

UNDERGRADUATES' ATTITUDE TOWARDS COMPUTER-BASED TESTS AS AN ASSESSMENT MODE FOR GENERAL STUDIES

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Abstract

This study investigated undergraduate attitude towards Computer-Based Tests (CBT) as an assessment mode for general studies. The population of the study comprised all undergraduates' of Federal University Dutsin-Ma, Katsina State while the target population consisted of one hundred to three hundred levels undergraduates' of Federal University Dutsin-Ma. The descriptive survey research was employed for the study and purposive sampling technique was used to select two hundred (210) undergraduates'. A researchers' designed questionnaire titled "Attitude of Undergraduates' Towards Computer-Based Test in General Studies Questionnaire' (AUTCGSQ)" with Cronbach's alpha reliability co-efficient of 0.88 was used to collect data for the study. Frequency, percentage, mean, t-test and ANOVA statistics were used to analyse the data collected. Findings revealed that undergraduates' generally have positive attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma while there is no significant difference in the undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma on the basis of gender, mode of entry, faculty of study, age and levels. Based on these findings, it was recommended that undergraduate students should be encouraged to improve their computer skills for better performance in their GST CBT examinations.

Keywords: Assessment, Undergraduates', Attitude, Computer-Based Test, General Studies

Introduction

In the school system, assessment is a tool used to measure students' performance. Ojerinde (2009) purports that assessment is at the heart of education as test scores of assessment are used to gauge students' academic strengths and weaknesses. Assessment is a mean whereby the teacher obtains information about knowledge gains, behavioural changes and other aspects of the development of learners (Ogunseye, 2002).

In addition, Borich (2011) defines educational assessment as an interactive process between students and teachers that inform the teachers about students' learning progress. Without this, teachers cannot make effective decision on students' learning. Such information is used by the teacher to make changes in the learning environment, and is shared with students to assist them in improving their learning and study habits. In addition, Ukwuije (2012) defines educational assessment is a process of documenting, usually in measurable terms, knowledge, skills, attitude, belief, practices or generally what behaviour a learner does or does not have before, during, and at the end of instruction, or a course of study. These definitions indicate that assessment is indispensable in teaching and learning process.

Computer-Based Testing (CBT) has emerged as one of the recent innovative approaches to assessment. This approach brings the use of technology into assessment procedures in the school system. It is necessary to note that delivering assessments via computers is becoming more and more prevalent in educational assessment domain (Kate Tzu, 2012; Genc, 2012; Hsiao, Tu & Chung, 2012). Computer-based test (CBT) is seen as a catalyst for change, bringing transformation of learning, pedagogy and curricula in educational institutions (Scheuermann & Pereira, 2008).

Mulvancy (2011) observed that CBT has emerged as one of the recent 'innovative' approaches to assessments and examination bodies are moving from paper-pencil standardized testing to the electronic format in order to eliminate materials and provide more timely feedback, cheaper and speedier test delivery. Bennett (2015) asserted that computer-based test represents a modern way of answering examination questions, replacing the written pen and paper (PNP)

format. Moreover, CBT is the use of computers by the examiners to administer tests to the examinees and it also means the examinee sits in front of a computer monitor and answers/submits questions using keyboard or mouse. Furthermore, CBT can be 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) (Sorana-Daniela and Lorentz, 2007). In addition, CBT is a test that can be used in a supervised or non-supervised environment. McConnell and Schoenfeld-Tachner (2001) viewed Computer-Based Test as a way to increasingly, provide a quick method of marking summative assessments for large groups of students. Computer-based test is the logical extension of computer-enhanced learning.

An effective method of student assessment technique is necessary in assessing student knowledge. Due to an increase in student numbers, ever-escalating work commitments for academic staff and the advancement of internet technology, the use of computer-assisted assessment has been an attractive proposition for many higher education institutions (Darrell, 2003).

CBT has many advantages over paper-based test (PBT). Some of these advantages are: it saves time; easy to administer; easy to mark and score; its scoring is reliable due to objectivity; it is economical (not expensive) considering the test materials, it provides immediate feedback for decision-making; it minimizes test leakage and examination malpractice and it covers a wide range of the course content or syllabus.

In addition, Noyes and Garland (2008) believe that the benefits of standardized computer-based tests, such as quick and objective results and the ease of comparing results with others make this method very popular. Moreover, moves toward computerized testing are rooted in the advantages it provides in comparison with traditional paper-and-pencil format (Choi & Tinkler, 2002; Kim & Huynh, 2007; Kingston, 2009). Such advantages, according to the findings of mentioned studies, include cost-effective administration, ease of administration, more accuracy, immediacy of scoring, reporting, and flexible test scheduling and location. These studies, also, indicated that students who are familiar with computers feel more comfortable using it

(O'Malley, Kirkpatrick, Sherwood, Burdick, Hsieh, & Sanford, 2005; Poggio, Glasnapp, Yang and Poggio, 2005; Hosseini, Zainol-Abidin & Baghdarnia, 2014).

Many researchers have already done studies investigating the relationship between computer usage ability and achievement tests. Yurdabakan (2012) identifies some of these studies (Pomplun & Custer, 2005; Pomplun, Ritchie, & Custer; 2006; Bennett, Braswell, Oranje, Sandene, Kaplan & Yan, 2008) stressing that computer usage ability is an important predictor of respondent achievement. Therefore, those poor students at computers may show low achievement in CBT. However, they added that with the increase in computer technologies and access opportunities, such problems might decrease.

The use of computer for test administration in University education is to change the state of test administration. University is the highest level of education where the high-level manpower, intellectual and future leaders are developed (Olutola & Olatoye, 2015). It is a place where students come together to pursue knowledge and it promotes the development of intellectual capacities of individuals to understand and appreciate their environments (Ajayi, 2003). Universities therefore educate future leaders and develop the high-level technical capacities that underpin economic growth and development (Odekunle, 2001). University education is at the centre of human resource development and advancement.

It is important to note that, all the university in Nigeria have embraced the paradigm shift in testing process from Paper-Pencil Test (PPT) to Computer-Based Test (CBT). For instance, Nigerian Universities are now using CBT to conduct Post-UTME examinations, General Studies (GST) examinations and other examinations, which is an evidence of innovation in testing in Nigeria tertiary institutions. One of the Federal Universities in Nigeria is Federal University, Dutsin-Ma (FUDMA). FUDMA is located in Dutsin-Ma Local government Area of Katsina State, which is located in the North-western region of Nigeria, bordering Niger Republic, Kaduna, Kano and Jigawa States. The vision of Federal university, Dutsin-Ma is 'to be a top ranking, world-class University, committed to excellence in research and the production of a generation of leaders with passion for service'. The mission of Federal University, Dutsin-Ma is 'to create knowledge, impart it to transform the human being, deploy it to grow the economy and solve local and global challenges, and do so in partnership and with integrity'.

Since, the establishment of FUDMA, the lecturers have been using CBT to conduct General Studies (GST) Examinations. General Studies (GST) courses are compulsory courses that must be taken and passed by all FUDMA students' before graduation. This is in line with the Nigerian Universities Commission (NUC) benchmark to all Universities in Nigeria. GST courses offer by FUDMA students are meant to equip them with broad based knowledge that cuts across special fields of study and to achieve the goal of GST stated in Universities Commission (NUC's) Benchmark (NUC, 2007). GST courses objectives are: "to produce well-rounded, morally and intellectually capable graduates with vision and entrepreneurial skills in an environment of peace and social cohesiveness." The overall goal of offering GST in FUDMA is to equip the FUDMA graduates with knowledge, skills and values as contained in the objectives of GST programme listed in the National Universities Commission (2007) Benchmark as shown below:

- Acquisition, development and inculcation of the proper value-orientation for the survival of the individual and society,
- The development of intellectual capacities of individuals to understand, appreciate and promote peaceful co-existence,
- Producing graduate with broad knowledge of the Nigerian Nation and people with a view to inculcating in them mutual understanding and patriotism,
- Exposing graduates of Nigerian Universities to the rudiments of ICT for computer literacy and ability to live usefully in this ICT age,
- Preparing students for a post university life with opportunities for job creation and entrepreneurial skills and
- Production of graduates capable of communicating effectively (both oral and written).

In addition, Lee (2003) reported that some lecturers perceived CBT not to be useful as their students perform lower in CBT than they would have in a Paper Pencil Test (PPT). Linn and Miller (2005) who reported that computer-based test is easy to use as it is not stressful.

Adewale, Ajadi, and Inegbedion (2011) carried out a research on perception of learners on electronic examinations in open and distance learning institutions using National Open University of Nigeria as a case study. Adewale et. al, (2011) reported that the difference in

students' perception is based on the reduction of examination malpractice, wide coverage of the scheme of work, students' academic performance, and inadequate facilities.

Different researchers in the past years have focused on the attitudes of lecturer towards computer-based test and students' academic performance. Ogunlade and Olafare, (2015), Terzis and Economides (2011), Jimoh, Yussuff, Akanmu, Enikuomehin, and Salami, (2013) studied lecturers' perceptions of computer-based test. None of the researchers conducted study on attitude of undergraduate students' to CBT utilization in tertiary institutions. This study therefore investigated the undergraduate students' attitude to computer-based tests utilization in general studies examinations in Federal University Dutsin-Ma, Katsina State, Nigeria.

Statement of the Problem

Some students find it difficult to answer CBT because of computer phobia and inability to operate computer. Some students are reluctant to the computerized testing method simply because they are accustomed to take notes, writing comments, and circling question and/or answers for later review (Gvozdenko, & Chambers, 2007). Others noted that they read more easily and quickly on paper than on a computer screen, which in turn helps their performance. Moreover, Ricketts and Wilks (2001) investigated the appropriateness of using CBT system for teaching numeracy and statistics to the first year Biology students. They discovered that students' performance was poor when online assessment was used and students had difficulty in interacting with computer screen. In addition, Bodmann and Robinson (2004) conducted an experimental study to compare speed and performances differences among computer-based (CBTs) and paper-pencil tests (PPTs). They concluded that undergraduates completed the CBT faster than PBT with no difference in scores. None of the researchers investigated the undergraduate attitude towards Computer-Based Tests (CBT) as an assessment mode for general studies using Federal University Dutsin-Ma as a case study. This is the gap which this study seek to fill.

Purpose of the Study

The purpose of the study was to assess undergraduates' attitude towards computer-based tests as an assessment mode for general studies. The study specifically investigated:

- i. undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma,
- ii. undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma based on gender, mode of entry, faculty of study, age and level.

Research Question

What is the undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma?

Research Hypothesis

- i. There is no significant difference in the undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma on the basis of gender, mode of entry, faculty of study, age and levels.

Method

The study adopted a descriptive survey research design. Data was collected from a representative sample of respondents in order to make generalization on the target population. The population of this study comprised all undergraduate students in FUDMA while the target population is made up of all undergraduate students from one to three hundred levels (100 - 300 levels) in FUDMA. Simple random sampling technique was used to select two hundred ten (210) students from the five Faculties in FUDMA. This means (210) students participated in the study.

In this study, researchers-designed questionnaire titled "Attitude of Undergraduates' Towards Computer-Based Test in General Studies Questionnaire' (AUTCGSQ) was used to collect data for the respondents. It was divided into two sections. Section 'A' contained the personal information of the respondents such as name of faculty, level, gender, age and mode of entry. Section 'B' contained items on attitude of undergraduate students to computer-based tests utilization in general studies examinations in Federal University Dutsin-Ma, Katsina State. A

four-point Likert-type scale of AUTCGSQ was used. The scale has four points namely; Strongly Agree (4- points), Agree (3- points), Disagree (2- points) and Strongly Disagree (1- point) was used to collect the needed data from the respondents. Expert judgment was used in validating the instrument. The Cronbach's Alpha reliability coefficient of 0.88 was obtained for the instrument. Analysis of data was carried out using frequency and percentage, mean, t-test and ANOVA statistics at 0.05 alpha level.

Results

Research Question One: What is the undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma?

Table 1:

Attitude of Undergraduates towards Computer-Based Tests as an Assessment Mode for General Studies

S/N	ITEMS	SA	A	D	SD	MEAN	RANK
1.	I like Computer – Based Test (CBT) more than paper-based test (PBT) in my GST tests and examinations	2 (1.0%)	22 (10.5%)	40 (19.0%)	146 (69.5%)	3.5714	1 st
2.	CBT encourages me to learn computer	8 (3.8%)	16 (7.6%)	57 (27.1%)	129 (61.4%)	3.4619	4 th
3.	CBT should be retained during GST examinations and tests	10 (4.8%)	19 (9.0%)	38 (18.1%)	143 (68.1%)	3.4952	3 rd
4.	CBT has developed my reasoning faculty	10 (4.8%)	21 (10.0%)	69 (32.9%)	110 (52.4%)	3.3286	6 th
5.	I like CBT because I am computer literate	10 (4.8%)	43 (20.5%)	60 (28.6%)	97 (46.2%)	3.1619	10 th
6.	I like CBT because its scoring is objective	14 (6.7%)	18 (8.6%)	76 (36.2%)	102 (48.6%)	3.2667	7 th
7.	CBT has improved my academic productivity and performance	12 (5.7%)	29 (13.8%)	66 (31.4%)	103 (49.0%)	3.2381	9 th
8.	I like CBT because it does not require a lot of mental effort	29 (13.8%)	61 (29.0%)	57 (27.1%)	63 (30.0%)	2.7333	12 th
9.	I did like CBT in my GST tests and examinations because there is enough time to answer all the questions	33 (15.7%)	62 (29.5%)	60 (28.6%)	55 (26.2%)	2.6524	13 th
10.	CBT ensures that results of tests are released on time	7 (3.3%)	16 (7.6%)	40 (19.0%)	147 (47.9%)	3.5476	2 nd
11.	CBT prevents cheating during examination	23 (11.0%)	41 (19.5%)	52 (24.8%)	98 (44.4%)	3.0333	11 th
12.	CBT encourages students to learn more about computer personally	11 (5.2%)	26 (12.4%)	73 (34.8%)	100 (47.6%)	3.2476	8 th

13	CBT allows test items to be drawn from a wide range of topics	7 (3.3%)	12 (5.7%)	74 (35.2%)	117 (55.7%)	3.4333	5 th
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N=210

In table 1 above, only 2(1.0%) of the respondents strongly agree to item 1 (I like computer - based test (CBT) more than paper-based test (PBT) in my GST examinations), 22(10.5%) agree, 40(19.0%) disagree and 146(69.5%) strongly disagree. However, 10(4.8%) of the respondents strongly agree to item 3 (CBT should be retained during GST examinations and tests), 19(9.0%) agree, 38(18.1%) disagree and 143(68.1%) strongly disagree. 14(6.7%) of the respondents strongly agree to item 6 (I like CBT because its scoring is objective), 18(8.6%) agree, 76(36.2%) disagree and 102(48.6%) strongly disagree.

In addition, 29 (13.8%) of the respondents strongly agree to item 8 (I did like CBT in my GST tests and examinations because there is enough time to answer all the questions), 61(29.0%) agree, 57 (21.1%) disagree and 63 (30.0%) strongly disagree. Moreover, 23 (11.0%) of the respondents strongly agree to item 11 (CBT prevents cheating during examination), 41(19.5%) agree, 52(24.8%) disagree and 98(44.4%) strongly disagree. 7(3.31%) of the respondents strongly agree to item 13 (CBT allows test items to be drawn from a wide range of topics), 12 (5.7%) agree, 74 (35.2%) disagree and 117(55.7%) strongly disagree.

Moreover, table 1 shows the rank means of the items 1-13. For each item, the mid-point on the scale is 2.5. All the items has rank mean above 2.5. This implies that undergraduates' generally have positive attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma.

Hypothesis One: There is no significant difference in the undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma based on gender, mode of entry, faculty of study, age and levels.

Table 2:

Undergraduate Attitude towards Computer-Based Tests as an Assessment Mode in General Studies Based on Gender.

Gender	N	Mean	Standard Deviation	Standard Error Mean	Df	t-value	Sig. of t (p-value)	Remark
Male	121	44.5207	6.95952	.63268	208	.351	.726	NS
Female	89	44.1798	6.96021	.73778				

NS: Not significant at 0.05 alpha level

Table 2 shows that there is no significant difference in the undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma on the basis of gender ($t = .351, P > 0.05$). Therefore, hypothesis one is accepted.

Table 3:

Undergraduate Attitude towards Computer-Based Tests as an Assessment Mode in General Studies Based mode of entry.

Mode of Entry	N	Mean	Standard Deviation	Standard Error Mean	DF	t-value	Sig. of t (p-value)	Remark
Direct	47	45.1915	7.45315	1.08715	208	.913	.362	NS
UTME	163	44.1411	6.79767	.53243				

NS: Not significant at 0.05 alpha level

Table 3 shows that there was no significant in the undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma based on level of entry ($t = .913, P > 0.05$). Thus, hypothesis two is accepted.

Table 4:

Undergraduate Attitude towards Computer-Based Tests as an Assessment Mode in General Studies on basis of faculty of study.

Faculty	Sum of Squares	DF	Mean Square	F-value	Sig. of t (p-value)	Remark
Between Groups	155.067	4	38.767	.801	.526	NS
Within Groups	9926.214	205	48.421			
Total	10081.281	209				

NS: Not significant at 0.05 alpha level

Table 4 shows an F-value of .801 which is not significant at 0.05 alpha level ($P > 0.05$). Thus, the null hypothesis of no significant difference in the undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma based on faculty of study is therefore accepted.

Table 5:

Undergraduate Attitude towards Computer-Based Tests as an Assessment Mode in General Studies Based on Age.

Age	Sum of Squares	DF	Mean Square	F-value	Sig. of F (p-value)	Remark
Between Groups	44.753	3	14.918			
Within Groups	10036.528	206	48.721	.306	.821	NS
Total	10081.281	209				

NS: Not significant at 0.05 alpha level

Table 5 shows an F-value of .306 which is not significant at 0.05 alpha level ($P > 0.05$). Thus, the null hypothesis of no significant difference in the in the undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma based on age is therefore accepted.

Table 6:

Undergraduate Attitude towards Computer-Based Tests as an Assessment Mode in General Studies Based on levels.

Levels	Sum of Squares	DF	Mean Square	F-value	Sig. of F (p-value)	Remark
Between Groups	.165	1	.165			
Within Groups	10081.116	208	48.467	.003	.954	NS
Total	10081.281	209				

NS: Not significant at 0.05 alpha level

Table 6 shows an F-value of .003 which is not significant at 0.05 alpha level ($P > 0.05$). Thus, the null hypothesis of no significant difference in the undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma based on level is therefore accepted.

Discussion of Findings

The findings from research question one revealed that undergraduates' generally have positive attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma. The finding of this study is in agreement with Dammas (2016) findings, which shows that the majority of respondents have positive attitude towards CBT, (83.7 %) of students said they were competent with the use of computer due to their prior experience.

The result of the hypothesis one revealed that there is no significant difference in undergraduates' attitude towards computer-based tests as an assessment mode for general studies in Federal University Dutsin-Ma based on gender ($t = .351, P > 0.05$), mode of entry ($t = .913, P > 0.05$), faculty of study (F-value .801, $P > 0.05$), age ($F = .306, P > 0.05$) and levels ($F = .003, P > 0.05$). Therefore, hypothesis one is accepted.

The results obtained from hypothesis one is supported by the study of Yurdabakan (2012) which stated that both genders (male and female) had positive views on computer-based test. Yurdabakan (2012) and Leeson (2006) reported that the attitudes of males and females towards computer-based tests are under the influence of social environment.

In addition, the findings of the study is against the study of Lim, Ong, Wilder-Smith and Seet (2006) on Computer-based versus pen-and-paper testing: Students' perception. The result of their finding reveals that 79.8% of their respondents who were final year medical students in a University preferred CBT. The finding of this study is not in agreement with Sanni and Mohammad (2015) findings, which noted that respondents within the age of 16-20 strongly agree (75 respondents) that they prefer CBT to conventional exams. This shows the rising influence of computer knowledge among the young generation than for older ones. This reveals that age is a significant variable in influencing the respondents' perception for CBT over conventional examinations.

Recommendations

The researchers made the following recommendations based on the results of the study:

- i. Undergraduate students should be encouraged to improve their computer skills for better performance in their GST CBT examinations.
- ii. Regular training should be given to students by the University management on how to use computer during GST CBT examinations to enhance their performance.

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