

## Assessment of Challenges of CBT among Students in Nigerian Educational System

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**Abstract.** This study examined the challenges of CBT among students in Nigerian educational system. This study made use of descriptive research design of survey type and the population of interest is the senior secondary school students that had experience CBT means of assessment. The sample is made up of 330 senior secondary school students that had experience CBT assessment. Simple random sampling technique was used to select the participants. Data were collected through the use of questionnaire tagged challenges of CBT among students in Nigerian educational system with reliability coefficient of 0.79. Section A consists of socio-demographic information while Section B consists of checklists of challenges of CBT among students in Nigerian educational system. The findings of the study showed that students took CBT assessment technique amidst a lot of challenges such as inadequate facilities, poor power supply, without computer technical knowhow, problems of far distance and insecurity of examination materials. Based on these findings the researcher concluded that CBT as one way of assessing learners has a lot of challenges. Therefore, the following recommendations were made that students must as a matter of necessity be able to learn how to use computer, government must make teaching of computer compulsory at secondary school level, power supply must be made available to every look and cranny of Nigeria cities, towns, villages and hamlets so as to be able to get electricity to power the computer for usage or alternative source of power must be made

available in each school. Computer literacy must be part of requirements for teacher's employability and pure computer teachers and computer literates personnel must be employed to teach computer in all secondary schools. In addition CBT centres must be owned by local, state or federal government to prevent insecurity of examination materials and examination malpractices that may arise from profit making individuals. The experts must be appointed to man each CBT centre to avoid break down of facilities and if there is any hitch these experts can quickly repair and make the system continue to work without wasting much time of examinees. The facilities like soft ware, hard ware and internet facility must be made available to prevent examination batching situation. Teachers should also adopt the pattern of the external examinations by exposing the students to CBT in the internal examinations to lessen examination anxiety. Professional and highly skilled computer science teachers should be recruited to help improve the computer skills of the students in the various secondary schools.

**Keywords:** Assessment, Challenges of CBT, Students, Educational System.

### 1. Background to the Study

Student's academic performance can be evaluated in many different ways, but in a developing country like Nigeria where about 40 percent of the adult population is illiterate, parents use the performance of their children in

public education to pass judgment on the schools and teachers (Nwagwu, 2002). Studies indicate that so many factors affect academic achievement of students at school. A host of scholars are of the opinion that all kinds of experiences are educative, whether in or outside school and therefore influence student academic performance. Studies in socio economic status and motivation showed that parental motivation and parents socio economic status (e.g. Emunemu, 2000) have positive effect on students' academic performance. The qualities of intake also influence the quality of output and performance of students at school. Other variables that affect academic performance are enrolment (e.g. Alabi 2001), location of the school (e.g. Adepoju 2001), age of the school, and adequacy of human material, physical and financial resources.

Educational achievement essentially applies to what an individual can do within a specified criterion domain. Onuka (2006) believed that achievement is about knowledge and skills possessed by an individual as a result of instruction or education and has to be demonstrated on specified curricula or objectives. Achievement is measures of current performance as a result of developed competence. Onuka further stressed that achievement is not the same as competence, as he stressed that competence involved knowledge acquired both as a result of instruction and as a result of experience outside the educational system. Okoronkwo (2015) stressed that individual differences in achievement involve such traits as aptitude, motivation and opportunity. He also gave the following relations:  $Aptitude + Motivation + Opportunity = Achievement$ .

Educational assessment procedures remain the corner – stone for establishing the quality, relevance and effectiveness of the instructional processes in the schools. This is informed by the whole lot of attention and resources committed to this aspect of the educational system (Aminu, 2012). There is the believed that without realistic educational assessment in schools it will be very difficult to obtain necessary information as feedback from classroom instruction. This is

needed for objective decision on the academic tone of the school based on the performance of the learners. Any method of education service delivery will adopt the means of assessment procedures for the purpose of determining the effectiveness of its instructional processes on the learners.

UNESCO, (2000) observed the relationship among these four terms: measurement, testing, evaluation and assessment. Measurement refers to the process by which a value, usually numerical, is assigned to the attributes or dimensions of some concepts or physical object. For example, a thermometer is used to measure temperature while a test is used to measure ability or aptitude. Testing refers to the process of administering a test to measure one or more concepts, usually under standardized conditions. For example, tests are used to measure how much a student has learned in a course of mathematics. Evaluation refers to the process of arriving at judgments about abstracts entities such as programs, curricular, organizations, and institutions. For example, systematic evaluations, e.g., national assessments are conducted to ascertain how well as education system is functioning. In most education contexts, assessments are a vital component of any evaluation.

Assessment is defined as the process of obtaining information that is used to make educational decisions about students, to give feedback to the students about his or her progress, strengths and weaknesses, to judge instructional effectiveness and curricular adequacy and to inform policy". This process usually involves a range of different qualitative and quantitative techniques. For example, the language ability of learners can be assessed using standardized tests, oral exams, portfolios and practical.

The assessment role in teaching-learning process involves judging the relevance and adequacy of an individual's learning and giving it a value according to a set of criteria for which the educational institution takes responsibility. In many cases, the assessment of assignments will lead to some kind of certification which learners

can use publically to represent their achievements on the programme. Assessment plays many roles in education and a single assessment can serve multiple, but quite distinct, roles. For example, results from a selection test can sometimes be used to guide instruction, while a portfolio of learner work culled from assessments conducted during a course of study can inform a decision about whether the learner should obtain a certificate of completion or a degree. From a learner's perspective, there are three main roles for assessments: Choose, Learn and Qualify. The data from an assessment can be used to choose a program of study or a particular course within a program. Other assessments provide information that can be used by the learner, teacher, or parents to track learner progress or diagnose strengths and weaknesses. Finally, assessments can determine whether learners obtain certificate or other qualifications that enable them to attain their goals.

Assessment in the service of individual learning is sometimes referred to as "formative assessment", in contrast to "summative assessment", which is intended to guide decision-making (Fagbola, Adegun and Oke, 2013).

The most common type of assessment and which is very central are: school based assessment and public based assessment otherwise known as external examination. The former assessments are usually devised and administered by class teachers, although some are the work of the school principal or other instructional staff. Typically, they are aligned with the delivered curriculum and may employ a broader array of media (e.g presentations) and address a greater range of topics than is the case with centralized standardized assessments. They have a decided advantage over centralized assessments in that the results are immediately available to the teacher and learner, and can influence the course of instruction. (William, Lee, Harnson & Black, 2004)

The second type of assessment, public examinations, can fulfill one or more of the following roles: selecting learners for admission to secondary or tertiary education, credentialing learners for the world of work, and / or

providing data for holding school staff accountable for their performance. While such examinations are an important component of every nation's education system, they are particularly critical in developing countries, where the number of candidates for advancement is usually many times greater than the number of places available. Typically, they are designed, developed and administered centrally with an almost exclusive focus on academic subjects. There is meager feedback to the school except the scores and / or pass rate, and, as a result, they offer little utility for school improvement programs beyond an exhortation to do better next time. More, public examination systems often have negative consequences for the general quality of education.

A CBT is a form of assessment in which the computer is an integral part of question papers' delivery, response storage, marking of response or reporting of results from a test or exercise (Whittington, Bull & Danson, 2000). It can be a multiple choice question based examination system that provides an easy to use environment for both Test Conductors and Students appearing for Examination. The main objective of a CBT is to provide all the features that an Examination System must have, with the interfaces that do not scare its users (Baddi, 2010). According to Taylor (Taylor, 2005) as cited in Newhouse (Newhouse, 2013), a Computer-Based Testing could be delivered on a stand-alone personal computer, within an isolated Local Area Network (LAN) or through the use of online technologies such as web-pages over the Internet. The two types of CBTS are:

**Linear Test** - This involves a full-length examination in which the computer selects different questions for individuals without considering their performance level.

**Adaptive Test** - the computer selects the range of questions based on individuals' performance level. These questions are taken from a very large pool of possible questions categorized by content and difficulty (Alabi, Issa & Oyekunle, 2012).

Whatever the type used the effectiveness of a computer based testing system depends largely

on factors such as standardization, security, examination conditions, mode of administering the examination, cost and so on. Some of these factors have been identified in literature as follow:

A CBTS is cost effective especially when deployed in the conduct of a mass-driven examination as there will be no need to print questions or answer booklets (Fagbola, Adigun & Oke, 2013).

According to Alabi, Issa & Oyekunle, 2012 inferred that human errors can be eliminated and examination malpractice eradicated when a CBTS is adopted in the process of examination. In the same vein, Akunyili (2010) in her presentation in Amsterdam on 'ICT and E-government' stated that manually marked scripts were more prone to errors than computer marked ones.

Also, Al-Amri (2007) also stated that the standardization of test administration conditions is one of the benefits offered by CBTS. No matter the size of the test-takers, CBTS helps test developers to set the same test conditions for all participants. More so, Bodmann & Robinson (2004) in their study investigated the effect of several different modes of test administration on scores and completion times. They observed that undergraduate students completed the computer-based assessment test faster than the paper-based assessment test.

Furthermore, Jamila, Tariqb & Shamic (2008) presented that technology based assessment provide opportunities to measure complex form of knowledge and reasoning that is not possible to engage and assess through traditional methods.

According Osang (2012) in his study of electronic examination in Nigeria suggested that course coordinators prefer electronic examination to pen and paper examinations as it requires lesser administrative tasks for the coordinators and enhances a timely release of examination result.

Software factors: Currently, there is no software or multimedia that has universal application as far as CBT is concerned. School curriculum and

education standard differ from one country to the other. Fluck, Pullen & Harper(2009) observed that assessment of student knowledge and skills within a web browser window or delivered by bespoke assessment software (specifically crafted for a particular set of questions) provides a restricted environment which prevents the demonstration of abilities associated with the use of specialist software or a combination of applications. Again, a corrupt software or network failure can cause rescheduling of the examinations.

However, despite of all benefits of CBT enumerated above there are problems associated with the testing methods. These problems are discussed one after the other. The first of these problems is a power supply problem which has to do with the challenge of erratic power supply in Nigeria. This problem is the most problem militating against CBT as means of assessing the learners since all the villages, hamlets, towns and cities have secondary schools and the learners there are to write external examination for them to qualify for SSCE Certificate and to gain admission into higher institution of learning with erratic supply of electricity into the cities and towns and no power supply to hamlets and villages at all despite attempts by various governments. Irregular and frequent interrupted power supply in Nigeria is a perennial problem affecting every aspect of the economy including education (Oye, Mazleena & Iahad 2011).

In most cases asking students/applicants to write examination using CBT method of assessment is like giving the students two assignments simultaneously. Many candidates do not have adequate skills in ICT since there are no electricity supply to many hamlet, villages and towns where majorities of these places are not connected to the electricity grid. Therefore, many secondary school leavers in the country are not computer literate due to the fact that there is no electricity to power computer talks less of learning how to use computer. Even many teachers in the primary and secondary schools cannot boot a computer not to talk of using any application. The teachers that cannot use computer how would that person teach computer, definitely the students cannot be

adequately equipped for CBT. Assessing applicants using CBT mean assessing applicants knowledge on subject based and computer operation skill simultaneously. Nigeria does not only lack ICT infrastructure, it also lacked the human skills and knowledge to fully integrate ICT into secondary school education and UTME (Ilesanmi & Lasisi, 2015).

Many applicants have become handicaps while many have lost their lives due to accidents in one way or the other due inadequate ICT infrastructure including hardware, software and bandwidth accessibility. Obioma, Junaidu & Ajagun (2013) observed that much of the infrastructures for automated examinations are either obsolete or overstretched in terms of capacity, accessibility, reliability and security. Again, the absence of internet facilities in our rural areas requires students travelling long distances to urban centres to have access to internet. As a result of this many students have to cover many kilometers distance to their place of abode and atimes accidents do occurred leading to death or maimed. Broadband penetration needs to be fast-tracked to reduce the cost of internet bandwidth access in Nigeria and to forestall untimely death and possible fracture.

Examination malpractices cannot be overcome because majority CBT examination centres in Nigeria are privately owned individual cyber-café owner. These individuals are profit making individual are ready to make profit at all cost. One of the key reasons advanced for migrating from PPT to CBT is to curb the rampant cases of examination malpractices in the country, the integrity of these businessmen in adhering to the laid down procedure for biometric data capturing during registration and verification during examination cannot be guaranteed. Experience in SSCE examination has shown that most of the privately owned schools are for pure economic gains leading to all sorts of examination malpractices. These exam ‘miracle’ centres syndrome has been transferred to CBT centres.

## 2. Statement of the Problem

Researchers on CBT had observed over the years the benefits and easy of conducting it without mindful of the problems the applicants are facing year in year out in the course of writing the test. Researcher is of the opinion that high rate of poor performance of applicants in CBT calls for concerns as learners tend to question the rationale behind using CBT to gain admission in to higher institutions of learning in Nigerian educational system. The researcher believe that the problem could be hinged on the influence of variables such as inadequacy of ICT facilities, problem of power supply, inability to operate computer effectively, distance of CBT centres to where the candidates lives, examination malpractices through the Cyber Café ownership and due to unavailability of paper pencil to do some workings. The study, therefore seeks to examine the extent to which variables such as inadequacy of ICT facilities, problem of power supply, inability to operate computer effectively, distance of CBT centres to where the candidates lives, examination malpractices through the Cyber Café ownership and due to unavailability of paper pencil to do some workings to determine the challenges of CBT among students in Nigerian educational system.

## 3. Purpose of the Study

The purpose of this study is to identify the challenges that the testees are facing as a results of using CBT as method of assessment. Finally, the study is expected to enlighten the teachers, students, curriculum planners, parents, examining bodies and the government to be aware of some of the problems militating against CBT as a method of assessing students.

## 4. Methodology

### 4.1 Research Design

This study make use of descriptive research design of survey type as there is not going to be any direct control of any variable or any experimental manipulation.

### 4.2 Target Population

The target population for this study consists of all the applicants that have participated in the CBT examination at one time or the other in all the public secondary schools and UTME in Oyo state.

**4.3 Sample and Sampling technique**

The study is restricted to thirty three local government areas within Oyo state with one secondary school in each local government. The sample for this study was made up of thirty three senior secondary schools using simple random sampling procedure to select one school in each local government area. Also simple random sampling was used to pick ten students that have participated in UTME since majority of these students participated in UTME before their SSCE in all 330 students were used for the study.

**4.4 Instrumentation**

**Questionnaire on Challenges of CBT among Students in Nigerian Educational System:** The challenges of CBT among students in Nigerian educational system Questionnaire was developed by the researcher. It was designed after conducting a KII (Key Informant Interview) of the senior secondary school students that has had the experience of CBT examination in Oyo state. The instrument was validated by three experts in Tests and Measurement. This questionnaire solicited for information on challenges of CBT among students in Nigerian educational system. Section

A is the Bio data of the respondents while the section B is 20 items on the subject matter. The structuring of the response format is based on a four point summated ratings scale of Strongly Agree=4, Agree=3, Disagree=2 and Strongly Disagree=1. This instrument was trial tested on 50 SS3 students. The pre-test showed no ambiguities in the instrument. Cronbach alpha (an estimate of construct validity and internal consistency reliability of the items) was computed and it yields a reliability estimate of .79.

**4.5 Data Collection Procedure**

The principal of the chosen schools were briefed about the purpose of the study for permission so as to allow the researcher to make use of their students for the study. The students were informed as well. Ten out of total SSIII students that participated and had experience UTME with CBT method of testing was taken at random to participate in the study. The questionnaire on challenges of CBT among students in Nigerian educational system was administered to the participants.

**4.6 Data Analysis**

Data were analyzed using descriptive statistics of simple frequency counts, percentages, mean and standard deviation.

**Research Question:** What are the challenges of CBT among students in Nigerian educational system?

**5. Results**

**Table 1: Frequency Counts showing the Challenges of CBT among Students in Nigerian educational system**

|    | <b>CBT challenges</b>   | <b>Agree</b> | <b>Disagree</b> | <b>Mean</b> |
|----|---|--------------|-----------------|-------------|
| 1  | Power failure destructs the exam  | 270          | 60              | 1.18        |
| 2  | Generator used due to power failure also broke down   | 263          | 67              | 1.20        |
| 3  | Some candidates are not computer literate   | 199          | 131             | 1.40        |
| 4  | Examination batching affects performance in CBT exams   | 204          | 126             | 1.38        |
| 5  | Some candidates were posted outside their place of residence  | 217          | 113             | 1.34        |
| 6  | Some candidates get involved in vehicular accident during the CBT exam as a result of travelling outside their comfort zone | 157          | 173             | 1.52        |
| 7  | Attendants posted to centers sought for monetary gratification before rendering assistance to applicants                    | 210          | 120             | 1.36        |
| 8  | Some applicants could not finished their exam due to incompetence use of computer   | 205          | 125             | 1.38        |
| 9  | Some centres attendant could not handle some technical faults that arose  | 195          | 135             | 1.41        |
| 10 | Net work fluctuation disrupted some candidates speed writing  | 287          | 43              | 1.13        |
| 11 | Non functional computers frustrated some candidates during exams  | 175          | 155             | 1.47        |

|    |  |     |     |      |
|----|--|-----|-----|------|
| 12 | Some candidates posted out of their town missed their examination period   | 102 | 228 | 1.69 |
| 13 | Many candidates had accommodation period due to the fact that they did not finish their exams on time  | 198 | 132 | 1.40 |
| 14 | Candidates who wrote their examination in the morning were not favoured while the afternoon candidates were highly favoured                        | 97  | 233 | 1.71 |
| 15 | Some students got to centre late because of posting to another town  | 136 | 194 | 1.59 |
| 16 | Some students spent extra money that were not budgeted for on transportation and accommodation   | 101 | 229 | 1.69 |
| 17 | It leads to risky of life due to posting candidates to unfamiliar terrain  | 277 | 53  | 1.16 |
| 18 | Poor lightning of the examination centres due to power failure: Power supply in some centres cannot power the computer and lightning of the centre | 285 | 45  | 1.14 |
| 19 | Some centres are not conducive for examination condition eg sitting arrangement etc  | 161 | 169 | 1.51 |
| 20 | Some CBT centres are located outside the town making it compulsory for applicants to ride on motorcycle  | 203 | 127 | 1.38 |

## 6. Findings

It was discovered that the following among others were the challenges faced by students in writing examination using CBT mode of examination:

- Power failure.
- Some centres do not have good generator.
- Some students are not computer literate.
- Insufficient CBT centres leading to examination batching system.
- Asking students to go and write exam outside their comfort zone.
- Some centre attendants seeking for money before attending to students problems.
- Some centre attendants cannot handle some computer technical faulty.
- Poor network leading to some student's inability to finish their exams.
- Use of faulty computers.
- Accommodation problem for candidates posted outside their place of jurisdiction.
- Risk of life due to long distance travelling for those posted outside there are of jurisdiction.
- Poor lightning of examination hall.
- Bad location of some CBT centres either too far from centre of the town or located in an in conducive environment.
- Attitude of examination supervisors and invigilators

## 7. Discussions

In the course of writing examination by testees' in Nigeria, the examination bodies conducted examinations without probably considering the

challenges which the testees are going to face and which undermine performances in such examinations.

Results from the study indicated that students take CBT examinations amidst the following challenges viz: Power failure, some centres do not have good generator, some students are not computer literate and insufficient CBT centres leading to examination batching system. Some students were asked to go and write examination outside their comfort zone, attendants in some centre were seeking for money from testees before attending to students problems on computer technicality, while some centre attendants cannot handle some computer technical faulty. Poor network leading to some student's inability to finish their exams is another challenge, use of faulty computers and accommodation problem for candidates posted outside their place of jurisdiction is another. Risk of life due to long distance travelling for those posted outside their areas of jurisdiction is another major challenge, while poor lightning of examination hall and bad location of some CBT centres either too far from centre of the town or located in an in conducive environment is another. The last which is not least is the attitude of examination supervisors and invigilators to the testees, some of these supervisors and invigilators are very hostile to the testees.

## 8. Conclusion

The results from the study have simply highlighted that CBT as a method of examining students in Nigeria educational system is not well footed and it requires urgent attention in the challenge areas pointed out. With the above

results from the study, one can see that the future development of Nigeria educational system is hinged on Computer literacy and internet facility. The consequence of this is lack of technological development and lack of personnel in the areas of engineering, agriculture, medicine, chemist, physicist and etc. The school system and the education stake holders are therefore expected to do much to reverse the situation.

Government and the education stake holders should stand up to their responsibility by making computer education compulsory at level of Nigerian educational system. Teachers of computer science should be employed and should reorganize their teaching methods and personal relationship with the students to stimulate interest and love for computer usage in them. Better attention should be given to the teaching of computer science in schools. Teachers should also adopt the pattern of the external examinations, in setting and marking internal examinations. More emphasis and assignment should be given to the students on CBT mode of examination system. Students should be made to realize and appreciate that no school subject is difficult or simpler than the others. Professionally and highly skilled teachers should be recruited to help improve the status of computer science in the schools.

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