



Assessment of Students' Attitude Towards Computer Based Test in Federal College of Education, Yola

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ABSTRACT: *This study is designed to assess the attitudes of students towards computer based test in Federal College of Education, Yola. Three objectives and three research questions were raised to guide the study. This research was carried out at the Federal College of Education in Yola. For this study, the researchers employed a survey research design. The target population for this research includes all the 1,982 NCE II students at the Federal College of Education, Yola. The respondents were selected through stratified simple random sampling. The research instrument was validated by two specialists, one with expertise in Computer Science/ICT and the other in Educational Psychology, to ensure both face validity and content validity. The data collected in this pilot study were analyzed for reliability using Cronbach's Alpha statistic. The resulting reliability coefficient for the instrument was 0.754. Two data analysis methods were employed for evaluating the data in this study: simple percentages were used for analyzing the respondents' biographical data, while mean score methods were utilized to answer the research questions posed in this work. The finding of the study showed that, on the average, the attitudes of students toward Computer Based Test in Federal College of Education, Yola is positive, with a grand mean of 2.78, on the average, 2.79 for male and 2.78 for female the difference of 0.01 mean is negligible as such there is no Gender differences in the mean attitudes of male and female students toward computer based test in Federal College of Education, Yola and lastly, the factors that affect student's attitudes toward Computer Based Test in Federal College of Education, Yola are: Using computers for a more extended period, Prior experience with computers, Level of technological proficiency, Familiarity with technology, User-friendly interfaces, Clear instructions, Accessible technical support, the educational context in which CBT is implemented, and Individual differences among students. The researchers recommend improved training initiatives for students to effectively use the computers for CBT and to maintain their positive attitudes. Further, CBT should be integrated into the curriculum rather than being limited to high-stakes assessments only.*

KEYWORDS: *Assessment, Attitudes, Federal College of Education, Computer Based Test (CBT), Yola, Nigeria.*

INTRODUCTION

Technology is essential in various facets of modern life, including education, marketing, transportation, and medical evaluations. Individuals from diverse professions utilize information technology (IT) across different sectors to fulfill their roles and responsibilities. Additionally, various educational institutions integrate IT for training and assessments, utilizing tools such as e-curricula, smart boards, and computer-based models. Several elements contribute to the growing adoption of ICT methods within academic settings, particularly for

evaluating students' learning, knowledge, and competencies. ICT serves to substantiate the level of student achievement (Aletan, Falade, Erundu, & Ogunsola 2022).

The advent of information technology has transformed all areas of human existence; educational systems, due to their knowledge-based nature, have experienced a greater impact from information technology than other systems. The area of assessment and evaluation stands out as a significant domain in education that has been reshaped by technology. Ramim (2017) identified over fifty distinct techniques applied in higher education for assessments, with computerized testing (CBTs) being the most prevalent. Nevertheless, the swift advancement of ICT methods in teaching and learning has altered the landscape, demonstrating that CBTs and traditional paper-based tests yield different outcomes even when using the same items. Consequently, there has been a shift from traditional pencil-and-paper assessments to computerized examination systems, commonly referred to as Computer Assisted Testing (CAT), Computerized Assessment (CA), Computer-Aided Assessment (CAA), Computer Based Testing (CBT), Computer Based Assessment (CBA), Online Assessment, E-Assessment, and Web-Based Assessment.

The Computer-Based Test (CBT) is one of the examples of how technology has influenced the evaluation process in teaching and learning. The origins of Computer-Based Testing (CBT) can be traced back to the early 1970s (Drasgow, 2002; Shute & Rahimi, 2017). According to Peter, Bill, and David (2004), the roots of CBT date back to the 1960s when it was first utilized to assess knowledge and problem-solving capabilities. Nowadays, CBT has evolved into a multi-platform system allowing test-takers to submit their answers and receive feedback through a computer. This platform provides a comprehensive interface where candidates can manually enter their answers, have them marked according to set guidelines, and receive scores through automated marking, typically involving multiple-choice questions (MCQs). Additionally, responses from CBT takers are processed through optical mark readers, which analyze the forms, score them, and evaluate the reliability of the test results (Kuzmina, 2010).

The need for CBT arose from the challenges associated with paper-based testing (PBT). Paper-based tests (PBT) have been found to suffer from several issues, including high costs for examination bodies, subjective grading, potential result manipulation, delays in result release, and missing grades (Alabi, Issa & Oyekunle, 2012). While the use of computers for assessment has been prevalent in developed nations for several decades (Daramola, 2018), the gradual acceptance of CBT is viewed as a positive advancement for evaluating students and prospective employees (Oluwatosin & Samson, 2013).

This development has made a considerable impact on the educational landscape of the country. CBT promotes fairness and efficiency in the evaluation process (Sanna *et al.*, 2012), and offers several key benefits over traditional paper exams, including greater efficiency, immediate scoring, and instant feedback, particularly for multiple-choice formats. Despite the many advantages associated with CBT, research has indicated that there are barriers to its implementation, such as computer anxiety, prolonged transition periods from traditional assessments to CBT due to the necessary adjustment to new technologies, the high costs of procuring computers to accommodate all test-takers, and technical difficulties encountered during exams (Pinner, 2011). Studies have also indicated that students often develop negative attitudes and perceptions toward computer-based assessments. It is against this backdrop that this study was designed to assess the attitudes of students toward computer-based tests at the Federal College of Education, Yola.

OBJECTIVE OF THE STUDY

The main objectives of the study is to assess the attitudes of students toward computer based test in Federal College of Education, Yola. Specifically, the study is designed to:

1. Ascertain the attitudes of students toward computer based test in Federal College of Education, Yola
2. Determine the differences in the attitudes of male and female students toward computer based test in Federal College of Education, Yola.
3. Identify the factors that influence the attitudes of male and female students toward computer based test in Federal College of Education, Yola.

RESEARCH QUESTIONS

The following research questions were raised to guide the conduct of the study:

1. What is the attitudes of students toward computer based test in Federal College of Education, Yola?
2. What is the mean differences in the attitudes of male and female students towards computer based test in Federal College of Education, Yola?
3. What are the factors that influence the attitudes of male and female students towards computer based test in Federal College of Education, Yola?

LITERATURE REVIEW

Computer-Based Test is a result of integrating Information and Communication Technologies (ICTs) into educational environments for assessment purposes. According to Bennett (2015), CBT offers a contemporary method for answering exam questions, replacing traditional pen-and-paper formats. The examinations typically feature multiple-choice questions (MCQs), which present test takers with four options, only one of which is correct for each question posed during the CBT (Ajinaji, 2017). CBT refers to assessments conducted on students through computer systems (Dembitzer, Zelikovitz, & Kettler, 2018).

Daramola (2018) defined CBT as a form of assessment or evaluation delivered via computer either in a dedicated or standalone network, or through other technological devices connected to the internet or worldwide web (www), primarily employing the MCQ format. Attitudes represent a crucial socio-psychological concept that reflects an individual's positive or negative appraisal of various aspects of their social environment, including objects and situations. It is suggested that attitudes are learned tendencies with the potential to influence behavior positively or negatively under different circumstances. It is indicated that student attitudes are a vital factor in how they respond to academic challenges, impacting their overall performance (Umar, 2021).

Attitude characterizes an individual's varied responses to specific stimuli (such as customs or institutional practices), which can be favorable, neutral, or unfavorable. Student attitudes are considered essential variables, as positive attitudes can significantly enhance the learning process and improve academic performance across various testing formats (Claria & Wallace, 2002; Leeson, 2006; Paek, 2005). Attitude reflects a favorable or unfavorable reaction towards a person, place, thing, or event, which can be positive or negative when assessed. According

to Koshshima and Toroujeni (2017), students' attitudes toward computerized testing play a pivotal role in the effective implementation of CBT.

Koshshima and Toroujeni (2017) noted that factors such as age, gender, and socio-economic status can influence students' attitudes toward computers. Additionally, social environment, computer experience, gender differences, and computer self-efficacy play significant roles. In their research, Teriz and Economides (2011) indicated that the attitudes of male and female students toward CBT are affected by the "social environment," with boys focusing more on its utility while girls emphasize ease of use. Numerous studies have explored the factors related to students' attitudes towards CBT. For instance, Tella and Bashorun (2012) investigated the attitudes of students at the University of Ilorin, Nigeria, utilizing a sample of 2,209 undergraduates from various faculties. Their findings demonstrated a generally positive attitude towards CBT among participants, highlighting their higher comfort levels with this method compared to traditional exams.

Dermo (2009) also found that students exhibited a positive attitude towards CBT, though they expressed concerns regarding the question banking system for assessments. Similarly, a survey conducted by Hassanien *et al.* (2013) among third-year medical students in Saudi Arabia indicated that while many were satisfied with their initial experience of CBT, nearly 50% preferred a pilot CBT test before full implementation. In a parallel study, Dammas (2016) evaluated student attitudes on computer-based tests at KAU in Jeddah, Saudi Arabia, involving sixty undergraduates who had prior experience with CBT. The results showed that previous experience significantly shaped students' attitudes towards the use of CBT. Bahar and Asil (2018) discovered that university students with extensive computer experience had notably higher positive attitudes towards e-assessment compared to their peers with lesser computer usage.

As computer-based test (CBT) emerged as a viable substitute for paper-pencil testing (PPT) (Damas, 2016), some individuals continue to relate computer culture and the internet to gender, noting that males and females engage with technology differently and possess varying levels of experience. It is often believed that men are more inclined than women to utilize online media and demonstrate a greater level of computer proficiency (Cuadrado-García, Ruiz-Molina, & Montoro-Pons, 2010). Research focusing on the impact of gender on students' views of e-assessment has been conducted by Kadel (2005), Bebetos and Antonio (2008), and Ayo *et al.* (2007). The existing literature has indicated both a positive attitude and a favorable opinion of e-assessment, with female students tending to have a more optimistic perception. Additionally, some studies have shown that, on average, males possess better computer self-efficacy and experience greater computer anxiety than females (McIlroy, Bunting, Tierney, & Gordon, 2001).

Adegbija, George, and Bolac (2013) explored students' perspectives on e-assessment at the University of Ilorin. Their findings revealed a notable difference in how male and female students perceive e-assessment, with males holding a more positive view than females. Moreover, Olufemi and Osuakuade (2014) found a significant disparity in the computer knowledge between male and female candidates, indicating that males were generally more knowledgeable about computers because they utilized them more frequently, while female candidates exhibited less interest and confidence in technology than their male counterparts. Bahar and Asil (2018) discovered that university students who had longer exposure to computer use exhibited substantially higher positive attitudes toward e-assessment compared to those with less experience.

Dammas (2016) investigated the attitudes of students toward computer-based tests at KAU in Jeddah, Saudi Arabia, using a sample of sixty undergraduates who had previously completed exams via CBT. The results indicated that prior experience significantly shaped students' attitudes toward the use of CBT. To summarize, the primary factors that affect students' attitudes towards CBT relate to their level of technological skill. Research suggests that familiarity with technology can help alleviate the anxiety associated with computer testing (Kumar & Sinha, 2020), and the perceived ease of use of computer-based assessments plays a crucial role in shaping students' attitudes. Elements such as intuitive interfaces, clear guidelines, and accessible technical support contribute to this overall perception. Studies reveal that when students face challenges during CBT, their general attitude tends to become less positive (Alharbi & Drew, 2014). Additional influencing factors include test anxiety (Putwain *et al.*, 2010), the educational context surrounding the implementation of CBT (Bennett, 2016), and individual differences among students (Huang *et al.*, 2021).

METHODOLOGY

This research was carried out at the Federal College of Education in Yola. The Federal College of Education, Yola is one of the post-secondary institutions located in Adamawa State. Established in 1974, the Federal College of Education, Yola serves as a training institution for middle-level teachers. It is situated in Jimeta, Yola. The college introduced computer-based testing (CBT) for GSE courses during the COVID-19 pandemic in 2020.

For this study, the researchers employed a survey research design. The survey research design was chosen because it allows researchers to efficiently assess public perceptions, recognize trends within a population, identify areas needing attention, and gather data for enhancement.

The target population for this research includes all the 1,982 NCE II students at the Federal College of Education, Yola. The selection of NCE II students is due to the timing of the study; it was conducted in the first semester, while NCE III students were engaged in teaching practice and unavailable in the college, and NCE I students were new to the college and had not yet taken any examinations. From the total of 1,982 NCE II students at the Federal College of Education, Yola, and the researchers selected a sample population of 333 participants. The 333 respondents were determined using the Taro Yamane Method of determining the population sample using the formula:

$$n = \frac{N}{1+N(e)^2}$$

In the formula above:

n = is the required sample size from the population under study

N = is the whole population that is under study

e = the precision or sampling error which is 0.05

The population sample of 333 comprised 214 female NCE 2 students and 119 male NCE 2 students. The respondents were selected through stratified simple random sampling.

Data for this research were gathered using a questionnaire titled "The Attitudes of Students Toward Computer-Based Test Questionnaire." The questionnaire includes two sections: Section A contains the participants' biographical information, while Section B consists of 22 items formulated with a modified four-point Likert scale. The research instrument was validated by two specialists, one with expertise in Computer Science/ICT and the other in

Educational Psychology, to ensure both face validity and content validity. To assess the reliability of the instrument, a pilot study was conducted at the College of Education Zing. The researchers provided 40 copies of the questionnaire to students at the Taraba State College of Education in Zing, who were not included in the primary study but shared similar characteristics with the study area regarding objectives, mission, and geographical location. The data collected in this pilot study were analyzed for reliability using Cronbach's Alpha statistic. The resulting reliability coefficient for the instrument was 0.754. This reliability coefficient of 0.754 was determined to be acceptable for use in the research.

Two data analysis methods were employed for evaluating the data in this study: simple percentages were used for analyzing the respondents' biographical data, while mean score methods were utilized to address the research questions mentioned in this paper.

DATA ANALYSIS AND DISCUSSIONS ON THE FINDINGS

From the analysis in Figure 1 it is clear that there were 333 questionnaires distributed to the 333 sampled population for the study. Out of the 333 questionnaires distributed only 308 representing 92.5 percent were well filled and returned, while a total of 25 questionnaires representing 7.5 percent were either not returned or not well filled.

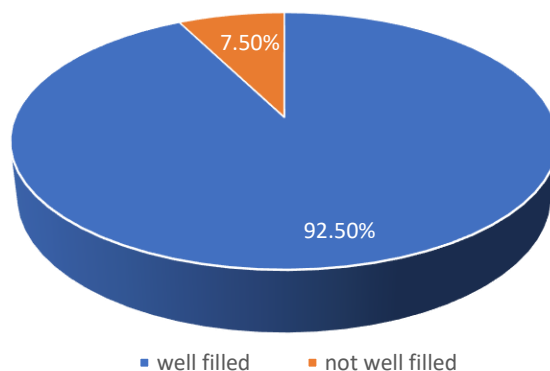


Figure 1: Questionnaire Return Rate

[Source: Research Survey, 2024]

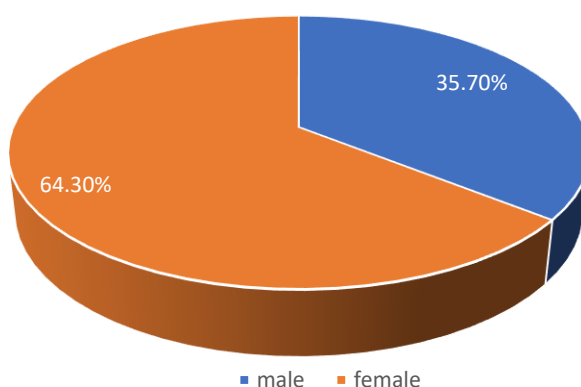


Figure 2: Distribution of Respondents by Sex

[Source: Research Survey, 2024]

From the analysis in Figure 2 it is clear that there were out of the 308 questionnaires that were well filled and returned 110 representing 35.7 percent are male while 198 representing 64.3 percent are female.

Answering the Research Questions

Research Question One: What are the attitudes of students toward Computer Based Test at Federal College of Education, Yola?

The responses of the respondents to items for answering research question one were analyzed using the mean score method of data analysis and the summary is presented in Table 1:

Table 1: Shows the attitudes of students toward Computer Based Test in Federal College of Education, Yola.

S/N	Item	Frequency	Mean	Decision
1	Computer-based tests are typically administered in a setting that is beneficial to the test takers.	871	2.83	Positive
2	Computer-based testing is quite effective.	806	2.66	Positive
3	Taking computer-based tests is a good experience.	890	2.94	Positive
4	I understand how computer-based tests are used for exams.	778	2.53	Positive
5	Because I use computers for various everyday tasks like games, assignments, and chats, I am accustomed to computer-based tests.	884	2.87	Positive
6	I think that computer-based tests have guaranteed equity and justice.	927	3.01	Positive
7	For my classes, I prefer the Computer Based Test style of testing over PBT.	857	2.78	Positive
8	I also like the Computer Based Test system to instantly deliver my exam results.	781	2.54	Positive
9	I'm increasingly accustomed to using computer-based tests for my exams.	799	2.60	Positive
10	I'm not anxious when using computer-based tests.	884	2.87	Positive
11	I don't have the fear of failing with the use of Computer Based Test for exam	956	3.10	Positive
12	I don't lack confidence during Computer Based Test Examination	853	2.77	Positive
13	I don't see Computer Based Test as a threat to my performance	829	2.69	Positive
	GRAND MEAN		2.78	Positive

[Source: Research Survey, 2024]

From the analysis in Table 1 it is clear that with computed mean scores ranging from 2.53 to 3.10, it is evident that the attitudes of students toward Computer Based Test in Federal College of Education, Yola is positive. The table showed that, on average, the attitudes of students toward Computer Based Test in Federal College of Education, Yola is positive, with a grand mean of 2.78 which is above the benchmark mean of 2.50.

Research Question Two: Is there Gender differences in the mean attitudes of male and female students toward computer based test at Federal College of Education, Yola?

The data collected for answering research question two was analysed independently for male and female respondents and the summary of the mean analysis is presented in Table 2:

Table 2: Represents the mean analysis of Gender differences in the mean attitudes of male and female students toward computer based test in Federal College of Education, Yola.

S/N	Item	MALE		FEMALE	
		Mean	Decision	Mean	Decision
1	Computer-based tests are typically administered in a setting that is beneficial to the test takers.	3.00	Positive	2.66	Positive
2	Computer-based testing is quite effective.	2.73	Positive	2.59	Positive
3	Taking computer-based tests is a good experience.	2.80	Positive	3.08	Positive
4	I understand how computer-based tests are used for exams.	2.50	Positive	2.56	Positive
5	Because I use computers for various everyday tasks like games, assignments, and chats, I am accustomed to computer-based tests.	2.74	Positive	3.00	Positive
6	I think that computer-based tests have guaranteed equity and justice.	2.98	Positive	3.04	Positive
7	For my classes, I prefer the Computer Based Test style of testing over PBT.	2.85	Positive	2.71	Positive
8	I also like the Computer Based Test system to instantly deliver my exam results.	2.57	Positive	2.51	Positive
9	I'm increasingly accustomed to using computer-based tests for my exams.	2.62	Positive	2.58	Positive
10	I'm not anxious when using computer-based tests.	2.93	Positive	2.81	Positive
11	I don't have the fear of failing with the use of Computer Based Test for exam	3.08	Positive	3.12	Positive
12	I don't lack confidence during Computer Based Test Examination	2.74	Positive	2.80	Positive
13	I don't see Computer Based Test as a threat to my performance	2.71	Positive	2.67	Positive
	GRAND MEAN	2.79	Positive	2.78	Positive

[Source: Research Survey, 2024]

From the analysis in Table 2 it is clear that with computed mean scores ranging from 2.50 to 3.08, for male and 2.51 to 3.08 for female, it is evident that there are no Gender differences in the mean attitudes of male and female students toward computer based test in Federal College of Education, Yola. The table showed that, on average, 2.79 for male and 2.78 for female the difference of 0.01 mean is negligible as such there are no Gender differences in the mean

attitudes of male and female students toward computer based test in Federal College of Education, Yola.

Research Question Three: What are the factors that influence the attitudes of male and female students toward computer based test in Federal College of Education, Yola?

The data collected for answering research question three was analyzed and the summary of the mean analysis is presented in Table 3:

Table 3: Shows the mean analysis of the factors that influence the attitudes of male and female students toward computer based test in Federal College of Education, Yola

S/N	ITEM	FREQ	MEAN	DECISION
1	Using computers for a more extended period	880	2.86	Agreed
2	Prior experience with computers.	906	2.94	Agreed
3	Level of technological proficiency.	870	2.82	Agreed
4	Familiarity with technology	790	2.56	Agreed
5	User-friendly interfaces,	890	2.89	Agreed
6	Clear instructions,	953	3.09	Agreed
7	Accessible technical support	810	2.63	Agreed
8	The educational context in which CBT is implemented	792	2.57	Agreed
9	Individual differences among students	809	2.63	Agreed
	GRAND MEAN		2.78	Agreed

[Source: Research Survey, 2024]

From the analysis in Table 3 it is clear that with computed mean scores ranging from 2.57 to 3.09, it is evident that the factors that affect student's attitudes toward Computer Based Test in Federal College of Education, Yola are: Using computers for a more extended period, Prior experience with computers, Level of technological proficiency, Familiarity with technology, User-friendly interfaces, Clear instructions, Accessible technical support, the educational context in which CBT is implemented, and Individual differences among students. The table showed that, on average, all the factors were rated agreed, with a grand mean of 2.78 which is above the benchmark mean of 2.50.

Summary of the findings

1. With computed mean scores ranging from 2.53 to 3.10, it is evident that the attitudes of students toward Computer Based Test in Federal College of Education, Yola is positive. Table 1 shows that, on average, the attitudes of students toward Computer Based Test in Federal College of Education, Yola is positive, with a grand mean of 2.78 which is above the benchmark mean of 2.50.
2. With computed mean scores ranging from 2.50 to 3.08, for male and 2.51 to 3.08 for female, it is evident that there is no Gender differences in the mean attitudes of male and female students toward computer based test in Federal College of Education, Yola. Table 2 shows that, on average, 2.79 for male and 2.78 for female the difference of 0.01 mean is negligible as such there are no Gender differences in the mean attitudes of male and female students toward computer based test in Federal College of Education, Yola.

3. With computed mean scores ranging from 2.57 to 3.09, it is evident that the factors that affect student's attitudes toward Computer Based Test in Federal College of Education, Yola are: Using computers for a more extended period, Prior experience with computers, Level of technological proficiency, Familiarity with technology, User-friendly interfaces, Clear instructions, Accessible technical support, the educational context in which CBT is implemented, and Individual differences among students.

Discussions of the findings

Based on the analysis presented in Table One, it is apparent that the computed mean scores, which range from 2.53 to 3.10, indicate that students at the Federal College of Education, Yola, harbor a positive attitude toward Computer-Based Testing (CBT). The table demonstrates that students' average attitudes toward CBT at the Federal College of Education, Yola, are favorable, with an overall mean of 2.78, surpassing the benchmark mean of 2.50. This outcome aligns with the results found by Tella and Bashorun (2012), which confirmed that students maintain a positive attitude towards CBT.

According to the analysis in Table One, with computed mean scores ranging from 2.50 to 3.08 for male students and from 2.51 to 3.08 for female students, there are no significant gender differences in the mean attitudes of male and female students towards Computer-Based Testing at the Federal College of Education, Yola. The average mean scores are 2.79 for males and 2.78 for females, reflecting a negligible difference of 0.01. Therefore, there are no notable gender differences in the attitudes of male and female students towards CBT at the Federal College of Education, Yola. This finding contradicts the conclusions drawn by Kadel (2005), Bebetos and Antonio (2008), and Ayo *et al.* (2007), who found that female students exhibited more positive attitudes and greater appreciation for e-assessment compared to their male counterparts. Additionally, it conflicts with the results obtained by Adegbija, George, and Bolac (2013), which indicated that males view CBT more favorably than their female peers.

From the analysis in Table Three, the computed mean scores ranging from 2.57 to 3.09 highlight that several factors influence students' attitudes toward Computer-Based Testing at the Federal College of Education, Yola. These factors include extended use of computers, previous experience with computers, technological proficiency levels, comfort with technology, user-friendly interfaces, clear instructions, accessible technical support, the educational context of CBT implementation, and individual differences among students. The table indicates that, on average, all these factors were rated positively, attaining a grand mean of 2.78, which exceeds the benchmark mean of 2.50. This finding is consistent with the research conducted by Bahar and Asil (2018), Dammas (2016), Alharbi & Drew (2014), Putwain *et al.* (2010), and Huang *et al.* (2021).

CONCLUSION

The assessment of students' attitudes toward computer-based testing (CBT) at the Federal College of Education, Yola, reveals that the students have positive attitudes towards computer-based test (CBT). Based on the above, the researchers recommends that:

1. Improved training initiatives are necessary for students to effectively use computers for computer-based testing (CBT) to maintain their positive attitudes.
2. CBT should be integrated into the curriculum rather than being limited to high-stakes assessments only.

3. Awareness campaigns are essential to showcase the advantages of computer-based testing, such as its efficiency, instant feedback features, and compatibility with contemporary educational practices.
4. A system for gathering feedback from students about their CBT experiences is needed, with regular reviews to pinpoint common problems and areas needing enhancement in both the technology utilized and the testing procedures.
5. It is important to offer technical support at CBT centers.

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