PERSPECTIVE
ON EDUCATION
IN NIGERIA

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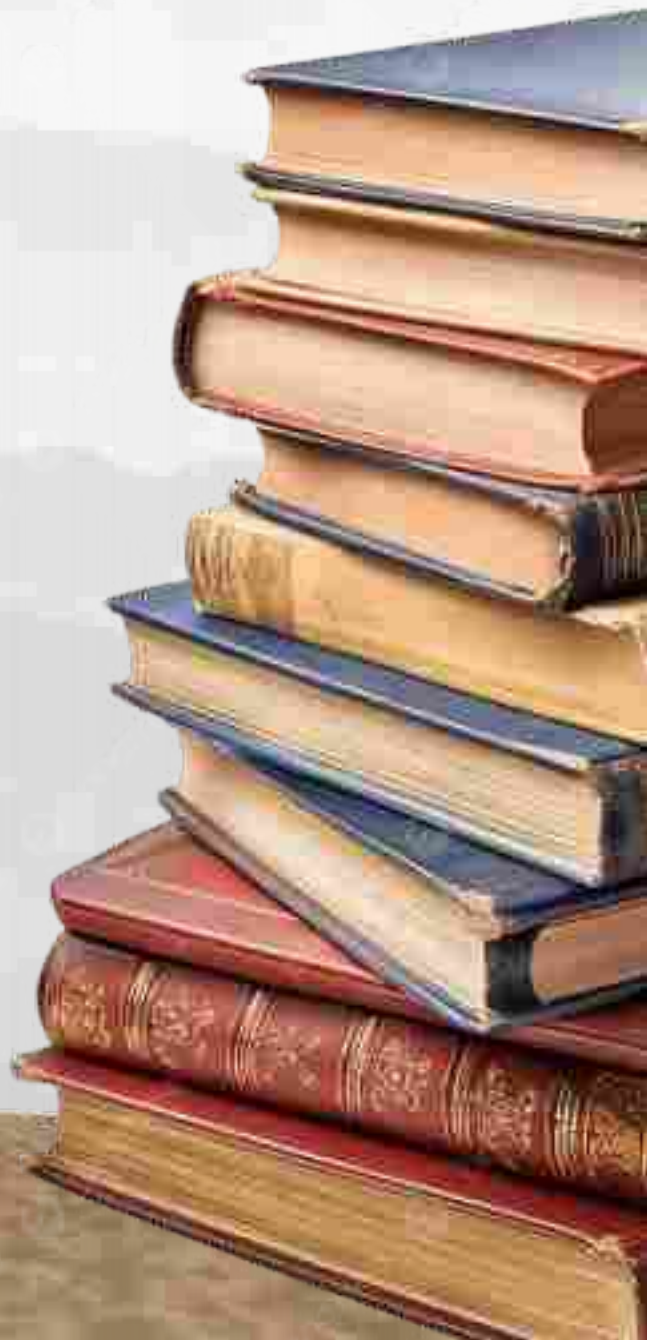
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CHAPTER ELEVEN

TERTIARY EDUCATION AND COMPUTER BASED TEST IN NIGERIA

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ABSTRACT

In recent years, Nigerian tertiary institutions have begun to adopt Computer-Based Testing (CBT) as an alternative to traditional paper-and-pencil assessments. This chapter explores the concept, advantages, benefits, and implementation challenges of CBT in Nigerian universities, polytechnics, and colleges of education. Drawing on empirical studies from Nigerian settings and international literature, it examines how CBT can enhance efficiency, test integrity, timeliness of results, accessibility (including for special needs students), and large-scale delivery. At the same time, it analyses barriers such as infrastructural deficits (ICT facilities, electricity), digital divide, limited training, resistance to change, and issues with assessing complex skills. The chapter proposes sustainable strategies, including investment in ICT infrastructure, stable power supply, capacity building for staff and students, inclusive design for differently-abled candidates, robust security and proctoring, and policy frameworks to support CBT adoption. With proper implementation, CBT has strong potential to improve fairness, transparency, and reliability of assessments in Nigerian higher education.

Keywords: computer-based testing; assessment; higher education; Nigeria; efficiency; accessibility; challenges

11.1. Introduction

In today's digital age, education systems globally are integrating technology to enhance teaching, learning, and assessment. A noteworthy development in Nigerian tertiary education is the adoption of Computer-Based Testing (CBT), introduced to improve efficiency, transparency, and reduce examination malpractice (Using Computer Based Test Method for the Conduct of Examination in Nigeria: Prospects, Challenges and Strategies, 2014; Kayode & Govender, 2022). Unlike the traditional paper-and-pencil method, CBT introduces speed, efficiency, and transparency into examinations, making it an essential tool for modern assessment.

The move toward CBT in Nigerian tertiary institutions is largely driven by the need to curb examination malpractice, reduce administrative burdens, and ensure quick release of results. Students no longer have to wait weeks or months to know their performance, while institutions can manage large populations of candidates with less stress. However, while the implementation of CBT brings hope and progress, it also comes with challenges such as poor infrastructure, inadequate training, unstable electricity supply, and limited access to technology for some students.

This chapter explores implementation of Computer based test in Nigerian tertiary institutions. The chapter is discussed under the following subhead: concept of tertiary education, concept of computer-based test, advantages of computer-based tests, benefits of computer-based test and challenges facing implementation of computer-based test.

11.2. Clarification of concepts
i. Tertiary Education

Tertiary institutions as the educational institutions that provide education beyond the secondary level hence, they are also known as post-secondary institutions. These institutions offer a wide range of academic, vocational, and professional programs that lead to certificates, diplomas and degrees (Obizue and Obizue (2018). The Universities, Polytechnics, Colleges of Education, School of Health, Technological and Technical Institutes, Vocational Schools are the various tertiary institutions in Nigeria (Udekamma and Nwafor, 2022). Tertiary institutions is an organized social institution made up with stakeholders like the students, lecturers (academic staff), non-academic staff and researcher whose responsibilities are lecturing, organization of instructional resources, assessment of students, marking of students' scripts and projects supervision (Ogunode, & Adamu, 2021).

In the words of Alabi (2020), tertiary institutions plays important role in the nation which include providing opportunities for social mobility, enabling individuals from diverse backgrounds to access higher education and improve their socio-economic prospects, developing the knowledge and skills required for the modern workforce and contributing to economic growth by providing a

skilled and educated workforce, driving innovation, and fostering entrepreneurship. Tertiary education is an organized educational system that is consciously designed for manpower production, in-service training and national development. Tertiary education is an education that advances teaching, research and community services for national development. Tertiary education is an education industry that is meant for the production of manpower and national development via implementation of teaching, research and provision of community services (Ogunode, 2025). The objectives of tertiary education includes; to provide higher education opportunities via effective teaching, researching and provision community services; to develop produce students with specialized knowledge and skills for solving personal problem and national problem; to prepare student for national workforce and to contribute to societal and community development; to provide academic program of various disciplines; to provide quality instruction in field of studies and to conduct researches to generate new knowledge for national development and to solve complex problems (Ogunode, 2025).

ii.   Computer Based Test

Computer-Based Tests (CBT) has transformed the way institutions conduct exams and assessments, moving away from traditional paper-based methods. This shift has been driven by the growing demand for efficiency, scalability, and enhanced user experiences in education and recruitment. CBT offers a flexible, streamlined approach that not only simplifies exam administration but also provides a more secure and accessible testing environment ( ). A Computer Based Test (CBT) is a way of giving tests using computers. Tests are conducted with the help of the internet and a computer-assisted facility. The CBT exam streamlines instructors' evaluation tasks by incorporating features such as MCQs, comprehensive responses, analytics-based surveys, and so on. With test mapping, the teacher can be assured of the correct results (Borkar, p 2025). A Computer-Based Test (CBT) is an assessment method that utilizes computer technology to administer, evaluate, and report test results instead of the conventional paper-based format. This digital approach allows candidates to take exams on computers or other digital devices, either online or offline. As highlighted in recent studies, "computer technology is now a critical element in designing, developing, and delivering test content, as well as scoring and reporting examinee performance." The flexibility of CBTs means they can accommodate various question formats, such as multiple-choice questions, essays, practical tasks, and even interactive scenarios, making them suitable for assessing a wide range of skills and competencies (Mishra, 2024). The various types of computer-based test according Mishra, (2024) include

a) **Linear Tests:** All candidates receive the same set of questions in a fixed order. This format is similar to traditional exams but conducted digitally, allowing for standardized scoring and evaluation.

b) **Adaptive Tests:** These tests adjust the difficulty level of questions based on a candidate's performance. Starting with a medium-difficulty question, subsequent questions are tailored

to the candidate's ability level. Research indicates that adaptive testing provides a more accurate assessment of knowledge and skills, making it ideal for organizations looking to identify candidates' true potential.

c) **Formative Assessments:** Used as ongoing evaluations, formative assessments provide continuous feedback that can be used to improve learning and performance. For example, HR professionals can use these assessments to monitor employee progress in training programs.

d) **Summative Assessments:** Typically conducted at the end of an instructional unit or training program, summative assessments evaluate the overall learning outcomes against established standards.

e) **Authentic Assessments:** These involve real-world tasks that demonstrate a candidate's ability to apply their skills and knowledge in practical situations, offering insights into how they might perform in actual job scenarios.

11.3. Advantages of Computer Based Test

There are a multitude of advantages offered by computer-based tests. Some of the key advantages of CBT test according to Borkar (2025) are as follows.

i. Large-Scale Delivery of Tests

Suppose there is a vacancy in an organization, and several job aspirants have come for an interview, a part of which is to give a written assessment, how long would it take for the entire procedure to conclude? It is reasonable to assume that it will take an entire day, but the **CBT test** hosts a large-scale assessment online without having to wait individually. In effect not only saving time but also conducting quality online examinations & assessments.

ii. Adjustable and Personalized Tests

Instructors or educators have the liberty to adjust the difficulty levels of the questions based on the groups of students. After reviewing the responses given by the learners the pattern of the questions can be further altered; by using video applications, the instructors can connect to particular students for oral assessments as well. If the students have any questions or queries to resolve they can easily do so by using other such assorted apps, along with sharing their personal views and opinions.

iii. Grading System

A student waits for his/her result or the score of certain tests taken for a considerable amount of time, likewise, the teacher needs time to go through answers minutely to give appropriate marks. But the instant grading of the CBT system allows for faster evaluation of the performance and based on the data that is collected the approach towards the learning process can also be altered.

This also gives the instructors some idea about where the students are lacking and the areas where they need further improvement.

iv. Well-Organized and Smooth Process

Usually, a traditional examination entails quietly lengthy and multiple tasks, starting with preliminary preparations which begin months before the starting of the tests. Be it the securing of the facilities, the invigilators who are hired for the examination halls or rooms, creating the question papers followed by careful storage and keeping it secured. The post-examination process such as retrieval and marking of the answer sheets is equally time-consuming and tedious as well, but all of these processes are automated and thereby streamlined efficiently under the system.

v. Taking Care of Candidates with Special Needs

For students or candidates who are differently-abled, computer tests help them by providing helpful features such as braille keyboard, voice to texts, texts to voice applications, screen reader, magnification, and other such tools.

vi. Exams Conducted with Integrity

There is an underlying concern in respect to the integrity of the exams taken or given online, but the availability of various security and proctoring features make sure that the test is conducted with full integrity and without cheating.

vii. Remote Test Feature

With the **CBT test online**, students do not need to travel far distances to appear for examinations, they can select an exam slot according to their convenience and timing and take the particular test.

11.4. Benefits of Using Computer-Based Tests

The adoption of CBTs offers several advantages according to Mishra, (2024) and they include;

i. Efficiency

One of the most notable benefits of CBTs is the automation of grading and result generation, which drastically reduces administrative tasks. This efficiency allows HR teams to assess a large number of candidates simultaneously, speeding up the recruitment process and enabling quicker decision-making.

ii.   Accessibility

With the flexibility to conduct assessments online, candidates can participate from any location with internet access. This accessibility not only widens the talent pool but also makes it easier for geographically dispersed teams to manage assessments.

iii.   Immediate Feedback:

Test-takers receive instant results, allowing HR professionals to quickly identify candidates' strengths and areas for improvement. This real-time feedback is invaluable in time-sensitive recruitment scenarios.

iv.   Enhanced Security:

CBTs incorporate various security measures, such as AI-driven proctoring solutions, identity verification, and anti-cheating features, to maintain test integrity. This ensures that the assessment results are reliable and valid.

v.   Inclusivity:

CBTs can accommodate candidates with diverse needs by offering features like screen readers and alternative input methods, making the assessment process more inclusive.

vi.   Data-Driven Insights:

Advanced analytics provided by CBT platforms like PMaps offer valuable insights into candidate performance, helping HR professionals make informed decisions about hiring, training, and development.

vii.   Large-Scale Delivery:

The ability to conduct assessments for large groups simultaneously makes CBTs ideal for organizations with high-volume recruitment needs, reducing the logistical challenges of traditional testing.

viii.   Cost-Effectiveness:

By eliminating the need for physical materials and reducing administrative overhead, CBTs can significantly lower overall assessment costs, making them an economical choice for organizations.

11.5.   Challenges of Computer Based Test in Tertiary Institutions

The following are some of the challenges militating against the use of computer-based test in the tertiary institutions:

i. **Technical Issues and System Failures**

CBTs are entirely dependent on technology—computers, servers, internet connections, and software. If any part of this system fails, it can severely disrupt the testing process.

Power outages, especially in regions with unreliable electricity. Computer crashes or software freezing during a test. Internet disruptions affecting online exams. Server overload due to too many users accessing the system simultaneously.

ii. **Digital Divide and Inequality**

Not all test-takers have equal access to technology or digital literacy. Candidates from rural areas, low-income families, or underfunded schools may lack basic access to computers or the internet. Inadequate computer skills to comfortably navigate CBT platforms. Lack of exposure to typing or using a mouse. No access to stable internet for online test practice or participation.

iii. **Security Concerns and Cheating**

Maintaining the integrity of CBTs can be challenging. There are several security risks that can compromise the validity of the exams. Unauthorized access to exam databases or systems. One person taking the test on behalf of another. Candidates using software, internet browsers, or communication tools during exams Digital formats are easier to copy and distribute illegally.

iv. **High Initial Cost of Setup**

The infrastructure needed for effective CBT deployment is expensive. It includes hardware (computers, servers), software (testing platforms, security tools), and human resources (IT support, training staff). Setting up a computer lab with hundreds of functional systems. Purchasing licenses for secure examination software. Hiring technical staff for maintenance and support.

v. **Limited Assessment Scope**

CBTs are most effective for **objective questions** (e.g., multiple choice, true/false), but they struggle with evaluating complex skills such as: Essay writing, Critical thinking, Problem-solving that requires step-by-step explanations and Hands-on or practical skills (e.g., art, lab experiments).

vi. **Resistance to Change and Lack of Training**

Teachers, administrators, and students may resist switching from traditional paper-based tests to CBT due to unfamiliarity, fear of failure, or comfort with existing methods. Teachers may not be trained to create or administer CBTs. Students may be anxious or unprepared for digital testing environments. Institutions may lack structured training programs.

vii. **Accessibility and Inclusivity Issues**

CBTs may not be adequately designed for people with disabilities, including. Visually impaired users. Individuals with motor difficulties. People with learning disabilities (e.g., dyslexia).

Conclusion

The implementation of Computer-Based Tests (CBT) in Nigerian tertiary institutions marks a significant step toward modernizing the assessment process and aligning with global best practices in education. It enhances efficiency, transparency, and credibility in examinations while reducing cases of malpractice and human error associated with traditional paper-based assessments. Despite challenges such as inadequate infrastructure, digital divide and inequality, security Concerns and Cheating, high Initial cost of setup, limited assessment scope, resistance to change and lack of training and accessibility and inclusivity issues, the benefits of CBT outweigh its limitations. With proper investment in technology, capacity building, and policy support, Nigerian tertiary institutions can fully harness the potentials of CBT to improve academic evaluation, promote fairness, and strengthen the overall quality of education delivery in the country.

Revise Questions

1. Define tertiary education

2. What is Computer Based Test?

3. List five advantages of Computer Based Test

4. Discuss five challenges of Computer Based Test in Tertiary Institutions in Nigeria

5. Discuss five sustainable Strategies to improve Computer Based Test in Tertiary Education in Nigeria

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CHAPTER ONE:

AN ASSESSMENT OF THE CONTRIBUTIONS OF WEST AFRICA TERTIARY INSTITUTIONS TO THE DEVELOPMENT OF WEST AFRICA COUNTRIES

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CHAPTER ELEVEN:
TERTIARY EDUCATION AND COMPUTER-BASED TEST IN NIGERIA

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CHAPTER TWELVE:
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CHAPTER THIRTEEN:
DEPLOYMENT OF ARTIFICIAL INTELLIGENCE FOR FRAUD DETECTION AND PREVENTION IN TERTIARY EDUCATION IN NIGERIA

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CHAPTER FOURTEEN:
DEPLOYMENT OF TECHNOLOGIES IN CURTAILING EXAMINATION MALPRACTICES IN NIGERIA TERTIARY EDUCATION

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CHAPTER FIFTEEN:
SMART RESEARCH IN TERTIARY EDUCATION IN NIGERIA: PROBLEMS AND SOLUTIONS

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CHAPTER SIXTEEN:
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CHAPTER EIGHTEEN:
AN ASSESSMENT OF THE IMPACT OF URBANIZATION ON LOCAL BIODIVERSITY

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