

Assessment of the Attitude of University Undergraduates towards Computer-Based Testing

Victor Abiodun LIJOFI

*Department of Educational Foundations and Counselling
University of Ilesa, Osun State.
victor_lijofi@unilesa.edu.ng*

Olawale Ayoola OGUNSANMI

*Department of Research and Development Forestry Research Institute of Nigeria
olawaleogunsanmi82@gmail.com*

Taiwo Michael AJAYI

*Department of Educational Foundations and Counselling
University of Ilesa, Osun State.
taiwo_ajayi@unilesa.edu.ng*

&

Olanrewaju Gabriel BABATUNDE

*Departments of Examinations and Records Management
Ministry of Education, Science and Technology, Akure, Ondo State.
lanrebabs2016@gmail.com*

Abstract

The study determined the types and level of attitude exhibited by undergraduate freshers towards computer-based testing at the University of Ilesa. It examines freshers' preferences, confidence, and anxiety, and investigates the rate at which gender influences students' preferences. The researchers use a descriptive survey research design. Two thousand and fifty (2,050) first-year University of Ilesa undergraduates comprised the population. The research sample comprised two hundred and forty (240) undergraduate freshers chosen by a multi-stage sampling method. The data gathering tool was a questionnaire named "Questionnaire on Attitude of Undergraduate Freshers Towards Computer-based Testing". Using simple Correlation and Cronbach's Coefficient Alpha, index of 78 and 73 were obtained, indicating that the instrument had both validity and reliability. The study issues were addressed by descriptive analysis of the data using frequencies, proportions, averages, and standard deviations. An independent-samples t-test was used to evaluate the hypothesis at the 0.05 level of significance. The study found that 75.6% and 78.9% of undergraduates exhibited a high level of preference and confidence in computer-based

testing, respectively. The study further showed that 60.6% of undergraduates exhibited a low level of anxiety towards computer-based testing. However, it was revealed that there was no significant gender difference between undergraduates' preference towards computer-based tests ($t = 0.897$; $p < 0.05$). The study concluded that undergraduate freshers of UNILESA have high levels of preference, confidence and low anxiety towards computer-based testing. The study recommended that the University of Ilesa should intensify efforts to improve the effectiveness of computer-based assessments' trustworthiness.

Keywords: Technological Driven, Computer-Based Assessment, Testing, Attitudes of Undergraduate Students

Introduction

Globally, every aspect of society is technologically driven. According to Qureshi, Khan, Raza, Imran, and Ismail, (2021), drawing from disciplines like Applied science, engineering, industrial arts, and pure science, technology is the area of study that addresses the practical development and application of technological tools and their relationship to existence, culture, and surroundings. Throughout the world, the educational system is becoming the platform for technological transition, growth and advancement. This justifies blending teaching and learning experiences with technology, such that the younger generation of educational institutions is technologically equipped. The current trend in education is that teaching and learning experiences are becoming interconnected with technological skills and digital support. Thus, Internet and computer usage were prevalently advantageous for many purposes, such as monitoring and recording student data, managing staff and accounting, distributing course materials, announcements, and assignments (Bennett & McWhorter, 2020). In addition, computers and comparable gadgets offer strong instruments to fulfill the objective of emerging challenges of developing and executing assessment techniques that surpass established standards, making it possible to capture a broader spectrum of intellectual capacities and knowledge (Olumorin, Fakomogbon, Fasasi, Olawale & Olafare, 2013).

The assessment of learning experience is the systematic collection, analysis and interpretation of relevant data to determine the degree to which educational goals are attained; it is associated and implemented with technology-based design. Conventionally, the paper-and-pencil test is the common method of assessment. However, a fundamental change in the assessment of learning experience in the education system is being necessitated by the prevalence

of a technologically driven society. The shift is from a paper-and-pencil test (PPT) to a computer-based test (CBT). Testing refers to the use of a specific instrument or a set of instruments to determine a trait or quality, or a series of qualities or traits. Testing procedures involve the construction, administration, scoring and analysis of test instruments. The focus of testing is the use of test instruments to describe a person's attributes so that predictions can be made and inter- and intra-unit comparisons can be made. The unit may be an individual, a class, a school or a local government area or a state, or a nation. A question that the test takers are supposed to answer, on the contrary, may be referred to as a test item. A test paper consists of an assortment of test items. formats for objectives and essays, such as multiple-choice, matching, true/false, short answer, and essay, can be used to write test items in a formal educational setting. Selected response Formats include true/false, matching, and multiple choice. (Eleni & Norman, 2005). The test subjects in these forms are given a choice. Respondents must provide their answers for the essay exam. According to Abiri (2007), testing is a procedure that establishes an environment in which people can be asked to respond or behave in ways that elicit information about their knowledge, skills, talents, or attitudes.

In the world today, computer-based testing is now available for examination, admission and scholarship, it has revolutionized the methods of education and instruction in multiple ways. This is clear from the way educators utilize computers to track attendance, estimate values, enter scores, and retrieve information about the degree of student achievement. In Nigeria's context, this outstanding improvement is clear from the application of computer-based testing (CBT) to assess academic performances by public examination bodies which is evident in the Post UTME and the Unified Tertiary Matriculation Examination (UTME), which are administered by the Joint Admissions and Matriculation Board (JAMB) performance aptitude conducted by various universities, colleges and other educational institutes.

A computer-based test is any kind of evaluation and assessment that involves the use of electronic means in the administration of achievement or ability test items with technological advances. Jimoh, Abduljaleel and Kawu (2012) defined computer-based testing as a test or assessment conducted using an electronic device connected with the Internet or the World Wide Web, mostly in multiple-choice format. Khoshshima, Toroujeni, Thompson and Ebrahimi, (2019)

describe two distinct types of computer-based tests (CBT) that exist: adaptive and linear. In a linear test, which typically represents an extended evaluation, testees answer many questions that the computer chooses without considering their performance level. It comprises an extensive range of multiple-choice questions ranging from the simplest to perhaps the most challenging, though not necessarily in that order. Both the conventional test and the paper-based test use the same scoring system. In a computer-adaptive exam, the candidate's achievement is used by the computer to choose items. These questions are chosen among a huge pool of potential items and categorized according to topic and complexity. Ethically, a test taker receives items of appropriate ability level of difficulty during the testing process. Tests typically start with a question that most testees find to be moderately challenging. The computer selects the questions that will be addressed next once each one has been addressed. Although the emergence of computers in testing management in higher education is changing the landscape, Nigerian universities, colleges and polytechnics are yet to fully embrace this transformation. While some students are receptive to the adoption and use of CBT, inaccuracy, reluctance and frustration which may influence its outcome, have also been observed. A student's attitude toward computers is a key factor that could influence how well they do in CBT. The examinee's attitude or inclination toward the test or the test style, without a doubt, has a significant impact on the exam. Some people would rather avoid dealing with any type of technology because they are unfamiliar with it, can't keep up with its rapid development, and can't keep up with it. They also refuse to incorporate it into their social or academic lives. There are other emotions that test takers have been said to experience as well.

Moreover, motivation levels have been linked to respondents' degree of aptitude, which has an impact on accomplishment. Having rapid access to test findings can explain motivational variances and lead to improved test-taking environment standardization in computer-adaptive test modes. The characteristics of test-takers, such as their familiarity with computers, attitude toward computers, preferred testing mode, and test-taking techniques, have an impact on students' success on computer-based examinations. For instance, Okocha (2022) reported that only a small percentage of students thought using CBT was simple, while the majority of students thought computer-based testing was unfair. Okocha, Eyiolorunshie, and Owolabi, (2017) noted that more than 75% of respondents favored computer-based assessment for their medical checkups. Hence, this indicates that while some students have a favorable attitude toward computer-based testing,

acceptance of it depends on the course being tested. These results demonstrate that the course and type have an impact on whether a computer-based test is considered acceptable. Davy and Waldon (2010) found that students' performance influences whether or not they adopt CBT. Although there are varying views among students regarding its adoption

Statement of the Problem

The attitudes of undergraduates towards the use of CBT in Nigerian universities have been established by several studies. More so, results from various studies have shown some dimensions of attitude that were exhibited toward the use of computer-based tests by university undergraduates. Some researchers argued that students of different grades may exhibit various dimensions of attitude toward CBT. However, few studies have focused on determining Undergraduate freshers' attitudes towards CBT. As part of the developmental strides in testing, the management of the University of Ilesa adopted the computer-based test to examine the first sets of undergraduates in the first semester 2023/2024 academic session. Nonetheless, it is easy to presume that first-year undergraduates are computer-literate and would favor computer-based exams over the conventional testing approach. In order to suggest the necessary improvements to further improve the University's delivery method, the researchers believe it is necessary to look into the attitudes of undergraduate freshmen toward computer-based testing, even in spite of the published data evaluating students' attitudes toward CBT. This study, therefore, set out to investigate some attitudes of undergraduate freshers towards computer-based tests at the University of Ilesa, Osun State.

Purpose of the Study

The purpose of the study is to find out how undergraduates at the University of Ilesa feel about using computer-based exams. The research's particular goals are to:

- (a) Investigate the preference of undergraduate freshers toward computer-based testing.
- (b) Assess the Confidence of undergraduate freshers toward taking computer-based testing
- (c) Examine the anxiety of undergraduate freshers toward taking a computer-based test.

Research Questions

To fulfill the study's goals, the following research questions were posed.:

1. What is the level of preference exhibited by undergraduate freshers towards the utilization of computer-based testing?
2. What is the level of confidence exhibited by undergraduate freshers towards computer-based testing?
3. What is the level of anxiety exhibited by undergraduate freshers towards computer-based testing?

Research Hypothesis

There is no significant difference in male and female undergraduates' preferences towards computer-based testing.

Methodology

A descriptive survey design was used in the investigation. The survey research was considered based on the researcher's interest in obtaining a sample from the targeted population. The population for the study comprised Two Thousand and Fifty (2,050) 100-level University of Ilesa undergraduate freshers in nine faculties of the university who were admitted in the 2023/2024 academic session, who took computer-based tests during the first-semester examination. The study sample consists of 240 students selected across seven faculties using Multi-stage sampling techniques. From each of the Nine faculties, seven faculties in the University comprising the faculties of Laboratory Sciences, Basic Medical Sciences, Nursing, Applied Sciences, Social & Management Sciences, Arts, Education and Computing were selected using a purposive sampling technique. Using a basic random sample procedure, four faculties were chosen from each of the seven faculties; two departments were chosen from each of the four faculties, to create a total of eight departments. From each of the Eight departments, ten students were selected using a convenience sampling technique based on gender. Hence, five male and five female students were selected for the final sample. The research tool is a survey named "Questionnaire on the Attitude of Undergraduate Freshers towards Computer-Based Testing" (QAUFEBT), developed by the researchers was used in the study. The

Questionnaire has 25 items that focus on three dimensions, including Preference, Confidence and Anxiety of undergraduate freshers towards computer-based testing. respondents who were participants in the study were required to mark the appropriate column for each statement promptly. Experts in testing and measurement edited the instrument. The face and content validity of the instrument were also verified by the experts. The Concurrent Validity of the instrument was obtained using Pearson's product-moment correlation to compare scores from concurrent administration of two forms of the test. The results showed a significant positive correlation ($r = 0.737$, $p < .05$). Using Cronbach's Coefficient Alpha, an index of .78 obtained, showing that the instrument had reliability evidence. The study problems were examined using descriptive statistics such as percentage, frequency count, average, and standard deviation, and the hypothesis was tested at the 0.05 level of significance using the independent sample t-test. The Statistical Package for Social Sciences (SPSS) version 20.0 was used to code and analyze the data.

Results

Research question One: What is the level of preference exhibited by undergraduate freshers towards the utilization of computer-based testing?

To answer this question, the 10 items relating to the preference exhibited by undergraduate freshers towards the utilization of computer-based tests were scored using a 4-point Likert scale response pattern. Thereafter, the responses were subjected to descriptive analysis as shown in Table 1(a) and 1(b) respectively.

Table 1(a): Descriptive Statistics of the Preference of the Undergraduate Freshers

	N	Mean	Standard Deviation	Variance	Maximum	Minimum	Range
Preference	240	35.67	1.074	115.28	41.00	30.00	11.00

Table 1(a) shows the minimal score of 30 and the maximal score of 41, with a mean value of 35.67 and a standard deviation of 1.074. To categorize the level of preference of undergraduates, the scores below the mean of 36 were categorised as a low level of preference of undergraduates and

scores above the mean were categorized as a high level of preference of undergraduates. The results are presented in Table 1(b).

Table 1(b): Level of Preference of the Undergraduate Fresher

	Frequency	Percent	Valid Percent	Cumulative Percent
Low	59	24.4	24.4	24.4
High	181	75.6	65.6	100.0
Total	240	100.0	100.0	

Table 1(b) shows the level of preference exhibited by undergraduates. From the Table, it could be seen that 181 respondents representing 75.6% had a high level of preference, while 59 of the respondents representing 24.4% had a low level of preference towards the utilisation of computer-based tests.

Research Question Two: What is the level of confidence exhibited by undergraduate' freshers towards computer-based testing?

To answer this question, the 8 items relating to the confidence exhibited by undergraduates towards the utilisation of computer-based tests were scored using a 4-point Likert scale response pattern. Thereafter, the responses were subjected to descriptive analysis as shown in Table 2(a) and 2(b) respectively.

Table 2(a): Descriptive Statistics of Confidence of the Undergraduates

	N	Mean	Standard Deviation	Variance	Maximum	Minimum	Range
Confidence	240	7.216	0.0952	0.908	9.00	5.00	4.00

Table 2(a) shows the minimal score of 5 and the maximal score of 9, with a mean value of 7.216 and a standard deviation of 0.09. To categorize the level of confidence of undergraduates, the scores below the mean score of 7 were categorized as a low level of confidence of undergraduates

and scores above the mean were categorized as a high level of confidence of undergraduates. The results are presented in Table 2(b).

Table 2(b). The Level of Confidence of the Undergraduates

	Frequency	Percent	Valid Percent	Cumulative Percent
Low	51	21.1	21.1	21.1
High	189	78.9	78.9	100.0
Total	240	100.0	100.0	

Table 2(b) shows the level of confidence exhibited by undergraduates. From the Table, it could be seen that 189 respondents representing 78.9% had a high level of confidence, while 51 of the respondents representing 21.1% had a low level of confidence towards the utilisation of computer-based tests.

Research question Three: What is the level of anxiety exhibited by undergraduates towards computer-based testing?

To answer this question, the 10 items relating to the confidence exhibited by undergraduates towards the utilisation of computer-based tests were scored using a 4-point Likert scale response pattern. Thereafter, the responses were subjected to descriptive analysis as shown in Table 3(a) and 3(b) respectively.

Table 3(a): Descriptive Statistics of Anxiety of the Undergraduates

	N	Mean	Standard Deviation	Variance	Maximum	Minimum	Range
Anxiety	240	17.6722	1.176	1.384	20.00	14.00	6.00

Table 3(a) shows the minimal score of 14 and the maximal score of 20, with a mean value of 17.67 and a standard deviation of 1.176. To categorize the level of anxiety of undergraduates, the scores below the mean score of 18 were categorized as a low level of anxiety of undergraduates and

scores above the mean were categorized as a high level of anxiety of undergraduates. The results are presented in Table 3(b).

Table 3(b). Level of Anxiety of the Undergraduates

	Frequency	Percent	Valid Percent	Cumulative Percent
Low	145	60.6	60.6	60.6
High	95	39.4	39.4	100.0
Total	240	100.0	100.0	

Table 3(b) shows the level of anxiety exhibited by undergraduates. From the Table, it could be seen that 95 respondents representing 39.4% had a high level of, while 145 of the respondents representing 60.6% had a low level of anxiety towards computer-based testing.

Hypothesis Testing

There is no significant gender difference in undergraduates' potential attitude towards computer-based testing.

To test this hypothesis, respondents' sex was coded in a way that 1 was allotted to males and 2 to females. This was used as a predictor variable, while job satisfaction was used as an outcome variable. These were subjected to a t-test and the results are presented in Tables 11 and 12

Table 4(a): Group Statistics of undergraduates' confidence

	Sex	N	Mean	Std. Deviation	Std. Error Mean
Preference	Male	120	37.4605	1.84348	.21146
	Female	120	37.6827	1.83422	.17986

Table 4(b): Independent t-test of undergraduates' confidence

		t-test for Equality of Means						
		t	df	Sig. (2-tailed)	Mean Difference	Std. Error Difference	95% Confidence Interval of the Difference	
							Lower	Upper
Preference	Equal variances assumed	-.801	238	.424	-.22217	.27739	-5.56898	4.88318
	Equal variances not assumed	-.800	208.264	.425	-.22217	.27761	-5.55480	4.86901

Tables 4(a) and 4(b) present the difference in the sex of undergraduates and their preference towards computer-based tests. The table showed that there was no significant gender difference between undergraduates' preference towards computer-based testing ($t = 0.897$; $p < 0.05$). Thus, any difference observed in the mean values could be due to mere chances or sampling error.

Discussion of Findings

The result of the first objective investigated the preference of undergraduate freshers toward computer-based testing. The result revealed that undergraduates' freshers have high levels of preference towards the utilisation of computer-based test. The implications of this is that the undergraduate freshers prefer the use of CBT to other forms of tests. These agrees with the findings of Khoshsima, Toroujeni, Thompson, & Ebrahimi (2019) investigated the comparability of Iranian English as a Foreign Language (EFL) learners' test results in CBT and PBT formats. CBT test scores were thought to be influenced by the test participants' computer proficiency, perspectives, dislikes, and chosen testing style. Data was collected using the CBT and PPT versions of the Nelson Proficiency Multiple-Choice Tests as well as the Computer dislike, Perspectives, and Proficiency Index (CAAFI) questionnaire. The subjects' scores were comparable in all modalities,

except the CBT version, where they did marginally better. The study's qualitative results, which were gathered through semi-structured interviews, demonstrated that the majority of participants had a strong preference for CBT over PBT and cited its advantages as justification for their preference.

The result of the second objective investigated the level of confidence exhibited by undergraduate freshers towards computer-based testing. The result showed that undergraduate freshers have high levels of confidence in the utilisation of computer-based tests. The implication of this is that the undergraduate freshers feel confident with the use of CBT. This finding is in line with the findings of the study conducted by Adebowale, Adewale and Oyeniran (2010). The purpose of the study was to assess secondary school students' interest in, acceptance of, and confidence in computers. The study included one hundred Senior Secondary III pupils. Teachers in ICT topics conducted the test, which was created to gauge pupils' enthusiasm, acceptance, and confidence in using computers. The findings demonstrated that pupils had high levels of confidence, interest, and approval about computer use and related issues. It was discovered that female pupils showed greater attention than their male counterparts. The result of the third objective investigated the level of anxiety exhibited by undergraduates' freshers towards computer-based testing. The result showed that undergraduate freshers have low levels of anxiety towards the utilisation of computer-based tests. This may be due to their prior exposure to the computer-based testing system. The implication of this is that the undergraduate freshers feel calm with the use of CBT. The finding of this study is in line with the study conducted by Nwagwu & Adebayo (2016), The purpose of the research was to investigate the effects of personality and demographic characteristics on computer efficacy and anxiety in first-year students accepted into three Nigerian institutions. Data was gathered from 892 students who agreed to take part in the study using a questionnaire. In terms of the study's demographic responses, the student populations from the three universities are similar to one another, as indicated by the Chi-Square analysis, which found no discernible differences between them. Computer self-efficacy and attitude are significantly high; however, computer anxiety is comparatively low, according to logistics regression analysis.

The result of the hypothesis revealed that there was no significant gender difference in undergraduates' preference towards computer-based testing. The implication of this is that both male and female undergraduate freshers exhibited a high preference towards computer-based testing to an equal magnitude. This disagrees with the findings of the study conducted by Bahar and Asil (2018), They investigated the effects of gender, computer use, and educational achievement on the relatively low attitude toward e-assessment anxiety using the electronic assessment measure, using a sample of 853 associate degree, undergraduate, and graduate students after a confirmatory factor analysis, a mimic modeling technique was utilized. It was revealed that, on two e-assessment aspects, undergraduates who utilize computers regularly performed noticeably better than those who used them less frequently. Men showed far more favorable opinions toward e-assessment than did women about test features, personal traits, and technical aspects, but not concerning social or environmental aspects. Education level had no bearing on a person's attitude toward online assessments.

Conclusion

The study concluded that undergraduate freshers in UNILESA have high levels of preference, confidence and low levels of anxiety towards the use of computer-based tests.

Recommendations

The suggestions listed below were made:

- The University of Ilesa should intensify more efforts towards the continuous usage of computer-based testing.
- The University should ensure the improvement of the efficiency of computer-based testing to increase its credibility.
- The University should ensure the provisions more computer-based testing facilities

References

Abiri, J. O. O. (2007). Element of Evaluation and Measurement Techniques in Education. Ilorin: Library and Publication Committee, University of Ilorin, Nigeria.

- Adebowale, O., Adewale, I., & Oyeniran, F. (2010). Computer interest, approval and confidence of secondary school students in three selected local governments of Lagos State (Nigeria): Implications for global computerization. *International Journal of Education and Development Using ICT*, 6(1), 40-52.
- Bahar, M., & Asil, M. (2018). Attitude towards e-assessment: influence of gender, computer usage and level of education. *Open Learning: The Journal of Open, Distance and e-sss Learning*, 33(3), 221-237.
- Bennett, E. E., & McWhorter, R. R. (2020). Digital technologies for teaching and learning. In *the Handbook of Adult and Continuing Education* (pp. 177-186). Routledge.
- Danladi, H., & Dodo, A. (2019). An assessment of the challenges and prospects of computer-based test (CBT) in Joint Admissions and Matriculation Board (JAMB). *International journal of humanities and social science*, 6(5), 86-91.
- Jimoh, R. G., Shittu, A. K., & Kawu, Y. K. (2012). Perception of Computer-Based Test (CBT) for Examining Undergraduate Chemistry Courses. *Journal of Emerging Trends in Computing and Information Sciences*, 3(2), 125 – 134. Retrieved from http://www.cisjournal.org/journalofcomputing/Download_February_pdf_2.aspx
- Khoshsima, H., Toroujeni, S. M. H., Thompson, N., & Ebrahimi, M. R. (2019). Computer-based (CBT) vs. paper-based (PBT) testing: Mode effect, relationship between computer familiarity, attitudes, aversion and mode preference with CBT test scores in an asian private EFL context. *Teaching english with technology*, 19(1), 86-101.
- Nwagwu, W., & Adebayo, O. (2016). Computer anxiety and computer self-efficacy in computer-based tests in selected universities in South-West Nigeria. *African Journal of Library, Archives & Information Science*, 26(1), 43.
- Okocha, F. (2022). Student perception of computer-based testing in Kwara State, Nigeria. *International Journal of Web-Based learning and Teaching Technologies (IJWLTT)*, 17(1), 1-11.
- Okocha, F., Eyiolorunshe, T. A., & Owolabi, S. (2017). Student perception and acceptance of computer-based testing: a case study of Landmark University undergraduate students. *Journal of Digital Innovations and Contemporary Research in Science and Engineering*, 5(1).
- Olumorin, C., A. Fakomogbon, M. A., Fakomogbon, M., Fasasi, Y. A., Olawale, C., & Olafare, F. (2013). Computer-based tests: a system of assessing academic performance in

university of Ilorin, Ilorin, Nigeria. *American Academic & Scholarly Research Journal*, 5(2).

Qureshi, M. I., Khan, N., Raza, H., Imran, A., & Ismail, F. (2021). Digital Technologies in Education 4.0. Does it enhance the effectiveness of learning?