

Pre-service Teacher's Perception and Attitude towards the use of Computer-Based Test for Assessment in Adeniran Ogunsanya College of Education

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Abstract: *Over the past few years, there has been a considerable increase in the usage of computer-based exams (CBTs) in various sectors of the economy. Education sector was not left behind, some schools have introduced the use of CBT during examinations, but the chosen location have not. This project aims to close a researchable research gap. This study used a mixed-methods research design in which both qualitative and quantitative methods were applied. The intended audience consisted of Adeniran College of Education 300-level students. From the five schools of Adeniran Ogunsanya College of Education in Lagos State, 300 level pre-service teachers made up the sample size. To elicit a response from the respondents, two tools were used. The preservice teachers' attitudes about CBT for assessment were elicited using an interview template that included seven open-ended questions. Also, a questionnaire titled "pre-service teachers' perception (PSTP) towards the use of CBT for assessment was administered. The two instruments were validated by experts in Education and reliably tested at 0.77 for the interview guide and 0.81 coefficient for the questionnaire. The data was examined using mean and percentage descriptive statistics from the survey, and a t-test with a significance level of 0.05 was utilized to assess the proposed hypothesis. According to the study's findings, preservice teachers have a favorable opinion of the use of cognitive behavioral therapy (CBT) for assessment. However, how they feel about CBT depends on the difficulties they encountered while undergoing CBT; some preservice teachers found it difficult to express themselves using Cognitive behavioural therapy. It was based on the findings that the study recommends that, preservice teachers in Adeniran Ogunsanya College of Education should be encouraged to learn how to operate and use CBT among others.*

Keywords: *preservice, teacher, Computer-based-test, assessment, perception, attitude*

Introduction

The t.test was used to test the formulated hypothesis at the 0.05 level of significance after the data were analyzed using descriptive statistics of mean and percentage from the questionnaire. According to the study's findings, preservice teachers have a favorable opinion of the use of cognitive behavioral therapy (CBT) for assessment. Their attitude toward the technique depends on the difficulties they encountered while undergoing CBT; some preservice teachers express themselves more freely when using CBT, while others find it uncomfortable. The study's conclusions suggest that, among other things, preservice teachers at Adeniran Ogunsanya College of Education should be encouraged to learn how to operate and use CBT. The test focuses on the value and merit of the data when applied to a particular use or context. To properly assess and assign values to test findings, teachers and administrators need analytical skills. With the assistance of the test sponsor, test developer, and test administrator, tests and testing processes are frequently predicated on providing high-quality exams to test takers in a financially prudent manner (Bennett, 2012).

Alabi, Issa, and Oyekunle (2012) found that the paper-based test had a number of problems, such as laborious procedures because the test was given simultaneously at many distant centers and marked manually; high risks of accidents for the staff involved and prospective students traveling for the paper test; the cost of administering the test on the part of the examination bodies, such as honoraria for invigilators, coordinators, markers, and collato Paper-based exam concerns also required substantial financial and human resources (Jimoh, Yussuff Akanmu, Enikuomehin, & Salman (2013). According to Davey (2011), there are many options accessible today for determining which technology is the most crucial.

According to Zhang, Powers, Wright, and Morgan (2013), technology is useful for creating responses on a computer screen, enabling real-time monitoring of the quality of marking, and possibly doing away with the need to assemble examiners. Technology has recently opened up a wide range of new possibilities for innovation in educational evaluation through potentially strong mechanisms for scoring, reporting, and real-time feedback. The construction of the management information system (MIS) unit is one of several attempts made by universities to incorporate information and communication technology (ICT) into the administration and teaching

processes (Mejabi & Raji 2010). Universities incorporate some information and technology for the aim of testing students on this note. As a result, computer and internet technologies have proved beneficial for a variety of tasks, including managing employees and accounting, sending course materials, announcements, and assignments, and tracking and recording student information (Bennett, 2019). Computers and related technology also provide powerful tools to address the challenges of creating and implementing assessment techniques that go beyond the accepted norms and enable the recording of a larger variety of cognitive abilities and knowledge (Olumorin, Fakomogbon, Fasasi, Olawale, Olafare, 2013).

Thematics, which is regarded as the cornerstone of science and technology, is the instrument for achieving scientific and technical advancement. The importance of mathematics in the interactions between mathematics, science, and technology is noted by Olusi and Anolu (2010), who draw the conclusion that science cannot exist without mathematics. Gauss (2010) emphasizes once more that society cannot exist without contemporary technology. According to Eze (2017), mathematics is an essential tool for people to be able to perform well in the current technology age, especially when using ICT. Science grew through the use of mathematical principles. Students are unable to use ICT or participate in CBT if they lack mathematical understanding.

According to Andrew, Pullen, and Harper (2019), some benefits of CBT for institutions and students include time analysis of responses to the question level to better discriminate between candidates, including video in questions for scenarios in authentic assessment, adaptive testing, where the next question to be posed is determined by the previous response(s), question banks, and randomization of questions and response orders to reduce cheating, and automated analysis of results. The cost of purchasing a computer, technical difficulties during exams, an overreliance on computers for testing, and the reduction in paper and administration costs are some of the drawbacks of using CBT for assessment (Pinner, 2011). Additionally, even employing computers for testing, human error can never be totally eliminated. Over the past few years, there has been a considerable increase in the usage of computer-based exams (CBTs). The most used type of CBT is linear CBT, a fixed-length computerized assessment that provides the same number of items to each examinee in a predetermined order. The score is often based on the number of properly answered answers. Evidently, linear CBT mimics a paper-based test that is delivered digitally and pays little to no consideration to the abilities of each individual examinee. Due to the adoption of the computer-based test (CBT) method, exams in Nigeria are rapidly taking on a new appearance. Several Nigerian universities have started using the CBT approach to administer the post-UTME (Unified Tertiary Matriculation Examination) to prospective students.

According to Isuwa (2019), undergraduate students have a favorable opinion on the usage of computer-based tests for educational purposes. Yari (2022) shown that students at tertiary institutions dislike CBT for examinations since it causes them to fail the courses; as a result, their opinion of CBT is negative, even if this finding does not support his findings. According to Umar (2019), the government (country) is more ignorant than the pupils when it comes to the utilization of computer-based tests for evaluation purposes. According to Tunde (2012), there are no gender-based differences in undergraduate students' perceptions of CBT for evaluation.

Statement of the Problem

Despite the fact that higher education is changing the way tests are given out by using computers to administer them, Nigerian universities have not yet fully embraced this integration. In the majority of earlier research on computer-based tests in Nigerian universities, attitudes toward them and how well they affect students' academic achievement were taken into account, but other factors like the CBT's utility, usability, and fairness were not measured. However, only a small number of researchers were able to determine how users saw CBT without providing any insightful information on how students perceived it. Consequently, this study produced insightful findings about CBT's utility, usability, and believability.

Research Question

The following research question was raised and answered:

1. What is the perception of preservice teachers towards the use of CBT for assessment?
2. what is the attitude of pre-service teachers towards the use of CBT for assessment?

Research Hypothesis

The following research hypothesis was formulated and tested at 0.05 level of significance

Ho1: There is no significant difference of male and female pre-service teachers' perception on the use of computer-based test in Adeniran Ogunsanya College of Education

Methodology

The research design adopted for this study is a mixed method; Qualitative and quantitative method were used. The target population were 300 level students of Adeniran College of Education. The sample size comprised of three hundred level pre-service teachers from the five schools in Adeniran Ogunsanya College of Education, Lagos State. Two instruments were used to elicit response from the respondents. An interview guide was used comprising of seven opened questions was used to elicit responses based on the preservice teachers attitude towards CBT for assessment. Also, a questionnaire titled “pre-service teachers’ perception (PSTP) towards the use of CBT for assessment was administered. The two instruments were validated by experts in Education and reliably tested at 0.77 for the interview guide and 0.81 coefficient for the questionnaire. The data collected were analyzed using descriptive statistics of mean and percentage the questionnaire and t.test was used to test the formulated hypothesis at 0.05 level of significance.

Results

Demographic analysis

Table 1: Distribution of respondents based on gender.

| Gender | Frequency | Percentage |
|--------|-----------|------------|
| Male | 83 | 52.9 |
| Female | 74 | 47.1 |
| Total | 157 | 100.0 |

Tables 1 showed the gender distribution of the respondents eighty-three (83) of the respondents representing 52.9% were male while seventy-four (74) of the respondents representing 47.1% were female. From the analysis above, it is evident that male respondents were found to be more in number than female respondents.

Table 2: Distribution of respondents based on Name of school.

| Name of school | Frequency | Percentage |
|----------------|------------|--------------|
| ECE/SECPED | 42 | 26.8 |
| SOS | 29 | 18.5 |
| SASS | 43 | 27.4 |
| SOL | 14 | 8.9 |
| SOVTE | 29 | 18.5 |
| TOTAL | 157 | 100.0 |

Tables 2 showed the name of schools distribution of the respondents forty-two (42) of the respondents representing 26.8% were ECE/SECPED, while twenty-nine (29) of the respondents representing 18.5% were SOS, forty-three (43) representing 27.4% were respondents from SASS, while fourteen (14) of the respondents representing 8.9% were respondents from SOL, and twenty-nine (29) representing 18.5% were respondents from SOVTE. From the analysis above, it is evident that SASS respondents were found to be more in number than other respondents.

Research Question One: What is the perception of preservice teachers towards the use of CBT for assessment?

Table 3: Table showing the perception of preservice teachers towards the use of CBT for assessment.

| S/N | ITEM | SA | A | D | SD | MEAN |
|-----|--|----------|----------|---------|--------|------|
| 1 | Computers help me to improve my work better | 60(38.2) | 83(52.9) | 11(7.0) | 3(1.9) | 3.27 |
| 2 | Computers make it possible to work productively. | 50(31.8) | 90(57.3) | 13(8.3) | 4(2.5) | 3.18 |

| | | | | | | |
|----|--|----------|----------|----------|----------|------|
| 3 | Computers allow me to do more interesting and imaginative work | 59(37.6) | 80(51.0) | 16(10.2) | 2(1.3) | 3.25 |
| 4 | Computers helps me work faster | 19(12.1) | 45(28.7) | 79(50.3) | 14(8.9) | 2.44 |
| 5 | Computers can enhance the presentation of my work to a degree which justifies the extra work | 41(26.1) | 94(59.9) | 21(13.4) | 1(0.6) | 3.11 |
| 6 | Most things that a computer can be used for, I can do just as well myself. | 20(12.7) | 64(40.8) | 53(33.8) | 20(12.7) | 2.54 |
| 7 | I prefer CBT, it is easier to use during assessment | 47(29.9) | 74(47.1) | 26(16.6) | 10(6.4) | 3.01 |
| 8 | The use of CBT allows me to answer all questions before time lapses | 36(22.) | 76(48.4) | 39(24.8) | 6(3.8) | 2.90 |
| 9 | The use of CBT allows one get higher score | 20(12.7) | 58(36.9) | 67(42.7) | 12(7.6) | 2.55 |
| 10 | Any student with or without knowledge of computer can easily operate and use CBT for assessment. | 19(12.1) | 68(43.3) | 49(31.2) | 21(13.4) | 2.54 |
| 11 | I think computers improves my learning | 51(32.5) | 78(49.7) | 21(13.4) | 7(4.5) | 3.10 |
| 12 | I think whenever I use CBT, I answer questions correctly. | 24(15.3) | 57(36.3) | 56(35.7) | 20(12.7) | 2.54 |
| 13 | I am comfortable in the use of CBT | 41(26.1) | 77(49.0) | 28(17.8) | 11(7.0) | 2.97 |
| 14 | I would like to use CBT for all assessment in school | 37(23.6) | 67(42.7) | 40(25.5) | 13(8.3) | 2.82 |
| 15 | I think the use of CBT allows me to take greater control of my assessment | 36(22.9) | 84(53.5) | 30(19.1) | 7(4.5) | 2.95 |
| | Weighted Mean= 2.88 | | | | | |

Note: The figures in parentheses are in percentages

Table 3 above showed the perception of preservice teachers towards the use of CBT for assessment. The following shows the perception of preservice teachers towards the use of CBT for assessment.as follows: It was revealed that Computers help me to improve my work better (3.27), Computers make it possible to work productively (3.18), Computers allow me to do more interesting and imaginative work (3.25), Computers helps me work faster (2.44), Computers can enhance the presentation of my work to a degree which justifies the extra work (3.11), Most things that a computer can be used for, I can do just as well myself (2.54), I prefer CBT, it is easier to use during assessment (3.01), The use of CBT allows me to answer all questions before time lapses (2.90), The use of CBT allows one get higher score (2.55), Any student with or without knowledge of computer can easily operate and use CBT for assessment (2.54), I think computers improves my learning (3.10), I think whenever I use CBT, I answer questions correctly (2.54), I am comfortable in the use of CBT (2.97), I would like to use CBT for all assessment in school (2.82) and I think the use of CBT allows me to take greater control of my assessment (2.95). The overall weighted average mean was 2.88 which indicated that the calculated mean (2.88) is greater than the fixed mean (2.50). This showed that the perception of preservice teachers towards the use of CBT for assessment is positive.

Research Question Two: What is the attitude of pre-service teachers towards the use of CBT for assessment?

Question 1: Do you possess the right proficiency level in handling computers?

The respondents mentioned the right proficiency level in handling computers they possess. A theme was identified from their responses.

Theme: Yes

The theme identified was yes. 67 respondents representing 67.0% mentioned the yes, that they know the right proficiency level in handling computers, while 38 respondents representing 38.0% said no they do not know the right proficiency level in handling computers.

Question 2: Do you express yourself better through the use of computer during assessment?

The respondents mentioned how they expressed themselves better through the use of computer during assessment. A theme was identified from their responses.

Theme: Yes

The theme identified was yes. 48 respondents representing 48.0% mentioned the yes, that they express themselves better through the use of computer during assessment, while 55 respondents representing 55.0% said no they do not express themselves better through the use of computer during assessment

Question 3: Do you possess the right level of competence in handling computer related examinations?

The respondents mentioned if they possess the right level of competence in handling computer related examinations. A theme was identified from their responses.

Theme: Yes

The theme identified was yes. 56 respondents representing 56.0% mentioned the yes, that they possess the right level of competence in handling computer related examination, while 44 respondents representing 44.0% said no they do not they possess the right level of competence in handling computer related examination

Question 4: Are you comfortable with the use of this CBT in future tests and examinations?

The respondents mentioned if they are you comfortable with the use of this CBT in future tests and examinations. A theme was identified from their responses.

Theme: Yes

The theme identified was yes. 32 respondents representing 32.0% mentioned the yes, that they are you comfortable with the use of this CBT in future tests and examinations., while 68 respondents representing 68.0% said no they are you comfortable with the use of this CBT in future tests and examinations.

Question 5: Would you prefer tests and examination written using mobile phones?

The respondents mentioned if they would prefer tests and examination written using mobile phones. A theme was identified from their responses.

Theme: Yes

The theme identified was yes. 42 respondents representing 42.0% mentioned the yes, that they would prefer tests and examination written using mobile phones, while 58 respondents representing 58.0% said no they would not prefer tests and examination written using mobile phones.

Question 6: Mention some of the challenges you perceive during CBT period?

The respondents mentioned mention some of the challenges you perceive during CBT period. Six themes were identified from their responses.

Theme 1: Poor Network connection

The theme identified was Poor Network connection. Seven (7) respondents representing 5.8% said that Poor Network connection is a challenge perceived during CBT period. One respondent specifically said that “the major challenge faced when using CBT is that network connection used to be poor”.

Theme 2: No proper organization, waiting room, inconducive hall, too rowdy.

This theme identified was No proper organization, waiting room, too rowdy. Seventeen respondents representing 14.2% said that no proper organization, waiting room, inconducive hall, too rowdy are some challenges perceived during CBT period. One respondent specifically said that “during CBT period, the place used to be too rowdy”

Theme 3: Poor timing, not enough time, questions not in the course outline.

This theme identified was Poor timing, not enough time, questions not in the course outline. Nineteen respondents representing 15.8% said they Poor timing, not enough time, questions not in the course outline are some challenges perceived during CBT period. The respondent specifically said that during the CBT period, most questions asked are not in the course outline.

Theme 4: Answer not complete, Duplicate answers, bad reception, poor services, staff (lecturers) and aggressiveness.

This theme identified was Answer not complete, Duplicate answers, bad reception, poor services, staff (lecturers) and aggressiveness. Eighteen respondents representing 15% said they Answer not complete, Duplicate answers, bad reception, poor services, staff

(lecturers) and aggressiveness are some challenges perceived during CBT period. One of the respondents specifically said that during the CBT period, most lecturers are aggressive to students.

Theme 5: Inadequate orientation before test, poor power supply, inadequate, faulty, or malfunctioning computer system.

This theme identified was Inadequate orientation before test, poor power supply, inadequate, faulty, or malfunctioning computer system. Thirty-eight respondents representing 31.7% said Inadequate orientation before test, poor power supply, inadequate, faulty, or malfunctioning computer system are some challenges perceived during CBT period.

Theme 6: Time consuming in arrangement issue, checking of docket/stress of quitting.

This theme identified was Time consuming in arrangement issue, checking of docket/stress of quitting. fifteen respondents representing 12.5% said Time consuming in arrangement issue, checking of docket/stress of quitting are some challenges perceived during CBT period. Lastly, Six respondents representing 5% specifically said that during the CBT period, one challenge perceived is the fear of choosing the wrong answer, not familiar with computer based test or even tension.

Question 7: State the possible solutions to the challenges in F

The respondents mentioned mention some of the possible solutions to the challenges in F.

Seven themes were identified from their responses.

Theme 1: Stress free and question should be based on course outline

The theme identified was Stress free and question should be based on course outline. Twenty-seven (27) respondents representing 22.5% said that Stress free and question should be based on course outline is the solution to the perceived challenges. One respondent specifically said that “if the CBT can be done properly in an organized manner, it would be stress free. And if the questionnaire in line with the course outline, it would solve some challenges perceived.

Theme 2: paper and pencil for better expression and cancellation of CBT

This theme identified was paper and pencil for better expression and cancellation of CBT. Twenty-five respondents representing 20.8% said that paper and pencil for better expression and cancellation of CBT are some ways the challenges perceived during CBT period can be solved.

Theme 3: Provision of more computers systems, reduction of procedures for examinations.

This theme identified was Provision of more computers systems, reduction of procedures for examinations. Thirty-three respondents representing 27.5% said Provision of more computers systems, reduction of procedures for examinations are some solutions to the challenges perceived during CBT period. The respondent specifically said that during the CBT period, if there can be a great reduction of procedures for examination it would really improve the CBT examination

Theme 4: Stable power supply, standby generator, adequate and proper orientation before the CBT.

This theme identified was Stable power supply, standby generator, adequate and proper orientation before the CBT. Twenty-two respondents representing 18.3% said that Stable power supply, standby generator, adequate and proper orientation before the CBT are some solutions to the challenges perceived during CBT period.

Theme 5: invigilator should be more patient, not aggressive and more time should be allotted for each course especially mathematics

This theme identified was invigilator should be more patient, not aggressive and more time should be allotted for each course especially mathematics. Sixteen respondents representing 13.3% said that invigilator should be more patient, not aggressive and more time should be allotted for each course especially mathematics are some solutions to the challenges perceived during CBT period. One specifically said that, CBT period can be smoothly run if lecturers invigilating can be less strict, patient and allow for more time to solve mathematical problems.

Theme 6: Proper organization, adequate furniture, well ventilated halls, and sequential arrangement.

This theme identified was Proper organization, adequate furniture, well ventilated halls, and sequential arrangement. Seventeen respondents representing 4.2% said that Proper organization, adequate furniture, well ventilated halls, and sequential arrangement are some solutions to the challenges perceived during CBT period. Lastly, five representing 4.2% said that CBT period can be smoothly run if the use of mobile phones are encouraged to undertake examination. One specifically said that the use of phones should be used in writing examination. This can help reduce CBT challenges.

Research Hypothesis

H01: There is no significant difference of male and female pre-service teachers’ perception on the use of computer-based test in Adeniran Ogunsanya College of Education

Table 4: Summary of T-test result showing significant difference of male and female pre-service teachers’ perception on the use of computer-based test in Adeniran Ogunsanya College of Education

| Gender | N | Mean | Standard Deviation | T | F | df | Sig | Decision |
|--------|----|-------|--------------------|------|------|-----|------|----------|
| Male | 82 | 44.29 | 4.66 | 2.73 | 6.71 | 154 | 0.01 | Sig |

The Use of Female 74 41.91 6.22
Computer-based test

Table 4 showed summary of t-test result showing significant difference of male and female pre-service teachers' perception on the use of computer-based test in Adeniran Ogunsanya College of Education. It was revealed that male respondents had mean score 44.29 with standard deviation 4.66 while female respondents had mean score 41.91 with standard deviation 6.22, the T_{cal} was 2.73, degree of freedom 154, F was 0.01 and significant level of 0.01 ($P < 0.05$). This implies that there is significant difference of male and female pre-service teachers' perception on the use of computer-based test in Adeniran Ogunsanya College of Education. Therefore, the null hypothesis that states that there is no significant difference of male and female pre-service teachers' perception on the use of computer-based test in Adeniran Ogunsanya College of Education was rejected.

Discussion of findings

The finding of this study showed that the perception of preservice teachers towards the use of CBT for assessment is positive. This finding indicates that most preservice teachers views the use of CBT for examination is good and proper. This finding supports Isuwa (2019) who revealed that, undergraduate students have positive perception towards the use of computer-based test for assessment purposes in schools. Al though this findgs is not in line with Yari (2022) who showed that, students in tertiary institutions do not like the CBT for examination as, it makes them fail the courses; thus, their perception on CBT is negative.

Also, the attitude towards the use of CBT was based on the challenges perceived during the CBT period, some expressed themselves better when using CBT, while some are not comfortable in using CBT. This finding showed that slightly above half respondents possess right proficiency and competency level in handling computers, slightly below half express themselves better through the use of computer during assessment, only 32 respondents are comfortable with the use of computers in future test and examinations. Also, only 42 respondents prefer test and examination written using mobile phones. Besides that, the preservice teachers mentioned some challenges faced during the CBT period that affect their attitude to CBT for assessment; these includes but not limited to lack of proper organization, poor network connection, inadequate computer systems etc. while the following solutions were suggested: proper and regular training of students on how to handle and use computers for assessment, provisions of adequate computer systems etc. this finding does not corroborate the finding of Umar (2019), who opined that student attitude to the use of computer based test for assessment purpose if because of ignorance on the side of the government (country) rather than the students.

Lastly, there was no significant difference of male and female pre-service teachers' perception on the use of computer-based test in Adeniran Ogunsanya College of Education. This finding showed that both male and female preservice teachers opined about CBT in the same direction as positive. as there was no observable differences in the mean scores. This finding supports Tunde (2012) who revealed that undergraduate students have no significance difference on the perception of CBT for assessment based on gender.

Conclusion

It is evident that preservice teachers opined that the use of CBT for examinations is good and positive as it will encourage better performance, it is comfortable and easy to operate when taught. Also, most preservice teachers possess the right proficiency and competency Level in handling computers.

Recommendations

It was based on the findings that the study recommends that;

1. preservice teachers in Adeniran Ogunsanya College of Education should be encouraged to learn how to operate and use CBT among others.
2. Proper orientation should be regularly organized for preservice teachers on the use of CBT.
3. Lectures, staffs and the tertiary institutions should attend workshop and conferences to equip themselves with new technologies and ways on how to successfully use CBT for examinations in schools.
4. Tertiary institutions should provide necessary and adequate computer systems in order to encourage the use of CBT for examinations

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