational assessment is very essential for good quality and functional education. Educational assessment is a sine qua non for quality education (Ukwuije, 2012). Quality education, according to Ukwuije, is the extent to which education accomplishes the various roles ascribed to it in the National Policy on Education such as usefulness of education for employment, relevance to the developmental needs of the recipients as individuals and the society in which the individuals live and operate as citizens, and achievement of students. In the light of this, therefore, educational assessment is an essential ingredient for quality education. Quality education is also very necessary for adequate and competent workforce of any nation.

History of educational assessment in Nigeria is very necessary at this point in order to make projection into the future. In 1954, Sir Sidney Philipson a British administrator and Chief Simeon Adebó, a seasoned Nigerian civil servant said “every situation has its roots in the past and the past survives in the present, the present is indeed the undergoing modifications”. Trends of educational assessment in Nigeria can therefore

be examined under three stages: Pre-colonial era, colonial/post independence era and digital/automation era.

### **Educational assessment during pre-colonial era**

The two educational programmes at this period were the general education for socialization or acquisition of social behavioural skills and vocational education programme for the inculcation of special vocational skills. In the case of general education, adult members in the family and the society served as teachers (Owolabi, 2003). Children were taught social conduct, positive attitudes and values. Assessment at this level was the concern of all these adult members in the society. In case of vocational education, children learnt vocations under the tutelage of a master which could either be parents, relations or anybody outside the family circle (Esu & Junaid, 2014). Assessment at this level was by observation coupled with elements of continuous assessment for diagnostic and remedying purposes. Practical test was also conducted to ascertain the apprentice mastery level of vocation learnt to mark the final examination (Esu & Junaid, 2014). Assessment at this level could be called “Social Group Assessment” which could be referred to as the lowest level of assessment.

### **Colonial/post–independence era**

The western type of formal education in Nigeria was introduced by the Christian missionaries around 1843 (Oni, 2009). Assessment mode at this level was basically oral with little written exercise and practicals. Later, the written mode developed and overshadowed the oral and practicals. This oral mode of assessment was later restricted to infants and higher degrees. The practical test which was initially meant for the assessment of learning in sciences and technical subjects was relegated to the background. Hence, written assessment (paper and pencil assessment) dominated the era. Some of the problems of written assessment as outlined by Alabi, Issa and Oyekunle (2012) are: tedious process in the conduct of the examination, high risks of accidents on the part of examiners/examinees, subjective scoring, late release of results, high cost of conduct of the examination and examination malpractices.

### **Educational assessment in digital/automation era**

Digital or automation is the use of electronic machines such as computers, or mechanical devices to perform the tasks being performed manually by humans. Automation of educational assessment can be defined as the use of technology for the assessment of learning outcomes using machines to perform those operations which hitherto were performed wholly or partly by teachers or employers (Obioma, Junaidu & Ajagun, 2013). The evolution of automation in public examinations in Nigeria

followed certain developmental stages. According to Obioma et al. (2013), the stages are:

- i. Use of punch card machines by West African Examination Council (WAEC) for handling all aspects of examinations from the capturing of candidates' registration information to the printing of certificates.
- ii. Replacement of punch card machines with optical Mark Reader (OMR) in 1970s.
- iii. Introduction of e-registration of candidates by National Examination Council (NECO) in 2004.
- iv. Introduction of Computer Based Test (CBT) examination by Joint Admission and Matriculation Board (JAMB) in 2013.
- v. At present, many tertiary institutions in Nigeria are now using the CBT for their internal examinations.

Some of the benefits of automating educational assessment in Nigeria, according to Obioma et al. (2013) are:

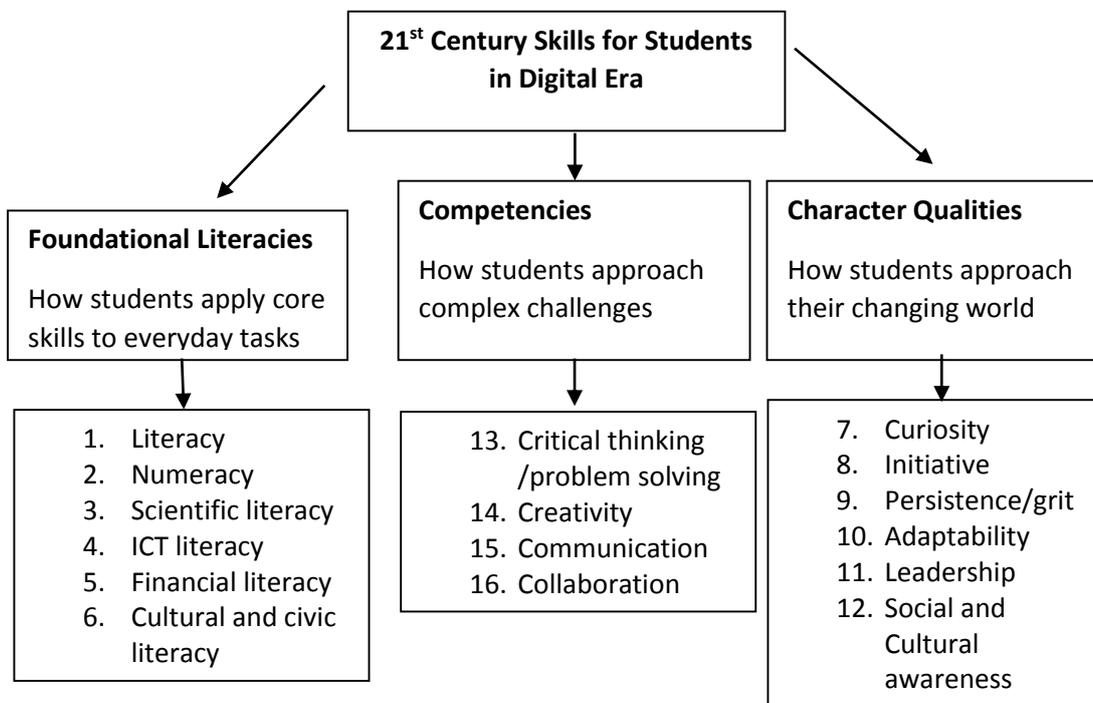
- i. Early release of results
- ii. Lower long term costs
- iii. Instant feedback to students
- iv. Extensive and efficient use of existing item banks
- v. Precision measurement through the adaptation of test content to individual student competency
- vi. Creation of digital records of student growth and development
- vii. Greater flexibility with respect to location and timing of examination
- viii. Improved reliability
- ix. Improved impartiality
- x. Greater storage efficiency
- xi. Enhanced question styles which incorporate interactivity and multimedia
- xii. Increased productivity and low operational variability
- xiii. Accommodation of candidates with special needs

### **Competencies of digital workforce**

Digital competence, according to Ferrari (2012), is the set of knowledge, skills, attitudes, abilities, strategies and awareness that are required when using ICT and digital media to perform tasks, solve problems, communicate, manage information, collaborate, create, and share content, and build knowledge effectively, efficiently, appropriately, critically, creatively, autonomously, flexibly, ethically, reflectively for work, leisure participation, and socializing.

In Nigeria, there seems to be a wide gap between the skills people learn and the skills people need. What people learn in traditional learning, although necessary, is gradually becoming short of equipping them with the knowledge needed to thrive in the 21<sup>st</sup> century. According to the World Economic Forum (2016), to thrive in the 21<sup>st</sup> century, students need more than traditional academic learning, coupled with mastery of traditional skills, social and emotional efficiency will equip students to succeed in the swiftly evolving digital economy.

World Economic Forum (2016) identified sixteen crucial proficiencies for education in the 21<sup>st</sup> century. These skills include six skills under foundational literacies and ten skills under competencies or character qualities.



**Figure 1:** Expected skills for students in digital era  
 (Source: Adapted from World Education Forum, 2016)

Apart from these sixteen skills expected of students, ten skills are also required for the future workforce according to Davies, Fidler and Gorbis (2011). These skills are:

1. **Sense making** – ability to determine the deeper meaning or significance of what is being experienced.

2. **Social intelligence** - ability to connect to others in a deep and direct way, to sense and stimulate reactions and desired interactions.
3. **Novel and adaptive thinking** – the ability to respond to unique and unexpected circumstances of the moment.
4. **Cross-cultural competency**– ability to operate in different cultural settings.
5. **Computational thinking**- ability to translate vast amounts of data into abstract concepts and to understand data-based reasoning.
6. **New media literacy** – ability to critically assess and develop content that uses new media forms, and to leverage these media for persuasive communication.
7. **Transdisciplinarity** - literacy in and ability to understand concepts across multiple disciplines.
8. **Design mindset** – ability to represent and develop tasks and work processes for desired outcomes.
9. **Cognitive load management** – ability to discriminate and filter information for importance and to understand how to maximize cognitive functioning using a variety of tools and techniques.
10. **Virtual collaboration** - ability to work productively, drive engagement and demonstrate presence as a member of a virtual team.

Corroborating these views further, the learning skills and competences in the 21<sup>st</sup> century, according to Adeleke (2018), are: ability to collaborate and work in teams, critical thinking skills, oral presentation skills, written communication skills, ability to use technology, willingness to examine civic and global issues, ability to conduct research to learn about issues and concepts, and chance to learn about new career opportunities.

ICT is very significant in teaching and learning for developing digital competence among students. Abundant literature exists on various ways in which ICT could be used to develop 21<sup>st</sup> century skills among students. For example, the role of ICT in developing critical thinking (Quinton & Smallbone, 2010); the role of ICT in developing creativity (Loveless, 2002) and the role of ICT in developing digital literacy (ALA, 2011 as cited in Lewin & McNicol, n.d), and so on, to mention but a few. Davies et al (2011) further stressed that global connectivity, smart machines and new media are just some of the drivers reshaping how we think about work, what constitutes work and the skills we will need to be productive contributors in the future.

### **Challenges of educational assessment in a digital era**

Since ICT still remains the driver of all the skills needed to function effectively as a future workforce in Nigeria, the use of ICT for curriculum, instruction and assessment

in schools is currently still faced with some challenges. Since educational assessment is very central to quality education and quality education is very essential for competent future workforce, the following are some of the challenges of automation of educational assessment in Nigeria.

Some of the challenges according to Awotokun (2016), Obioma, Junaidu and Ajagun (2013), Adeleke (2018) are:

- Lack of ICT literacy among teachers
- Inadequate ICT training facilities
- Inappropriate funding
- Few highly skilled personnel to operate complex ICT facilities for assessment process
- Unwillingness to change from the old system of teaching to more innovative and technology based assessment methods
- High cost of ICT facilities
- Poor access to internet connectivity
- Unstable electricity supply
- Inequitable distribution of computers and other ICT facilities between rural and urban schools
- Learners motivation
- Technological skills of learners
- Evaluating effectiveness
- Focus of education in a digital era.

### **Automation of educational assessment practice and future of workforce in Nigeria**

Twenty first century skills are very essential for life in a digital economy. ICT is central to the development of those skills required, since ICT is the driver of these skills. Teachers at all levels of Nigerian educational system ought to constantly use ICT in educational assessment for the proper development of 21<sup>st</sup> century skills among future workforce in the country. Some questions that are still begging for answers now are: how adequate are the ICT facilities in schools for the development of these skills? How competent are the teachers in the effective deployment of ICT in their assessment practices? According to Abdul-Salaam (2012), giving a picture of ICT in some schools in Nigeria submitted that ICT facilities are lacking in many schools while some schools which have some of the facilities lack internet access and relevant software. The computers are also inadequate in number, and in schools where ICT is available, it is used for administrative tasks or leisure as most teachers are incompetent in computer operation. Corroborating these views further, Fakeye (2010) and Oyejola as cited in

Wordu and Emamorose (2017) summarily posited that most schools in Nigeria are ill equipped for the application of ICT.

Educational assessment in Nigeria using ICT is mostly summative assessment, and summative assessment alone without formative assessment cannot provide feedback to learners talk less of remediation. Rigid summative assessment practices and curricula were identified as significant barriers to the types of pedagogies which support the development of 21<sup>st</sup> century skills, as the majority of assessment frameworks are subject and knowledge-based, they do not cover 21<sup>st</sup> century skills (Dede, 2010). Summative assessment alone cannot develop skills necessary for the 21<sup>st</sup> century.

### **Conclusion**

In view of the applications of ICT in virtually all facets of human endeavour, there are certain skills needed by both students and workers to thrive well in a digital economy. Automation of educational assessment is a tool for developing these skills among students. Integration of ICT into assessment practices for the development of 21<sup>st</sup> century skills in Nigeria is still riddled with some challenges and not satisfactory. Production of competent and quality future workforce in Nigeria is still a mirage.

### **Recommendations**

Since students of today are future workers, and for educational assessment making use of ICT to develop 21<sup>st</sup> century skills for digital economy among students, it is hereby recommended that:

1. Schools should be equipped with computers and internet facilities for the use of teachers and students.
2. Teachers at all levels of Nigerian educational system should be trained on how 21<sup>st</sup> century skills and competencies should be assessed using automation.
3. Educational assessment in digital era should not only be limited to summative assessment, but with formative assessment.
4. Our education in this era should be restructured to be in tandem with contemporary work.

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