

Attitude of Undergraduate Students Towards Computer-Based Test (CBT): A Case Study of the University of Ilorin, Nigeria

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ABSTRACT

This study examined the attitude of the students towards computer-based test (CBT) at the University of Ilorin, Nigeria. A case study research design was adopted to carry out the study. The sample consists of 2209 undergraduate students selected from seven out of the ten Faculties that made up the university. Data were collected through a computer based test attitudinal survey (CBTAS) and a focus group discussion. The results demonstrated that; generally, respondents have positive attitude towards CBT. More than average of the respondents prefer CBT to paper and pencil test. Respondents also demonstrate strong perception of increase in their learning performance as a result of taking CBT/examination. On the other hand, problems such as shortage of computers, lack of skills, loss of data in the process of writing CBT, slow network and hazard of reading on the screen were identified.

Keywords: *Attitude, Computer Anxiety, Computer Assisted Learning, Computer Based Test (CBT), E-Learning, Nigeria, Test Anxiety, Undergraduate Students*

INTRODUCTION

As the 2007/2008 academic session of the University of Ilorin, Nigeria ended May 2008, prospective candidates for admission into the university for 2008/2009 academic session were notified that the senate of the university has decided that admission exercise would be

by computer-based test (CBT) in English and General paper (aptitude test).

An individual's attitude is an important variable in the learning process, Gattiker and Hlvaka (1992) observed that research assessing the attitude of the undergraduate to a computer-based test is lacking. This is a reflection of the fact that research such as this has never been conducted in the context of the University of Ilorin, Nigeria. The University of Ilorin introduced the process of using computer for writ-

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ing test and examination by the undergraduate students in 2008. In the light of this, knowing the attitude of the students towards this mode of tests and examinations writing is important for the university to know where improvement is needed to further enhance the exam delivery method. It is tempting to assume that students entering school today are computer savvy and would prefer computer-based activities to more traditional activities such as reading a book. However, there is little published data evaluating the attitude of students towards computer based testing particularly in the Nigeria university setting. This study therefore, sets out to examine the attitude of undergraduate students towards computer based test/ examination at the university of Ilorin, Nigeria.

Review of the Literature

There are numerous variables that impact on student's performance when questions are presented on a computer, such as the quality of the monitor (Schenkman, Fukuda, & Persson, 1999) and others. Attitude is one of the most prominent variables that have not been so much considered in various related studies particularly from the African context and Nigeria particularly. Attitude by definition is an inner psychic state influencing behaviour. We can understand an inner state from actions and words. For instance, we may presume that a person actively avoiding a computer has a negative attitude towards it. Attitude is not an inborn, instinct phenomenon; it mainly depends upon person's experience and its impact in a new situation (Saparniene, Merkys, & Saparnis, 2002). Consequently, attitudes are formed in the process of experience and their change is possible due to the internal and external factors. In other words, attitude towards computer based test in this study is defined as ways of thinking and feelings of the students towards taking computer-based test.

Previous Studies

In early studies, the main research focus was on whether computer-based tests were equivalent

to paper-and-pencil tests when computers gave exactly the same tests as those given in paper-and-pencil formats. In order to define score equivalence, the American Psychological Association (APA) in 1986 published the Guidelines for Computer-Based Tests and Interpretations. The guidelines define the score equivalent of computerised tests and conventional paper-and-pencil test in two ways. First, as the rank order of scores of individuals tested in alternative modes closely appropriating each other. Secondly, as the means, dispersions and shapes of the score distributions being approximately the same by re-scaling the scores from the computer tests versions (APA, 1986). The guidelines also require that any effects due to computer administration be either eliminated or accounted for in interpreting scores. In their empirical study, Olsen *et al.* (1986) compared paper-administered, computer-administered, and computer-adaptive tests by giving third- and sixth-grade students mathematics applications achievement tests. This study found no significant differences between paper-administered and computer-administered tests, and equivalences among the three test administrations in terms of score rank order, means, dispersions, and distribution shapes. Mazzeo and Harvey (1988) (Envisage International Cooperation, 2010) pointed out that computer-based test may affect test scores and consequently their equivalence with paper-and-pencil versions, and that test with reading passages may be more difficult when given on computers. Summarising all the mentioned studies, Bugbee (1996) concluded that the use of computers really affects testing; however, computer-based and paper-and-pencil tests can be equivalent provided the test developers take responsibility by showing how the equivalent can come by. Bugbee (1996) stated that the barriers to the use of computer-based testing are inadequate test preparation and failure to grasp the unique requirements for implementing and maintaining computer tests. In other words, Bugbee reminded us that some factors such as the design, development, administration and user characteristics must be taken into consideration when computers are used

for testing. This justifies the reason why this study focuses on one of the users characteristics which is attitude.

CBT and Attitude

Stricker, Wilder, and Rock (2004) assess test takers' acceptance of the computer-based version of the Test of English as a Foreign Language (TOEFL), and the links between this acceptance, general attitudes about tests. A questionnaire concerning attitudes about the test, familiarity with computers, and other relevant variables was administered to TOEFL test takers at large testing centers in Buenos Aires, Cairo, and Frankfurt. Attitudes about the TOEFL were moderately positive and had similar patterns of relationships in the three countries: slight or moderate with test performance, moderate with general attitudes about tests, slight with computer anxiety and test anxiety, and minimal with other variables.

Butler (2003) conducted a study on the Impact of Computer-Based Testing on student attitudes and behaviour. He reported that overall, a moderate number of tests were associated with better student attitudes. Student attitudes were generally more positive toward the proctored, computer-based testing facility than toward in-class, pencil and paper testing. Because this study did not involve careful manipulation of the independent variables, some of these attitude effects may have been due to the practices of faculty members or other unmeasured variables.

Anxiety

Anxiety can be defined as the feeling of worry, nervousness or unease about something with uncertain outcomes. In other words, it is the strong desire or concern to do something or for something to happen. It has been observed that students particularly those with limited or no prior experience with computer are usually anxious about taking computer-based test. Studies on students' computer anxieties such as Wise and Plake (1989) found that immediate feedback may contribute to students' test anxiety. Bernt *et al.* (1990) also point out that

general computer-test anxiety may influence test-takers. They considered that, although anxiety tends to be a random variable among people, it must be identified and dealt with. The research studies mentioned above help us understand that students may experience less academic achievement in computerized testing situations initially, but the detrimental effects (computing anxiety and/or test anxiety) appear to diminish with time. Successive computerized testing environments produced notably higher academic achievement for several groups. Effective design and implementation of computer applications courses are incomplete without a study of the evaluation methods used to test students' computing skills and attitude towards the electronic test delivery method. The pertinent question now is, does anxiety affect students' attitude towards CBT? It is necessary to address these questions before recommendations can be made to incorporate "electronic only" evaluations for students.

Donn (1991) investigates the effects of a computer-based test on the achievement and test anxiety of students, explored the relationship between computer anxiety and computer experience, and assessed the affective impact of computerized testing on students. The results suggest that the mean achievement score was significantly higher for the computer-based group. There was no significant difference in test anxiety between the groups. No significant relationship existed between the students' computer experience and the computer anxiety evoked as a result of taking the computer-based test. Reactions toward computer-based testing were generally positive. It is concluded that if computerized test-taking tasks are kept simple, even test-takers with minimal computer experience may not be disadvantaged.

Preference

Preference is a greater liking for one alternative against another or others. Marson, Patry, and Berstein (2001) examine the equivalence between computer-based and traditional tests when the computer testing program provides

opportunities comparable to paper testing conditions. Twenty-seven introductory psychology students completed ten identical unit tests via paper or computer. The results indicated that, when students are motivated and testing conditions are equivalent, there are no differences between the scores obtained via computer-based or paper-pencil tests. Similarly, Lynch (1997) found no significant differences in test mean scores for 87 community college students enrolled in three sections of Introductory Psychology when comparing computerized versus paper and pencil tests.

CBT and Achievement

Ricketts and Wilks (2002) assert that one of the benefits claimed for computer-based assessment is that it can improve student performance in summative assessments. A first-year module on numeracy and statistics in Biology, online assessment was used. Analysis of student results after the first year show that students using online assessment did not perform as well as those using OMR-marked multiple-choice questions. The difference in performance could not be attributed to a weaker student cohort. In the second year student performance improved dramatically when they were not required to scroll through the question paper. This study's results suggest that students may be disadvantaged by the introduction of online assessment, unless care is taken with the student-assessment interface.

Aside of the findings of the studies reported above, there are other previous relevant studies. Wingenbach (2000) determine if a statistical relationship exist between academic achievement and exam delivery method for students enrolled in a Computer Applications in Agriculture course during spring semester 1999. A purposive sample of college of agriculture students ($n = 45$) had their computing application skills tested through traditional (paper and pencil) and electronic (e-mail) methods. Significant, moderately positive associations resulted between academic achievement and exam delivery method for the quiz exam scores.

Agriculture students who took the quiz using paper and pencil had significantly higher scores than did students who took the quiz through an electronic version. A significant moderate relationship exists between academic achievement and learning style for the quiz; field-independent students achieved significantly higher quiz scores than did field-dependent learners. No significant associations were found between academic achievement and students' attitudes towards computers, computing anxiety levels, attitudes towards electronic exams, or gender.

METHODOLOGY

Based on the review of literature above, the study assesses the attitude of the undergraduate students towards computer based test at the University of Ilorin, Nigeria. To achieve this objective, the following research questions were developed to guide the study.

1. What is the general attitude of the students towards computer based test?
2. What is the students' preference for CBT?
3. What is the students' level of anxiety and comfortability towards taking computer based test.
4. What is the students' perception of the impact of CBT on their learning performance?
5. What problems are encounter by the students on CBT?

Research Design

Both qualitative and quantitative methods were applied using case study design. Quantitative method was used in capturing and reporting data on students' general attitude to CBT, preference, anxiety level, impact of CBT on learning and problems. Qualitative method was used in analysing data on the other variables considered in the study (solution to problems of CBT). Fielding and Schreier (2001) noted that the conventional approach to triangulation was that if diverse kinds of data supported the same conclusion, confidence in the conclusion will

increase. They pointed out that qualitative aspect of the research exposed factors that participants were willing to explicitly articulate (while not being obvious to the researcher) whereas quantitative element enabled the identification of factors that were effective but not consciously articulated during the research process.

The procedure for the sample selection from the population of the study followed census of all the ten faculties of the university. Eventually, seven out of the ten faculties that made up the university participated in the study. These are Faculty of Art, Agricultural Science, Business and Social Sciences, Communication and Information Sciences, education, Engineering Technology, and Science. The other three faculties, Law, Medical and Health Sciences do not usually take CBT or examination as at the time this study was conducted. In all a total of 2209 students responded to the questionnaire while a focus group was set up in each of the seven participating faculties.

A self developed questionnaire tagged Computer Based Test Attitudinal Survey was used for the collection of data on the study. The design of the questionnaire was informed by the objectives and research questions focused by the study, literature review and questionnaire and survey used in previous related studies. The questionnaire was divided into two sections, A and B. Section A required the participants' bio-data information while section B contained the items (this Section B is further divided into seven (7) parts.

Part 1: General Computer Skill measured the respondents' general computer skills.

Part 2: General Attitude to CBT measured the respondents' general attitude to CBT.

Part 3: Preference for CBT measured the respondents' preference for CBT.

Part 4: Anxiety measured the respondents' general anxiety towards CBT. **Part 5** and measured respondents comfort for taking taken computer based tests or examinations.

Part 6: Perceived Impact of CBT on Performance measured respondents' perceived

impact of taken CBT on their academic performance.

Part 7: Problems and Solutions to CBT Tests required the identification of problems respondents encounter during computer based tests/examination and the solution to the problem.

Interview: Aside of the computer based test attitudinal survey (CBTAS) administered to the respondents; seven (7) focus groups consisting of (7) respondent taken from each faculty that participated in the study were constituted. This gave a total of 49 respondents that took part in the focus group. The interview took place in the respondents' respective faculty. The items of the interview included predetermined open ended questions. Interview for each of the focus group lasted 15 minutes. Responses were voice recorded based on respondents' acceptance of the arrangement and these were later transcribed into a meaningful content.

Validity and Reliability: The survey questionnaire was given to three experts in computer-based test for scrutiny. Based on the suggestions, comments and observations of these experts, some of the items in the instrument were removed and substituted while others were modified. The fact that some items in the questionnaire were taken from the questionnaire used in previous related studies in turn contributed to validity of the instrument. To ensure the reliability of the instrument, it was administered on 50 Sandwich degree students from the Faculty of Education who did not eventually take part in the study. Tests re-test reliability of two weeks interval was later conducted. The results obtained was subjected to a Cronbach alpha and the overall reliability of the questionnaire returned an $r = 0.94$. The reliability for each of the sub-parts in section B are as follows: General Computer Skills $r = 0.87$, Attitude to CBT $r = 0.88$, preference for CBT $r = 0.90$; Anxiety $r = 0.85$; Comfortability with CBT $r = 0.89$.

Data collection procedure: The questionnaire (CBTAS) was administered during the time series of continuous assessment were being conducted for the second semester examination which took place in May-June 2010 at the university CBT arena. A total of 3500 copies of questionnaire were distributed to the respondents. The questionnaire was administered to all the students who were at the arena for one CBT/examination or the other. Instructions were clearly read to the respondents and they were assured of the confidentiality of their responses. Respondents were given 15 minutes to complete the questionnaire. Before administration, permission was sought from appropriate authority at the university. Informed consent of the respondents was also sought and the respondents were given opportunity to decide whether or not to participate in the study. They were also assured of keeping their responses confidential. Completed questionnaires were collected immediately. Some students refused feeling the questionnaire complaining that they are already in examination mood and does not want any distraction.. Out of the 3500 copies of questionnaire distributed, a total of 2209 copies of questionnaire were returned properly filled. This gave a return rate of 63.1%. These were used for the data analysis on the study (see Tables 1, 2, and 3 for the sample distribution based on faculty, department, and level of study). Interview data on the other hand were analysed and presented thematically.

Data analysis: Data collected from the questionnaire administration were coded and analysed using statistical package for social sciences (SPSS). Descriptive statistics including mean, standard deviation, simple percentage and frequency count were performed. Qualitative data collected were analysed thematically under each of the theme and variables focused in each of the research question.

RESULTS

Bio-Data Information

The highest number of respondents was from the faculty of Science with 20.96%, followed by the faculties of Agricultural science and Engineering with 16.07% respectively. The faculty of Business and Social sciences is the next with 15.48%. Other faculties followed in this order: Education, 13.36%; faculty of Art, 13.08% and faculty of Communication and Information Sciences 4.98%. Summarily, 7 faculties out of the 10 faculties that made up the university participated in the studies. The remaining 3 faculties did not have record on CBT as at the time the study was conducted. Faculty of communication and Information Sciences is a new faculty. This may be the reason for its lower participation in the exercise. The higher number of respondents from the faculty of science indicates that they have the highest number of students taking CBT and examinations.

Some 36 departments participated in the study. The department of Agricultural Economics and Farm Management produced the highest respondents 79 (3.6%). This is followed by Agronomy 75 respondents (3.4%). Departments of Agricultural Extension, Rural Development and Mechanical Engineering had 74 respondents (3.34%) each while Animal Production, Agricultural Bio-System Engineering and Civil Engineering had 73 (3.30%) respectively. The Department of Home Economics and Food Science produced the lowest respondents 34 (1.3%).

Further results reveal that respondents in 200 levels (year two) were the majority with 704 (31.9%). This is followed by respondents in 300 level (year three) with 669 (30.3%). Respondents in 400 level (year four) followed with (30.1%) while respondents in 500 level were the lowest with 171 (7.7%). The lower rate of participation of the respondents in 500 level (year five) may be attributed to the fact that very limited number of faculties and departments has course duration of five years.

Table 1. General attitude of the students to computer based test (N = 2209)

SN	ITEMS	YES	NO	No Option
1.	I like the computer based test (CBT)	1280 (58.0)	885 (40.0)	44 (2.0)
2.	Computer based testing (CBT) is more efficient than paper and pencil testing	1250 (56.6)	910 (41.2)	49 (2.2)
3.	The computer based test (CBT) is easy to read on the screen	1100 (49.8)	800 (36.2)	309 (14.0)
4	The typing speed significantly influenced my completion time	1260 (57.1)	670 (30.3)	279 (12.6)
5	My best choice is CBT and not paper and pencil test	1255 (56.8)	954 (43.2)	--

The distribution of respondents based on gender indicated that 60.6% were male while 39.4% were female. This implies that majority of the respondents that took part in this study were male. With this result, it is assumed that male prefer CBT than the female.

The age distribution of respondents shows that majority of the respondents (40.3%) fall between the ages of 21 – 25 years. This is followed by respondents between the ages of 16 – 20 years with (29.8%). Next to this are respondents between 26 – 30 years with (21%) while respondents in the age group 31 – 35 years and above amounted to (8.9%).

Table 1 reveals that more than average of the respondents indicates they like computer-based test. More than average indicated CBT is more efficient than paper and pencil tests while about average indicate CBT is easy to read on the screen and that their best choice is CBT. This result suggests that respondents have positive attitude towards CBT.

Regarding preference for CBT, the result in Table 2 shows that (57.5%) prefer computer based test to paper and pencil test. On the other hand, (41%) indicated that they prefer paper and pencil to CBT while (1.5%) indicated combination of both. This implies that more than average of the respondents prefer CBT to paper and pencil test.

Concerning CBT, (58.9%) of the respondents indicated they would still be part of the school if greater emphasis is place on writing all tests/ examination on CBT. On the other hand (41.1%) were of the contrary opinion. This complements the result in Table 6 where respondents who prefer CBT were more than those who prefer paper and pencil test or the combination of both.

Table 3 reveals results on anxiety towards computer-based test. The results show that 90.4% of the respondents agreed that writing CBT makes them nervous while 5.6% disagreed. The result also reveals that 85% agreed that writing computer based test is frustrating while

Table 2. Students' preference for CBT

Test Preference	Frequency	Percentage
Computer Based Test	1269	57.5
Paper and Pencil test	906	41.0
Combination of both	34	1.5
Total	2209	100.0

Table 3. Anxiety towards taking computer based test

S/N	ITEMS	SA	A	N	D	SD
1	Writing CBT makes me nervous	1380 (62.5)	617 (27.9)	88 (4)	100 (4.5)	24 (1.1)
2	Writing computer-based test/examination (CBT) is frustrating	1200 (54.3)	700 (31.7)	75 (3.3)	180 (8.2)	34 (1.5)
3	The CBT increase my test anxiety	1385 (62.7)	620 (28.1)	30 (1.4)	80 (3.6)	94 (4.3)
4	The typing sound made by other people made me nervous	800 (36.2)	803 (36.4)	104 (4.7)	308 (13.9)	194 (8.8)
5	Most of the time, I forgot what I have read in preparation for the computer-based test/exam (CBT) before it's my turn.	1400 (63.4)	589 (26.7)	50 (2.3)	90 (4.1)	80 (3.6)

Note: Strongly Agree + Agree = Agree and Disagree + Strongly Agree = Disagree.

9.7% disagreed. Similarly, 72% agreed that the typing sound made by other people made them nervous while 22.7% disagreed. Moreover, 90.1% agreed that they forgot what they read in preparation for the computer-based test while 7.7% disagreed. It is clear from this table that percentage of strongly agreed and agreed to all the five items on the table is greater than the percentage of disagreed and strongly disagreed. This implies that respondents in this study have high level of anxiety towards computers-based test.

Results (Table 4) demonstrate that more respondents 88.1% agreed that they were comfortable writing computer-base test while 10.2% disagreed. Similarly, 84.1% agreed that the frustrations created by CBT were more trouble than they are worth while 13.6% disagreed. Furthermore, 93.9% agreed that CBT freed them from tedious reading thereby allowing them to concentrate on more difficult tasks at

the expense of 5.5% who disagreed. The result demonstrates that respondents in this study are comfortable taking computer-based test.

Results (Table 5) on the perceive impact of CBT on respondents performance reveals that 61.5% agreed that writing CBT help their learning. On the other hand, 35.4% disagreed with the statement. Moreover, 73.7% agreed that using CBT as supplementary to paper and pencil test improved their performance while 25.7% disagreed. Similarly, more respondents 89.9% agreed writing CBT has increased their skills and knowledge of writing exam on the screen. On the other hand, 8.8% of the respondents disagreed. It is also clear from this table that percentage of strongly agreed and agreed to all the three items on the table is greater than the percentage of disagreed and strongly disagreed. This implies that respondents in this study have a strong perception that CBT has impacted their performances.

Table 4. Comfortability of taking computer based test

S/N	ITEMS	SA	A	N	D	SD
1.	I am comfortable writing computer-based tests/exams	1301 (58.9)	644 (29.2)	39 (1.8)	95 (4.3)	130 (5.9)
2.	The frustrations created by CBT are more trouble than they are worth.	1274 (57.7)	582 (26.4)	54 (2.5)	180 (8.2)	119 (5.4)
3	CBT frees me from tedious reading thereby allowing me to concentrate on more difficult tasks.	1470 (66.6)	604 (27.3)	12 (0.5)	67 (3.0)	56 (2.5)

Table 5. Perceived impact of CBT on performance

S/N	ITEMS	SA	A	N	D	SD
1.	I believe that writing computer based test (CBT) would help my learning.	970 (43.0)	408 (18.5)	50 (2.3)	532 (24.1)	249 (11.3)
2.	Using CBT as a supplementary to paper and pencil test has improved my performance.	1012 (45.8)	617 (27.9)	12 (0.5)	378 (17.1)	190 (8.6)
3	Writing computer based test/exam has increased my skills and knowledge of writing exam on the screen.	1500 (67.9)	486 (22.0)	29 (1.3)	77 (3.5)	117 (5.3)

Note: Strongly Agree + Agree = Agree and Disagree + Strongly Agree = Disagree.

To determine the problems encounter when taking CBT/examination, some spaces were provided for the respondents to write out the problems. These responses were summarised into five major problems as appear in Table 6. A Friedman Test was then conducted to indicate how significant and importance these problems are.

On the problems encounter when taking CBT/ examination, the result reveal shortage of computer was ranked as the common problem with a mean rank of 9.63. Following this immediately is the problem of lack of skills of taking CBT with a mean rank of 9.25. The next problem identified is loss of data in the process of writing CBT with a mean rank of 9.05. Slow network was the next problem with a mean rank of 8.67 while hazard of reading on the screen was the last identified problem with a mean rank of 7.43. The result of a Friedman Test performance on the problems encounter on CBT reveals that all the identified problems were significant problems with Chi-square observed of 15.7 at 0.001 level.

RECOMMENDATIONS

The results of the interview conducted for the focused group organised by the researcher also confirm all these identified problem. Similarly, through the focused group discussion, respondents were able to explain the problems into detail. The issue about the shortage of computers was said to be the major problem as emphasised by the respondents. This to them is so severe to the extent that some them had to stay on campus till 12 midnight while some others 3am the following day before could be able to write their own test. With this development, one respondent declared that "in the process of waiting for ones turn on the queue, I forget all I have read in preparation for the test". In the light of this, the university authority is called upon to find means of extending the CBT platform so that it can takes hundreds of students at a time.

Lack of skills was also confirmed as one of the commonest problems by the respondents. On this issue, one respondent said that "I know the answer to most of the questions however typing

Table 6. Problems encountered on CBT

S/N	Items	Freq.	Mean Rank	Chi. Square	Sign. F
1.	Shortage of computers	1985	9.63	15.66	.001
2.	Lack of skills	1877	9.25		
3.	Loss of data in the process of writing the test	1840	9.05		
4.	Slow network	1755	8.67		
5.	Hazard of reading on the screen	1236	7.43		

speedily is my problem". In the light of this, it is suggested that the university should include a computer based course where the students will be taught preliminary, foundation or basic computer skills. This will also takes care of the loss of data in the process of writing CBT test.

On the slow network issue, respondents indicate how frustrating this could be. One respondent have this to say "it is one thing for candidate to know the answer to the questions and very fast in typing, the slowness of the network is another". Respondents explained that sometimes they want to write and finish on time but the sluggish nature of the network most often debarred them of this. In the light of this, it was suggested that the university should go for the higher bandwidth so that the network can perform better than it at the moment. Moreover, it was suggested that alternative should be provided in form of a paper and pencil test for student who finds it difficult to read on the screen.

DISCUSSION

As pointed out earlier in this study, there have been limited studies addressing the issue of attitude towards computer-based test (CBT) in Nigeria and specifically at the University of Ilorin where CBT has been in use for the past three years. The result of the first research question on the study has revealed that: generally, respondents have positive attitude towards CBT. This is actually in accordance with the findings of some of the previous studies conducted outside Nigeria. For instance, Fancovicova and Prokop (2008) who reported that attitude toward ICT were positive and that school had effect on the behavioural dimension of attitudes, but this was not caused by the accessibility of computers per se. Similarly, the reports is supported by Stricker, Wilder, and Rock (2004), Butler (2003), and Howard, Parm, and Grauer (2003); all of whom report that overall, a moderate number of tests were associated with better student attitudes. Student attitudes were generally more positive toward the proctored, computer-based testing

facility than toward in-class, pencil and paper testing. However, no report actually contradicts the present finding on the general attitude of respondents to CBT. This buttresses the reports above thereby indicating that students not only in the context of the University of Ilorin, Nigeria have positive attitude to CBT than paper and pencil test. Another very important result revealed in this study is that more than average of the respondents prefer CBT to paper and pencil test. The reports by Marson, Patry, and Berstein (2001) and Lynch (1997) confirm this result. This preference may be attribute to the benefits associated CBT which include increase in respondents' learning performance.

The results also demonstrate strong perception that CBT increase respondents' performance in learning. The report by Donn (1991) supports this finding by indicating that reactions toward computer-based testing were generally positive. Donn concluded that if computerized test-taking tasks are kept simple, even test-takers with minimal computer experience may not be disadvantaged. Similarly, Ricketts and Wilks (2002) assertion that 'one of the benefits claimed for computer-based assessment is that it can improve student performance in summative assessments' also support the fact that CBT has the capability of improving learning performance. The result of the study conducted by Eid (2005) also lend a good credence to the findings in this study by indicating: 1) students did achieve similar scores for math problem-solving tests administered on the computer and on paper; 2) students did achieve similar scores for math problem-solving tests administered on the computer and on paper; 3) computer anxiety did not affect students' online test scores; and 4) computer experience did not affect students' online test scores. Based on the review of literature above, the study assesses the attitude of the undergraduate students towards computer based test at the University of Ilorin, Nigeria. However, Wingenbach (2000) contradict this result by stating that no significant associations were found between academic achievement and students' attitudes towards computers, computing anxiety levels, attitudes towards electronic

exams. This may be due to the variation in the context in which the two studies were conducted using respondents with different cultural background.

Moreover, problems such as shortage of computers, lack of skills, loss of data in the process of writing CBT, slow network and hazard of reading on the screen were identified by the respondents. While some of these problems are peculiar to developing countries. Others are due to the computer literacy skills which CBT test takers. Therefore, this is unexpected.

IMPLICATIONS

Clearly the results of this study have implications for learning and education generally, as well as for further research. Given the positive attitudes towards CBT demonstrated by the respondents in this study, it implies that respondents in the study are suited for a full range of technology courses. This is assumed will fast-track the process of transforming delivery of courses at the university to complete online. The positive attitudes and comfort levels with technology may make respondents especially adept at creative applications of technology. The most important implication resulting from this study involves recognizing the magnitude of the perceived impact of CBT and its effect on academic achievement, anxiety, enjoyment and comfortability and attitudes toward computers. It is believed that early identification of learners who are not skilful in taking CBT test will allow the instructor, teaching assistants, and/or cooperative learning teams an opportunity to provide additional assistance for students who find taking CBT an academic challenge.

CONCLUSION

This study has examined the attitude of the students towards computer-based test CBT. And so far, the results have demonstrated that; generally, respondents have positive attitude towards CBT. More than average of the respondents prefer CBT to paper and pencil test. The results

also demonstrate strong perception that CBT increase respondents' performance in learning. On the other hand, problems such as shortage of computers, lack of skills, loss of data in the process of writing CBT, slow network and hazard of reading on the screen were identified by the respondents. From personal development and utilization experiences of CBT at the University of Ilorin, Nigeria, the author concludes that computer-based testing (CBT) is becoming a major testing alternative. It is expected that more research will be conducted on computer based testing environments and systems will be developed to benefit the students and the university as a whole.

Further Study

In the light of this future researcher are called upon to consider carry out relevant studies on the impact of CBT on the university from the point of view of the various stakeholders including academic and administrative staff. Moreover, more study is needed on the comparative analysis of CBT performance based on faculties or disciplines. Studies such as this should be conducted when students are not preparing for examinations. This is to be able capture larger percentage of the students.

Limitations of the Study

Despite covering a large number of respondents, this study has some shortcomings. These include limited number of people interviewed. This study was conducted when students were preparing for their first semester examination. As a result, very few people were ready to surrender themselves for interview or taken part in the focus group. The results also reveal that respondents in this study despite being comfortable have high level of anxiety towards CBT.

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