STUDENTS' PERCEPTION OF EASE-OF-USE AND TEST FAIRNESS OF COMPUTER BASED ASSESSMENT

Hassan, KADIRI[1] and Hauwa Ajibola, ARIKEWUYO[2]

[1]Department of Educational Psychology, Kwara State College of Education, Ilorin
Email: kadirh011@gmail.com
[2]Department Of Early Childhood Education
Kwara State College Of Education, Ilorin

Abstract : *Advancement in technology has greatly influenced all aspects of education including assessment of learners. This has brought about the use of computer in assessment. Although, computer based assessment has a number of benefits, it has generated varying reactions from stakeholders in education system. This study therefore, examined students' perception of computer based assessment in the area of ease of use and test fairness. A survey research design was adopted for the study and 142 students from Kwara State College Education, Ilorin were randomly selected as sample of the study. A structured questionnaire was used to collect data. Cronbach alpha was used to determine the internal consistency of the instrument which gave internal consistency coefficient of 0.72. Arithmetic means and chi-square were used to analyse data. The result shown that majority of students have basic computer knowledge, and perceived CBA to be more easy to use than PBA and that tests in CBA are more fair than in PBA. Also, it was discovered from the study that students' perception on ease-of-use and test fairness of CBA based on computer efficiency was significantly different. However, there is no significant difference in the students' perception on based on gender was not statistically different. Recommendations were also made based on the findings of this study.*

Keywords: Assessment, Paper Based Assessment (PBA), Computer Based Assessment (CBA), Computer Efficiency, Test Fairness, Ease of Use.

Background

In education, the term assessment refers to wide range of methods employed by teachers for measuring, documenting and evaluating learner's academic preparedness, learning progress and educational needs. Assessment involves the process of investigating or examining the status of students' learning achievement with reference to stated objectives. This includes all actions engaged by teacher and learners in retrieving information that can be used to make judgment and enhance teaching and learning activities (Nu-Man, & Porter, 2018; Anikweze, 2013). Assessment is a key component of learning which serves as an instrument for teachers to evaluate the knowledge and understanding of their learners and also provides motivation for learners to perform better. It enables the learners to determine whether or not they understand what has been learned. It is very essential in determining the extent to which desired outcomes of teaching and learning activities are accomplished. Educational assessment helps the teacher to identify learner's academic strength and weakness. Consequently, the teacher adjusts his instructional strategy to improve the strength and address the weakness (Faniran & Ajayi, 2016; Cox, Imrie, Miller & Miller, 2014). The outcome of assessment is used to give value judgement and make important decisions about the learners. The two major modes of assessment in teaching are Paper Based Assessment (PBA) and Computer Based Assessment (CBA).

Paper-Based Assessment involves the use of paper, pen and pencil to conduct assessments for students (Rollings-Carter, 2010). These assessments have been effectively used in evaluating learners' knowledge, understanding and skills since the early 1930s and existed in essay, multiple choice and fill in the blank questions forms (Demirci, 2007). Over the years, PBA has remained the dominant mode of assessment in most educational institutions. Nevertheless, some challenges such as high cost of preparation and administration of tests, subjective marking and scoring, high risk of examination malpractice, time consuming and inadequate manpower are associated with this mode of assessment (Alabi, Issa & Oyekunle, 2012; Abubakar & Adebayo, 2014; Olafare, Akinoso, Omotunde & Annenne, 2017). Also, the developments in technology have led to a major shift in education system from traditional to more advanced settings. This is reflected in all aspects of learning including assessment of learners. The recent advances in information and communication technology (ICT) have led to the use to new methods of assessing learners. This has made it possible to organize and take assessment online. This new method of assessments are both delivered and marked by making use of computers and often referred to as Computer Based Assessments (CBAs) (Faniran & Ajayi, 2016; Tara & Josh, 2020).

Computer-based assessment simply involves assigning tests to students on a **computer** instead of paper. It is a service that is under the direct control of web system and available through correspondence without human intervention which guarantees fair treatment for all candidates (Ojerinde, 2009). Broadly, computer based assessment is the practice of conducting test for learners using digital devices such as laptop, tablet and smartphone either online or offline. CBAs' tests commonly consist of multiple choice questions and short answer tests, which are automatically handled by computer programs. And feedback is either available instantly or later. Computer based assessment removes the challenges associated with examiner's mood and subjective bias and addresses the challenge associated with test construction and administration in the conventional practice (Anikweze, 2013). Studies have shown that CBA reduces examination expenses, saves time, gives immediate feedback, minimizes human error and it is reusable (Priyanshi, 2022; Jeong, 2014). However, this mode of assessment has some challenges such as, the need for training of the test takers, high test anxiety among examinees, loss of motivation, difficulty in answering long questions, and inadequate facilities (Ananya & Mayank, 2020; Tara & Josh, 2020; Sobremisana & Arago, 2016; Refik, 2003). Despite these challenges, CBA has become accepted mode of assessment in most countries including Nigeria.

In Nigeria, nationwide implementation of computer based assessment is being experienced in the conduct of entrance examinations for prospective tertiary institutions students by the Joint Admissions and Matriculation Board (JAMB). The use of CBA in the country educational institutions is increasing, for example, many tertiary institutions now adopt CBAs in the conduct of their examinations. Kwara State College of Education, Ilorin joined the trend in 2017/2018 academic session when computer was first used to conduct general courses (GSE) semester examinations. Many departments in the college now adopt CBA for their end of semester examinations. Whether computer based assessment should be used is now out of debate. Today, the main issue has to do with how to ensure that it is more effective, valid, reliable, easy to use and fair.

Some studies have been conducted by some researchers on Computer Based Assessment. For instance, Rausch et al. (2016) investigated the validity and reliability of computer based assessment. It was found that the validity and reliability of CBA was satisfactory for both cognitive and non-cognitive. Also, Tara & Josh, (2020) compared the use of computer testing and paper testing in Mathematics. The study revealed a significant difference in the mean scores in favour of CBA. Likewise, Sobremisana & Arago, (2016) examined the effects of CBA on students' performance and attitude using quasi-experimental method. The result showed that there was a statistically significant difference in students' performance in favour of CBA and that students' attitude towards CBA was positive. More studies on attitude towards computer based assessment revealed that both the teacher and learners have positive attitude towards this mode of assessment

(Jamil, Tariq & Shami, 2012; Refik, 2003). Furthermore, Ananya & Mayank, (2020) examined the perceptions of teachers and learners on computer based test based on gender, subject and efficiency in computer. Finding from the study showed that both teachers and students perceived that CBT was effective in the areas of instant feedback and time saving. Though, the difference in their perceptions based on gender and subject background was not significant.

The fore going shows that there is the need for more studies on perception of students on CBA in the areas of ease-of-use and test fairness particularly in colleges of education. Hence, the intent of this study was to investigate perception of students on ease-of-use and test fairness of computer based assessments in Colleges of Education. Specifically, the study intended to: determine students' perceptions on the ease-of-use of CBA, examine students' perceptions on test fairness of assessment in CBA and determine the difference in the perceptions of students based on gender and efficiency in computer.

Methodology

The study adopted survey type of descriptive research. Krejcie and Morgan's table (1970) was used to determine the sample size. A total of 142 students (58 males and 84 females) were used as sample of the study. The sample was randomly drawn from Kware state College of Education, Ilorin (48 students from NCE I, 45 students from NCE II and 49 students from NCE III). The Students' Perception of Computer Based Assessment Questionnaire (SPCBAQ) developed by the researcher was used to collect data. Cronbach alpha was used to determine the internal consistency of the instrument which gave internal consistency coefficient of 0.76. Mean, standard deviation and chi-square statistics were used to

Results

The results of the study are presented as follows:

Table 1: Students' efficiency in computer

Statement		V. High	High	Low	V. Low	Total
Students' efficiency in computer	Frequency	42	51	23	26	142
	Percentage	29.60	35.90	16.20	18.30	100

Table 2: Students' perception on ease-of-use of CBA

Statement		SA	A	D	SD	x	REMARKS
CBA is more easy to use than taking PBA	Frequency	60	52	15	15	3.11	Agree
	Percentage	42.30	36.60	10.60	10.60		

Table 3: Students' perception on test fairness of CBA

Statement		SA	A	D	SD	x	REMARKS
There is equity and fairness in CBA	Frequency	39	51	27	25	2.73	Agree
	Percentage	27.50	35.90	19.00	17.60		

Table 1 shows that 29.60% of the students have very high efficiency in computer while 35.90% have high. 16.20% of the students have low efficiency while 18.30 have very low efficiency in computer. This implies that more than half of the students (65.50%) have basic knowledge in computer before taking computer based assessment. Table 2 shows that $\bar{O} = 3.11$, this implies that students agree with the statement that CBA is more easy to use than taking PBA. Table 3 show that the arithmetic means is higher than 2.50 ($\bar{O} = 2.73$), the implication is that the students agree that there is equity and fairness in CBA.

Table 5: Difference in students' perceptions on ease-of-use and test fairness of CBA based oncomputer efficiency

	Value	Df	Asymptotic Significance (2-sided)
Pearson Chi-Square	27.003[a]	9	0.001
Likelihood Ratio	29.483	9	0.001
Linear-by-Linear Association	12.964	1	0.000
N of Valid Cases	142		

Table 5 shows that $p < 0.05$,this implies a statistically significant difference in the perceptions of students on ease-of-use and test fairness of CBA based on computer efficiency.

Table 6: Difference in students' perceptions on ease-of-use and test fairness of CBA based ongender.

	Value	Df	Asymptot Significan (2-sided)
Pearson Chi-Square	2.492[a]	3	0.477
Likelihood Ratio	2.459	3	0.483
Linear-by-Linear Association	2.034	1	0.154
N of Valid Cases	142		

Table 6 shows that $p > 0.05$, this suggests that there is no statistically significant difference in the perceptions of students on ease-of-use and test fairness of CBA based on gender.

Discussion of Results

Result from table 1 revealed that majority of the students have basic knowledge in computer (65.50%) while table 2 showed that students agree with the statement that CBA is more easy to use than taking PBA PBA ($\bar{O}$=3.11) Also table 3 showed that, the arithmetic means is higher than 2.50 ($\bar{O}$= 2.73 which implies that the students agree that there is equity and fairness in CBA. Furthermore, the study revealed that the perception of students on ease-of-use and test fairness of CBA based on computer efficiency is statistically different ($p < 0.05$). However, it was discovered that the perception of students on ease-of-use and test fairness of CBA based on gender was not significantly different ($p > 0.05$).

Conclusion and Recommendation

In view of the findings of this study, the following conclusions were drawn: that many of the students have basic computer knowledge before entering the college, students perceived CBA to be more easy than PBA, that there is equity and fair treatment candidates in CBA and that students perceived that cheating during examinations is more difficult in CBA than in PBA. Also, there is a significant difference in the perceptions of students on ease-of-use of CBA based on computer efficiency. However, there is no significant difference in the perceptions of students on ease-of-use of CBA based on sex.

Based on this conclusion, the following recommendations were made;

1. The college management should ensure that students' interests are considered for a better ease-of-use of CBA.
2. Similarly, individual differences should be a major factor to be consider when conducting CBA for a fairness of the test.
3. There is the need for training and re-training of students on the use of CBA especially those who are less efficient in the use of computer.

Funding

(TETFund/DESS/COE/ILORIN/ARJ)

"TETFund Projects 2017-2020"

References

Abubakar, A. S., & Adebayo, F. O. (2014). Using computer based test method for conduct of examination in Nigeria: Prospects, challenges and strategies. *Mediterranean Journal of Social Sciences*, 5(2), 47-56.

Alabi, A. T., Issa, A. D. & Oyekunle, R. A. (2012). The use of computer based testing method for conduct of examinations at the university of Ilorin. *International Journal of Learning and Development*, 2(3), 2164-4063.

Ananya, S., & Mayank, S. (2020). Perception of teachers and students towards computer-based test: An analysis in terms of gender, subject background and computer efficiency level. https://www.researchgate.net/publication342846080

Anikweze, C.M. (2013). Measurement and evaluation for teacher education. Ibadan: Constellation publisher

Cox, K., Imrie, B. W., Miller, A., & Miller, A. (2014). Student assessment in higher education: A handbook for assessing performance.

Demirci, N. (2007). University students' perceptions of web-based vs. paper-based homework in a general physics course.*Online Submission*, 3, 29-34.

Faniran, V., & Ajayi, N. (2016). Students' perceptions of computer-based assessment: A case of UKZN. www.ist-africa.org

Jamil, M., Tariq, R. H. & Shami, P. A. (2012). Computer-based vs paper-based examinations: Perception of university teachers. *Turkish online Journal of Education Technology*, 11(4), 371-381.

Jeong, H. (2014). A comparative study of scores on computer-based test and paper-based test. *Behaviour and Information Technology*, 33(4), 410-422.

Nu-Man, M. R. & Porter, T. M. (2018). Assessing learning using technology. https://granite.pressbook.pub/teachingdiverselerners

Ojerinde, D. (2009). Online service on assessment: To be or not to be. In Nwana, O. C. (ed): Educational measurement and

evaluation. Nigeria Academy of Education year book no 5. Ark publishers.

Olafare, F. O., Akinoso, S. O., Omotunde, C. &Annenne, V. (2017). Students' perceptions of computer-based test in Nigerian universities. *Nigerian Journal of Educational Technology*, 1(2), 117-129.

Rausch, A. Seifried, J., Wuttke, E., Kogler, K. & Brandt, S. (2016). Reliability and Validity of computer-based assessment of cognitive and non-cognitive facets of problem-solving competence in the business domain. *Empirical Research in Vocational Education and Training*, 8(9), 1-23. Doi10.1186/s40461-016-0035-y

Priyanshi, M. (2022). What is a computer-based assessment? https://www.proprofs.com

Refik, S. (2003). Students' perceptions about online assessment: A case study. Unpublished M. Sc thesis: The Middle East Technical University.

Rollings-Carter, F. (2010). Performance assessments versus traditional assessments.http://www.learnnc.org/lp/editions/linguafolio/6305

Sobremisana, V. S. & Arago, R. C. (2016). Computer-based assessment: Its effects on students' performance and attitude. *Research Journal of Science and IT Management*, 5(9), 10-18.

Tara, M. & Josh, C. (2020). A comparison of computer based testing and paper and pencil testing in mathematics assessment. *The online Journal of New Horizons in Education*, 10(2), 78-89.