Full Length Research Paper

Computer based test: panacea to undergraduate students' performance in Olabisi Onabanjo University, Ogun State, Nigeria

[1*]Olafare Festus Oladimeji and [2]Boor Charity Mwuese H

[1]Department of Science and Technology Education, Faculty of Education, University of Lagos, Lagos, Nigeria. [2]Instructional Technology, Educational Foundation and Curriculum, Ahmadu Bello University, Zaria. *Corresponding Author's Email: dimejifestus@gmail.com

Abstract

The influence of Computer Based Test (CBT) on student's academic performance has received little or no attention of researchers but students in Nigerian Universities are now performing better than the era of paper based test. Hence, this study examined CBT as panacea to undergraduate students' academic performance. Descriptive research design was used for the study. A researcher designed questionnaire was used for the study. The reliability coefficient of the instrument was 0.77 using Cronbach Alpha. A total of 125 undergraduates were selected for the study but 115 filled the questionnaire properly and returned. Analysis of data was done with descriptive statistics (mean and standard deviation). The study revealed that though CBT had positive influence on undergraduate students' performance, it is saddled with a lot of challenges. The study recommended that adequate facilities should be made available, as well as enforcing Government policy on computer education at the primary and secondary school levels to ensure that all students are computer-literate.

Keywords: Computer based test, Assessment, Performance, Undergraduates.

INTRODUCTION

Evaluation is a vital element of instructional processes as it is often conducted to determine the degree to which stated educational objectives have been achieved and the extent to which educational institutions have aided the needs of the society in general. According to Shah (2002), examination is an aspect of the evaluation process of education. It has great influence in the classroom activities and how educators teach and instruct their students (Rehmani, 2003). Through examinations, students are assessed to measure acquired knowledge, skillfulness, aptitude and somatic fitness. However, the method of administering the examination or conducting assessment has remarkable influence on the entire performance of the students.

Assessment as a curriculum issue is a process for obtaining information that informs decision taking about student learning, curriculum, programs, or education policies matters (Fisseha, 2010). The purpose of assessment among other things, include strengthening knowledge, skills, dispositions, and classroom practices. The major goal is to promote student growth and learning while also inspiring great teachers to remain in the class. Kellaghan and Greaney (2001) identified the roles of assessment in education. They include helping to describe student's learning outcome, assisting teachers to identify and diagnose student's learning problems, providing guidance for students, motivating students, giving judgments about the effectiveness of the school, and drawing conclusion about the adequacy of an educational system.

Many years back, the conventional method of assessment otherwise known as paper-pencil-test was the only available option for evaluation at all levels of education. This method was faulted due to the fact that it did not suit the learning styles of many students (Weavers, 2003). Besides, is was characterized by numerous forms of examination malpractices ranging from the use of unauthorized materials, inscription on currency notes and identity cards, spying of other candidates in examination hall, swap of answer sheets to changing examination scores or grades (Fagbemi, 2001; Jacob et al., 2001). It creates room for impersonation, obtaining questions papers before the examination, conniving with supervisors, school authorities among others (Sanni, 2005). As a result of these identified problems and the inclusion of information and communication technology (ICTs) in education, it is however important to re-consider the modification of this conventional method of examination.

The use of computers has become popular in education in the last decade. Of particular interest was how to use computers and the internet to improve the proficiency and effectiveness of the evaluation process of education at all levels (Chua et al., 2013). Since the emergence of ICT, schools, institutions and examination bodies have incorporated computer based test (CBT) as an indispensable tool in their examination administration. David (2016) added that online technologies have greatly influenced the means of conducting examination and assessment. Most institutions have adopted CBT as an assessment tool for admitting or screening of students.

According to Sadiq et al., (2011), CBT is an internet based test or assessment that is administered using computer or other technological devices. It can take two formats: The first type requires the student to fill in their answers on a paper form which is then fed into a computer optical mark reader. Here the reading of the paper, scoring, and report on the test reliability is done. In the second type, the computers provide an assessment interface for students to input their answers and receive immediate feedback (Aduwa-Ogiegbaen et al., 2005; Sadiq et al., 2011). Universities all over the world, colleges of education and polytechnics have replaced the customary paper and pen testing with CBT for academic assessment and students' evaluation (Best, 2002). This was informed by the bounteous advantages schools derive from CBT. It offers several benefits over traditional paper-and-pencil or paper-based tests. It enhance speed of delivery, administration and scoring efficiency, improved test security, consistency and reliability, faster response rate among others (Riku et al., 2001; Walker et al., 2004). Technology based assessment provide opportunities to measure complex form of knowledge and reasoning otherwise impossible through traditional methods (Bodmann and Robinson, 2004).

A study was conducted by Sanni and Mohammad (2015) on views of students on the use of computer based test for the conduct of UTME. The study found that the introduction of CBT for UTME examination attracted most of students' attention and therefore led to CBT preference over the conventional way of writing the examination. The study revealed further that CBT can reduce examination malpractices and enhanced security as opposed to paper-and-pencil test. A similar study conducted by Aduwa-Ogiegbaen and Iyamu (2005) on online examination practices in vocational education and training found that students perceive online assessment as a flexible and efficient means of conducting examination with immediate feedback. However, Joshua and Ikiroma (2013) findings were rather contradictory. They carried out a study on Computer Based Testing in Nigeria's university entrants' matriculation examination: readiness and acceptability of critical stake-holders. Among other things the study found that the major stake holders, the students, complained that the exam may be interrupted by electricity while others expressed fear that the computer system used for the CBT could malfunction during the test.

The inherent advantages of this mode of assessment notwithstanding, the constructive or destructive influence on the academic performance of student must be taken into consideration. In view of this however, it is quite important to investigate further on the influence of computer based test on the academic performance of student. This will assist to know where improvements are needed so as to enhance the examination delivery method.

STATEMENT OF THE PROBLEM

In Nigeria, employers now conduct aptitude test for job seekers using electronic means. Likewise universities and other tertiary institutions register and conduct computer based examination for admission seekers. Diverse examination bodies in the country use electronic means to register their respective candidates for the

examinations (Olawale, 2010). This is an indication that computer based assessment is no longer a new idea in Nigeria. From the review of related researches conducted on computer based test, the influence of use of CBT on student academic performance is often neglected. It was against this background that the researcher sought to examine computer based test as a panacea to undergraduate students' performance in Olabisi Onabanjo University, Ogun State.

RESEARCH QUESTIONS

1. What is the relevance of computer based test to undergraduate students' performance?
2. What are the challenges associated relevance of computer based test to undergraduate students' performance?

METHODOLOGY

The study is a descriptive research design. Random sampling technique was used to select a sample of 125 undergraduate students of Olabisi Onabanjo University, Ogun state. A researcher-designed questionnaire tagged "questionnaire on students' performance" (QSP) was used collect relevant data. The questionnaires was administered by the researchers through direct administration. Out of the 125 questionnaires distributed only 115 valid questionnaires were returned. To answer the research questions, descriptive statistics (mean and standard deviation) were used.

PRESENTATION AND ANALYSIS

The data are presented based on the research questions that guided the study as follows:

Research Question 1: What is the relevance of computer based test to undergraduate students' performance?

Table 1: Relevance of Computer Based Test to Undergraduate Students' Performance

S/N	Item Description	N	Mean	SD
1.	Marking is more accurate and consistent in CBT because computers do not suffer from human error.	115	3.41	.71
2.	Due to random distribution of questions to students, CBT favours some students more than others.	115	3.04	.92
3.	CBT gives me greater control over my academics.	115	2.48	.75
4.	CBT makes it easier for students to get good grades.	115	2.55	.76
5.	CBT exams cover all aspects and topics taught in a course, hence I read wide to pass.	115	2.69	.99
6.	I am confident that my grades for online	115	3.15	.69

S/N	Item Description	N	Mean	SD
	assessment are secure.			
7.	CBT enhances my academic performance.	115	2.66	.77
8.	I find CBT useful for my examination.	115	2.69	.84
9.	CBT makes examination easier for me.	115	2.85	.75
10.	CBT has given me greater awareness of its use.	115	3.20	.71

Table 1 revealed in item 1 that marking is more accurate and consistent in CBT because computers do not suffer from human error (mean score 3.41), random distribution of questions to students favours some more than others (3.04), it gives students greater control over their academics and makes it easier for them to get good grades (2.48 and 2.55). CBT exams cover all aspects and topics taught in a course and allow students to read wide to pass (2.69). Students are confident that their grades for online assessment are secured (3.15). CBT enhances students' academic performance (2.66). It can be inferred from the table that CBT had a positive influence on undergraduate students' performance. This is evidence on the fact that the average mean of each item on the questionnaire is above the decision point of 2.0.

The result of this study justified the assertion of Abubakar and Adebayo (2014). They noted that the rationale behind the use of CBT for UTME was to forestall examination misconduct and to speed up the release of results. Corroborating this assertion, Kapoor and Welch, (2011) and Poggio and McJunkin, (2012) added that CBT has the capacity of motivating the students, improving accuracy in data collection, and speedy reporting of result. This peculiar feature of immediate report of result is particularly useful to educators because of the possibility of accessing and using the results to make timely changes in instruction (Bennett, 2003; Poggio et al., 2012).

Research Question 2: What are the challenges associated relevance of computer based test to undergraduate students' performance?

Table 2: Challenges Associated Relevance of Computer Based Test to Undergraduate Students' Performance

S/N	Item Description	N	Mean	SD
1.	I often experience loss of power failure when writing CBT exam.	115	2.23	.96
2.	CBT experience loss of network connection.	115	2.59	.87
3.	There are no good infrastructural facilities for CBT centers in my University.	115	2.21	1.00
4.	CBT questions are not secure and can leak which sometimes lowers its validity.	115	2.31	.90
5.	The time given in CBT exam is not always enough	115	3.16	.80

5

	to complete the questions.			
6.	CBT questions are too cheap.	115	2.19	2.08
7.	I feel nervous anytime I am sitting for CBT exam.	115	2.08	.93
8.	The computers available for CBT in my school are not sufficient to serve the large population of students.	115	3.02	.99
9.	The computers malfunction at times when writing CBT exams.	115	2.73	.87
10.	CBT result get mixed up due to improper data base management which at times leads to mass failure.	115	2.43	1.00

From Table 2, some factors militate against the smooth application of CBT. They include: power failure (2.23), loss of network connection (2.59), absence of good infrastructural facilities (2.21), and absence of tight security to forestall question leakage (2.31). Other challenges include: insufficient time allocated for the exam (3.16), many of the questions are too cheap (2.19), students feel nervous (2.08), insufficient computer set to serve the large population of students (3.02), while some of the computers malfunction mid-way into the exams (2.73). Besides, some CBT results get mixed up due to improper data base management which at times leads to mass failure (2.43).

This result is in conformity with that of other researches carried out in time past. In studies conducted by Adebayo (2015), Alabi, et al. (2012), Joshua and Ikiroma, (2013), Nkwocha and Akanwa, (2015), Osei (2007), network problems, erratic power supply and inadequate skills in computer usage were identified as major challenges militating against effective use of CBT by students. In the same vein, a report on perception of students on Jamb CBT conducted by Sanni and Mohammad, (2015) revealed that the challenges faced by students in the examination include poor ICT skill, dearth of adequate facilities at the examination centers, and incapability of invigilators to give technical assistance to students due to their low capacity development.

Though students may encounter some challenges at the initial stage, such a setback could just be temporary (Ricketts et al., 2002). This may have accounted to the no significant associations found by Wingenhach (2000) between academic achievement and students' attitudes towards computers, computing anxiety levels or gender following the introduction of CBT. Therefore, the major task of CBT designers and administrators is to design and construct a test that can guarantee fair, dependable, and valid test scores (Coniam, 2006).

CONCLUSION

The study revealed that Computer based test (CBT) is a good method of assessment. It enhances students performance and gives credibility to scores obtained in such exams because marking is more accurate, consistent, and do not suffer from human error. Nevertheless, the examination mode suffered some setbacks:

students experience loss of power failure while writing the exam, loss of network connection, absence of good infrastructural facilities at CBT centers and the insecurity of the questions resulting to leakage which sometimes lowers the test validity. There is therefore a need for capacity building for students and other relevant stake holders on general use of computer before exposure to CBT mode of assessment.

RECOMMENDATIONS

1. For a successful CBT administration in any institution, good infrastructural facilities are essential. Private organizations and agencies should assist in equipping CBT centers in institutions.
2. Effort should be made to avoid questions leakage. In views of this, data bank where examinations questions are stored should be well secured using strong password.
3. Orientation and tutorials should be organized to familiarize students with the testing environment prior to the commencement of the examination. This will help reduce their nervousness.
4. Government policy on computer education at the primary and secondary school levels should be reinforced to make all students computer-literate.
5. Technical challenges or breakdown of computers is imminent with CBT. Therefore, all gadgets to be used should be overhauled before the commencement of CBT examination.

REFERENCES

Aduwa-Ogiegbaen SE, Iyamu EO (2005). Using Information and Communication Technology in Secondar Schools in Nigeria. *Problems and Prospects. Educational Technology & Society*, 104-112.

Bodmann SM, Robinson DH (2004). Speed and Performance Differences among Computer Based and Paper-Pencil Tests. *Journal of Educational Computing Research, 31*(1), 51-60.

Chua YP, Don ZM (2013). Effects of computer-based educational achievement test ontest performance and test takers: motivation.

Coniam (2006). Evaluating computer-based and paper-based versions of an English-language listening test.

David M (2016). Computer-based testing will continue to grow, for several good reasons.

Fisseha M (2010). Review Article: The Roles Of Assessment In Curriculum Practice andEnhancement Of Learning. *Ethiop J Educ & Sc, 5*(2), 102.

Johua MT (2013). Computer-based testing in nigeria's university entrants matriculation examination: readiness and acceptability of critical stake-holders.

Olawale ASM (2010). E- Exams System for Nigerian Universities with Emphasis on Security and Result Integrity. *The Seventh International Conference on e-learning for knowledge- Based Society*.

Osei AT (2007). ICT for Education in Nigeria, Survey of ICT and Education in Africa. *Nigeria Country Report*. Retrieved from http://www.infodev.org/infodev-iles/resource/InfodevDocuments_422.pdf

Ricketts C, Wilks SJ (2002). Improving Student Performance Through Computer-Based Assessment: Insights from Recent Research. *Assessment & Evaluation in Higher Education, 27*(5), 475-479.

Sadiq, Onianwa (2011). Towards a Scalable Web Assessment System for Post University Matriculation Examination in Nigeria. *African Journal Computer and ICT, 4*(2).

Sanni AA, Mohammad MF (2015). Computer Based Testing (CBT): An Assessment of Student Perception of Student Perception of JAMB UTME in Nigeria. *Computing, Information Systems, Development Informatics & Allied Research Journal, 6*(2).

Shah JH (2002) Validity and Credibility of Public Examinations in Pakistan. *An Unpublished Thesis Submitted for the Degree of Ph. D., in the Department of Education, Islamia University Bahawalpur, Pakistan*.