IMPACT OF COMPUTER BASED TEST IN NIGERIA TERTIARY INSTITUTIONS: A THEORETICAL VIEW

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Abstract
The impact of computer-based examination in Nigeria tertiary institutions cannot be overruled since research established the roles and immense contributions of ICT for instructional purpose in Nigeria education. The paper explored the conceptual meaning of Computer Based Test (CBT), historical development of Computer Based Test, advantages of Computer Based Test in education and problems of computer-based examinations in Nigeria educational institutions. Based on the following considerations, conclusion and recommendations were made.
Keywords: Computer Based Examination, Tertiary Institutions, Theoretical View

Introduction

During the past few years, technology has significantly reshaped the method of assessment. In many academic domains, educational measurement has been moving towards the use of computer-based testing (CBT), defined as tests or assessments that are administered by computer in either stand-alone or dedicated network, or by other technology devices linked to the internet or world wide web most of them using multiple choice questions (MCQs). Computer based tests have been used since 1960s to test knowledge and problem solving skills. Computer based test systems have enabled educators and trainers to author, schedule, deliver, and report on surveys, quizzes, tests and examsThere are two main types of computer based testing. The most familiar type is where candidates fill in their responses on a paper form, which is fed into a computer optical mark reader. This reads the form, scores the paper, and may even report on the test reliability. The second type of computer based testing is where computers provide an assessment interface for students: they input their answers and receive feedback via a computer (Jimoh, AbdulJaleel, & Kawu, 2012).

Computer Based Test (CBT) is not just an alternative method for delivering examinations; it represents an important qualitative shift away from traditional methods such as paper-based tests. Despite these advantages available in computerized test administration as it was shown that, it does not mean that CBTs are intrinsically better than paper-and-pencil tests. Previous study by have even found that testing format does not affect test scores and as such CBT can be considered a valid and acceptable testing mode. As CBT began to be used for summative assessment, establishing whether computer-based testing performance was comparable to that of paper-based assessment became important.

The Conceptual Meaning of Computer Based Test

Computer based examination requires a system of interconnected computer networks that the Standard Internet Protocol Suite (SIPS) to serve the users. Computer systems which are used for CBT are made of two major components for them to carry out their functions as delivering examination questions they help to store examination questions and allow students to access them. The two parts are hardware and software. Computer hardware refers to the physical components of the computer i.e. the aspect of computer that can be seen, touch and felt. While software refers to the set of instruction that are fed into the system which enable the computer to process information or data, and these are application software (Williams, 2007).

Bennett (2015) asserted that computer-based test represents a modern way of answering an examination questions, replacing the written pen and paper (PNP) format. CBT is a combination of networks, hardware and software as well as means of communication, collaboration and engagement that enables the processing, management and exchange of data, information and knowledge. It can be understood to be a complex of artificial techniques and knowledge for solving instructor's problem involving marking pen and examination (Bennett, 2015).

Computer – based tests (CBT) are the 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. Conole and Warburton (2005) defined CBT as 'the use of computers for assessing

students' learning'. It is required to think, re-consider, and modify or change the traditional test manners. Electronic assessment tools had reduced the load of teachers and facilitate exams execution purposefully because of inclusion of ICTs in education. CBTs can be applied to promote further efficient learning by examining students' knowledge and understanding in many fields.
Students' prior experience in computer and communication skills is essential matters in CBTs. CBT are a method that may does not suit the learning styles of many students. The primary factor in determining whether an assessment program is beneficial or not depends on whether the assessment tasks are relevant to the purposes and learning outcomes for the course, not forgetting the attitudes and skills that are to be examined. Computer and related technologies provides a powerful tool to encounter the challenges of designing and implementing assessments modes that go beyond the conventional practices and facilitate accessing a widely sources of information, cognitive skills and knowledge (Sonntag, Sinacore, McNulty2011).

CBTs are written to test specific levels of ability they have the potential to deliver more accurate and reliable results than traditional exams". Traditional methods of assessment are being changed by automated assessment in all over the world progressively, but it is not clear so far to up to what extent these changes will be fruitful to the academicians and administrators of HEIs, in addition to that, institutions across the globe are migrating toward the use of (CBT) to test students' knowledge (Conole and Warburton 2005).

Historical Development of Computer Based Test

From the punctual, a considerable length of time of instructive registering in the 1960s it might have been envisaged that exams or tests might be completed around computers, yet all the normally this just recognized completing on the PC what might have been generally completed on paper (Ilesanmi & Lasisi, 2015). Throughout the years different courses in which appraisals could be encouraged by utilizing PCs have been visualized and as a rule attempted (Clarke-Midura and Dede, 2010). Pilots and specialists frequently do PC based exams utilizing test systems, some oral dialect exams have included "talking" into the PC (Pearson Instruction Australia, 2012), drawing and varying media computerized apparatuses have been utilized to present and record exhibitions, and the e-scape extend in the UK had understudies utilizing versatile PCs to record their advance chipping away at handy work (Kimbell, Wheeler, Mill operator, and Pollitt, 2007).

An exam should measure some sort of performance and there is a multitude of ways in which this could be done on a computer system using the range of hardware, software and networking options now available. For example, a computer-based exam could be delivered on a stand-alone personal computer or within an isolated Local Area Network (LAN) or use online technologies such as web-pages over the Internet. Technical and administrative methods can be used to assure security and fairness (McNulty et al., 2011). The increasingly sophisticated range of peripheral devices can provide audio-visual and kinaesthetic support to collect an enormous range of types of student responses and evidence of performance.

For more than a decade, researchers at the Centre for Schooling and Learning Technologies (CSaLT) at Edith Cowan University (ECU) have grappled with the multitude of ways in which digital technologies can be used to improve assessment, including with computer-based exams (Newhouse &Njiru, 2009). In so doing we have identified a number of categories of exams or exam items. Traditional exams are based on response items, but an exam could include performance tasks or be based on the production of artefacts(s). Computer-based response items can provide stimuli using a full range of sensory forms and can allow responses in text, graphic, audio and kinaesthetic forms. Performance task items may involve recording a representation of a performance (e.g. making an audio recording of a talk), simulating a performance on the computer (e.g. demonstrating capability in using virtual equipment), or in some cases the performance is in using software on the computer (e.g. an ICT literacy test). Similarly, production items may involve recording the process of production and/or representing the final artefact(s) (e.g. e-scape project (Kimbell et al., 2007)). Naturally in practice the distinction between these categories of items is not always clear and there may be some blending.

There have been trials of diverse types of PC based exams in various nations including the UK, Norway, Denmark, USA and Australia. In Australia a PC based test was utilized to survey the PC proficiency of 12 and 16-year-old understudies (Clerical Committee on Instruction, Work, Preparing and Youth Undertakings, 2007). The test was developed around a simulated computer environment and

utilized using sets of networked laptop computers. While the test was successfully implemented with over 7000 students this was over a long period of time and would not be readily scalable. Also, the use of a simulated environment would be expensive and difficult to provide a great enough variety of activities each year. The trial in the UK also involved a multi-million-pound simulated system but was accessed by students through their school computers (Boyle, 2006). In the Norwegian illustration understudies utilized their own legislature gave journal PCs (English Telecom Company, 2009). In the USA progressively, national testing is PC based and PC education will be incorporated inside national testing as is as of now the case in various states (Clarke-Midura and Dede, 2010; Harris, 2008).

Computer-based exams are a part of e-assessment that Ripley (2009) defines as "the use of technology to digitize, make more efficient, redesign or transform assessments and tests" that includes "professional examinations, qualifications, certifications and school tests, classroom assessment and assessment for learning". He proposes that there are two "drivers" of e-assessment being "business efficiency" and "educational transformation". E-assessment driven by business efficiency will tend to use digital technologies to support the same forms of assessment traditionally done on paper such as multiple-choice and short answer items. Where the driver is educational transformation then it is likely that the e-assessment will take on different forms and designs to suit the outcomes or the performances to be assessed.

The history of computer-based testing began in the early 1970s with the introduction of the early computers in the 1970s which revealed the potentials of using technology not only for new learning environments but also for completely new settings in the design and administration of tests. E-assessment originated with the PLATO system from the University of Illinois and was commercialized by Control Data Corporation in the 1970s, starting with a computer testing system for National Association of Securities Dealers (now the Financial Industry Regulatory Authority). The testing business grew slowly and is today known as Thomson Prometric. Further expansion of the testing system was occasioned by Pearson VUE in 1994 which was one of the first to use the internet for CBTS. Today many universities and institutions employ the use of computer-based testing.

Advantages of Computer Based Testing in Education

Computer-based tests offer a few advantages over conventional paper-and-pencil or paper-based tests. Innovation based appraisal give chances to gauge complex type of learning and thinking that is impractical to connect with and survey through conventional strategies (Alabi, Isaa, & Oyekunle, 2012). In Nigeria, bosses now direct inclination test for occupation searchers through electronic means; the colleges and other tertiary establishments are enrolling and leading electronic examination for their understudies through the web and other electronic and systems administration devices. Correspondingly, extraordinary examination bodies in the nation, for example, West Africa Examination Council (WAEC), National Examinations Council (NECO), National Business and Technical Examination Board (NABTEB), and National Teachers' Institute (NTI), among others enrol their understudies through electronic means (Olawale & Shafii, 2010). Computer and related innovations give capable instruments to address the new difficulties of outlining and actualizing appraisals techniques that go past the customary practices and encourage recording a more extensive collection of psychological aptitudes and information (Mubashrah, Tariq &Shami, 2012).

Computer based testing can encourage the improvement of more legitimate evaluations. CBT has the possibilities of guaranteeing viability and effectiveness in instructing, proficient advancement, certainty and direct criticism. Computer have changed the way we work, be it any calling (Mubashrah, Tariq &Shami, 2012). Computerized standard testing likewise gives leeway in booking, since tests can be managed in a great deal less time than it takes to regulate a paper test. This makes testing more open to those with all day employments or full class plans. Since the calendar can be packed, more test dates can be given consistently. The prompt and calculation and accessibility of test scores makes it workable for test takers to anticipate their subsequent stages directly in the wake of taking the exam. CBT assumes a key part in the cutting-edge arrangement of Education. The way toward learning has gone past noting examination inquiries with pen and paper. Online examination has changed the instruction business. It has made the fantasies of separation taking in a reality. Examination is not any more constrained to paper and pen organizes (Johnson, 2009).

By and large, focal points of CBT frameworks over conventional paper-and-pencil testing (PPT) have been shown in a few similar works and as specified by, CBT is not only an option strategy

for conveying examinations, it speaks to an essential subjective move far from customary techniques, for example, paper-based tests. Regardless of, these preferences accessible in computerized test organization as it were demonstrated that, it doesn't imply that CBTs are characteristically superior to paper-and pencil tests. Past review by have even discovered that testing group does not influence test scores and all things considered CBT can be viewed as a substantial and worthy testing mode. (Dede, 2008) highlighted the beneath focal points of Computer Based Testing.

Changed Measurement: Standardized tests regularly are condemned as simulated and unique, measuring execution in routes separated from certifiable practices. In any event some of this feedback is because of the requirements that paper based organization forces upon test engineers. Paper is confined to showing static content and designs, offers no genuine methods for cooperating with the examinee, and forcefully restrains the courses in which examinees can react. Computers can free test engineers from these limitations. Computers can introduce sound and movement, cooperate powerfully with examinees, acknowledge reactions through an assortment of modes, and even score those reactions consequently. For instance:

- ✓ A test evaluating dialect capability can gauge not just how well understudies can read and compose, additionally their capacity to grasp talked dialect, talk, and even speak.
- ✓ A science test can enable understudies to outline and lead mimicked analyzes as a methods for reacting.
- ✓ A medicinal affirmation exam can enable examinees to intelligently assess, analyze, treat, and oversee recreated patients.
- ✓ A written work test can enable understudies to compose and alter their expositions in a well-known word-processor condition (rather than the undeniably less recognizable pen-and paper).

Moreover, the computer can score that paper consequently and immediately give the understudy, analytic criticism, combined with guideline for development.

Improved Measurement Precision and Efficiency: Certain sorts of CBTs can change not only the way of what is measured, but rather the estimation procedure itself. The way to doing as such is, once more, the capacity of the computer to associate with and tailor itself to the understudy being tested. A CBT with these capacities is named versatile. As a versatile test continues, answers to prior inquiries figure out which inquiries are asked later. The test hence logically changes as the understudy's execution level is slowly uncovered.

Increased Convenience: The third major benefit of computerized testing is operational convenience for students, test administrators, and those who use test scores. These conveniences include:

- ✓ **Self-administering**. Regular paper-and-pencil tests for the most part oblige somebody to disseminate test booklets and answer sheets, monitor time points of confinement, and gather materials after the test closes. Overseeing a CBT can be as straightforward as stopping an understudy before a computer. The computer can gather recognizable proof information, situate the understudy to the testing procedure, manage and time the test, and deliver a score report at the conclusion. Diverse understudies can sit next to each other taking distinctive tests with various time limits for various purposes. With customary organization, these two understudies may should be tested at various circumstances or in better places.
- ✓ **Immediate scoring**. The estimation of any data debases after some time. A score report based on a test taken a month and a half prior is a portrayal of what that understudy was instead of what she or he at present is. CBTs can address this qualification by giving understudies score reports endless supply of their test. The test can along these lines have moment affect. At the understudy level, this may include rapidly changing the instructional approach brought with a specific idea. At the school or locale level, prompt data may permit comparative however more worldwide strategic movements.
- ✓ **Integrated information administration frameworks**. Testing on computer can enable scores to be entered naturally into classroom-, school-, region , or statelevel databases. Once there, different individual and total reports can without much of a stretch be created to condense and track the execution of individual understudies and characterized gatherings.
- ✓ **Diagnostic appraisal and combination with instructional programming**. Self-delegating, prompt scoring, and simple information administration makes CBTs — versatile CBTs specifically — perfect for demonstrative or developmental appraisal. Consider the issue of evaluating an understudy's example of qualities and shortcomings over a genuinely wide substance space. A

versatile CBT can start with a concise review of the space to decide the understudy's general level of capability. This is much the same as looking a dim stay with a moderately diminish, yet wide-shot electric lamp. The areas of huge articles can be mapped however subtle elements would not be unmistakable. Intriguing items are best inspected all the more intimately with a brighter, all the more barely engaged shaft. Certain versatile CBTs could be particularly intended to switch persistently between these parts and therefore would be extraordinarily suited for this sort of inquiry.

A further advantage on the diagnostic front is the ability to connect the scores output from a CBT directly to instructional software. This can allow the diagnosis remediation cycle to proceed much more quickly and easily than might be possible with paper-based tests. **Adaptable planning**: Since CBTs can act naturally delegated and self-scored, they can enable testing to happen when schools or potentially understudies think that it's helpful instead of as indicated by some forced timetable. **Reach and speed**: Even though CBTs are here and there given in settled destinations committed to test organization, they can hypothetically be conveyed anyplace and at whatever time a computer is accessible. It is likewise conceivable to get a CBT bundled and appropriated significantly quicker than a paper test can be designed, printed, boxed, and transported. This circumstance can enable tests to change quickly to stay aware of quick changing educational module or topic.

Problems of Computer Based Examination in Nigeria Educational Institutions

Bennett (2015) watched that actualizing computer exams requires a protected testing condition, one that keeps understudies from looking for answers by checking their computer hard drives, texting or messaging companions, or perusing the web. To Fagbola (2013), absence of institutionalized/brought together CBT improvement show alone undermines the accomplishment of the e-examination stage for continuous reception by and by. Fluck (2009) is of the sentiment that online appraisal may not be viable for assessing imagination, critical thinking capacity, basic considering, reflection, or true adapting; altogether the qualities of profound and successful learning. Different difficulties militating against the full selection of CBT in Nigeria and other creating nations are highlighted beneath:

Inadequate ICT infrastructure: including hardware, software and bandwidth accessibility. Obioma (2013) watched that a great part of the foundations for robotized examinations are either out of date or overstretched regarding limit, openness, unwavering quality and security. Once more, the nonappearance of web offices in our provincial territories requires understudies setting out long separations to urban focuses to approach web. Broadband infiltration should be optimized to lessen the cost of web transfer speed access in Nigeria.

Power supply*:* The test of whimsical power supply in Nigeria has opposed all endeavours by different governments. Sporadic and visit intruded on power supply in Nigeria is a perpetual issue influencing each part of the economy including training (Oye, 2011). Most rural communities are not connected to the national grid, the implication is that schools located there cannot undertake practical effectively. During JAMB's online UTME, cases of power failure interrupting the examination abound.

Students / candidates inadequate skills in ICT*:* Many school leavers in the country are not computer literate. Even many teachers in the primary and secondary schools cannot boot a computer not to talk of using any application. With these 'analogue' teachers to impart ICT skills to students, the students cannot be adequately equipped for CBT. And this anxiety explains why the resistance to JAMB's full uses of CBT in 2015 UTME by students, parents and even teachers. Nigeria does not just need ICT foundation; it likewise did not have the human abilities and information to completely coordinate ICT into auxiliary school training (Ilesanmi & Lasisi, 2015).

Integrity of examination managers: One of the key reasons progressed for moving from PPT to CBT is to control the wild instances of examination acts of neglect in the nation, the uprightness of these specialists in holding fast to the set down strategy for biometric information catching amid enlistment and check amid examination can't be ensured. Involvement in SSCE examination has demonstrated that the vast majority of the exclusive schools are for immaculate monetary increases prompting a wide range of examination acts of neglect. These exam "supernatural occurrence" focuses disorder might be exchanged to CBT focuses if critical measures are not taken. All levels of government as a team with corporate association through open private organization (PPP) ought to manufacture, prepare and keep up standard CBT focuses no less than four in each of the 774 nearby government territories in the nation. This will encourage e-examination in the nation and guarantee decency and value to the examinees.

Acceptability: There are arrangements of reasons distinctive partners are kicking against robotization of examination in Nigeria. Dreher (2011) referred to in Obioma (2013) watched that for instructors and teachers, work parts and control are significant explanations behind opposing computerized evaluation. They contended that since computerized appraisals are probably going to encourage a more autonomous way to deal with learning for understudies, instructors who consider themselves to be "master that interpret information in the classroom" are tested and thusly oppose its take-up in their classroom rehearses. For school proprietors and other instruction administrations suppliers, financial variable might be the purpose behind opposing the take-up of CBT. Ilesanmi and Lasisi (2015) noticed that ICT has remained a low money related need in most instructive frameworks in Africa. To preserve subsidize that would be utilized to get computers, web offices and other required framework, some school proprietors might need to sidestep the positive change CBT has conveyed to our instructive framework. For applicants and understudies, poor ICT abilities could be the main certifiable purpose behind not grasping CBT in this time.

Software factors: Presently, there is no product or mixed media that has all-inclusive application to the extent CBT is concerned. School educational modules and training standard vary from one nation to the next. Fluck (2009) watched that evaluation of understudy learning and aptitudes inside a web program window or conveyed by bespoke appraisal programming (particularly created for a specific arrangement of inquiries) gives a confined situation which keeps the showing of capacities related with the utilization of master programming or a blend of uses. Once more, a degenerate programming or system disappointment can bring about rescheduling of the examinations.

Conclusion

The impact of computer-based test in Nigeria tertiary institutions in this present technological development era has enhanced both the teaching and learning process and makes it easy for the achievement of teachers' set objectives. Teaching is no longer teachers centred as the learner can utilize ICT tools like Computer Assisted Instruction for individualized learning. Despite the impact of computer-based examination in Nigeria tertiary institutions, most institutions in Nigeria are yet to extensively embrace these innovations. Efforts should be geared integrating computer-based examinations in Nigeria tertiary institutions. Problems such as inadequate ICT infrastructure, power supply, students / candidates' inadequate skills in ICT, integrity of examination managers, acceptability, software factors militate against these efforts. For computer-based examinations to succeed in Nigeria, governments, school ownerships and individuals are called upon to investigate the problems stated in this paper and proffer solutions to them, as such will go a long way to making teaching and learning more interesting, stimulating, admiring and efficient as well as to improve Nigeria standard of education through the proper use of ICT tools for computer-based examinations.

Recommendations

To ensure that Computer Based Examinations are widely utilized in Nigeria tertiary institutions, the following recommendations are put forward:

1. Government should provide ICT facilities in all tertiary institutions in Nigeria.
2. Government should provide institutions at all levels in country with adequate information technology tools.
3. Teacher should be more committed with the use of ICT tools, giving the importance of practical knowledge in it.
4. Government should ensure adequate electricity supply in all tertiary institutions in Nigeria.
5. Adequate funds should made available for the provisions of ICT tools in Nigeria tertiary institutions.
6. Teachers and students should make use of ICT facilities in Nigerian tertiary institutions.

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