Chapter 5
Computer Literacy and Candidate Performance on Computer-Based Tests

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ABSTRACT

This chapter investigates the influence of computer literacy through blended learning methods on the computer-based aptitude test performance of prospective students at the University of Port Harcourt. An ex-post facto research design was used, and simple random sampling was adopted in drawing a sample of 1,720 candidates from a total population of 38,988 who wrote the examinations. A Computer Literacy Scale was developed to ascertain the computer literacy level of participants and a Results Collection Form was developed to gather test results. This study was based around nine research questions, which were answered using descriptive statistics, and nine corresponding hypotheses, which were tested using inferential statistics. Results show that computer literacy through blended leaning methods has a significant effect on performances on the computer-based test while gender has no effect. There was also a significant difference in the performance of candidates on paper and computer examinations.

INTRODUCTION/BACKGROUND

Over the years, education has undergone several transformations, from the early Greek and Roman systems to the present 21st century system. Technology has long been a major agent of change in societies across the globe, although its impacts are perhaps being felt more than ever in the present information age. Technological developments, particularly Information and Communication Technology (ICT), and global educational reforms are reshaping educational practices and activities globally (Ololube & Egbezon, 2009). Educational technology driven by ICT is shift-
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ing classrooms from brick and mortar to virtual classrooms; blackboards are being replaced with smart or electronic boards; e-books are gradually replacing the ubiquitous printed books; traditional libraries are giving way to digital libraries; and Learning Resource Centres with full multimedia resources and computer-based assessments are replacing paper-based assessments (Ololube & Egbezor, 2009).

Assessments of student ability are one of the most important undertakings in education and these too have been altered in recent years through technology. Assessments play a crucial role in any teaching and learning environment (Kpolovie, 2002). Educators require a way in which to have students demonstrate what they know or are able to do. The test is one such means of demonstration (Ololube, 2012). A well-designed test can provide valuable information on a student’s academic and other achievements and capabilities (Blazer, 2010). Results or test information are veritable means of ascertaining a student’s level of performance or mastery and testing should therefore be seen as one of the most important activities of the educational institution (Kpolovie, 2002).

The use of computers for testing in schools is a growing phenomenon and many schools have now adopted computerized testing as their preferred method of assessment. Thurlow, Lazarus, Albus, and Hodgson (2010) report that twenty-six American states have at least one state-administered computer-based test that is operational or in field testing stages. Increasingly, schools are using computerized testing not only for class assessment but for entrance examinations in the selection of candidates for admission. Globally recognized testing organizations like Educational Testing Services (ETS), Pearson Vue, and Prometrics have all adopted computer based testing. According to Marc (2000), Educational Testing Services (ETS) uses computers to deliver and evaluate several tests, including the Graduate Management Admission Test (GMAT), Graduate Record Examinations (GRE), Test of English as a Foreign Language (TOEFL), and the Praxis. Not surprisingly, computerized testing centres are beginning to spring up in various institutions across Nigeria.

A number of higher education institutions in Nigeria, including universities, conduct the Post-Unified Tertiary Matriculation Examination (PUTME) screening examination using computers. The Joint Admission and Matriculation Board (JAMB), however, continues to conduct the Unified Tertiary Matriculation Examination (UTME) on paper (Kpolovie, Ololube, and EkWebelem, 2011). The UTME conducted by JAMB is a prime example of a widespread Paper-Based Test (PBT) while the post-UTME is a good example of a largely Computer-Based Test (CBT).

The introduction of computer-based tests at the University of Port Harcourt has yielded positive results. The University of Port Harcourt now conducts all of its entrance examinations on computers. These entrance examinations include the PUTME for candidates seeking admission to regular degree programmes; part-time screening exam for candidates seeking admission to the university’s part-time degree programmes; basic studies entrance exam for candidates seeking admission to the basic studies programme; and certificate programme entrance exams for candidates seeking admission to the university’s certificate programmes as well as into SSLT part-time programme. Candidates looking to complete any of the above are now expected to do so using a computer. Candidates’ scores are displayed immediately as they complete the exams and so candidates are able to leave the exam with their final results. This is a feat that cannot be accomplished with the paper-based exam (Al-Amri, 2008).

Computer-Based Testing (CBT) has been in use for over four decades (Meissner, 2007) by schools and testing organizations. Across the globe, testing organizations have taken advantage of the potentials of CBT method of testing to administer certification and job recruitment tests to millions of individuals in the last few years (Meissner, 2007). An average computer-based testing centre can test