

COMPUTER-AIDED TESTING: A PANACEA FOR EXAMINATION MALPRACTICE.**by****AGI, CHRISTIANA IKPOYI****ladyagi2@gmail.com (+234-7039347017)****ADULOJU, M.O.****adumeg@gmail.com (+234 -7039344190)****Department of Educational Foundations and General Studies,****College of Agricultural and Science Education.****Federal University of Agriculture, Makurdi-Nigeria.****&****IORNIENGE TARNUM MOSES****iorniengetar@gmail.com (+234-7037782749)****Department of Vocational and Technical Education,****Faculty of Education,****Benue State University, Makurdi-Nigeria.****Abstract**

The issue of examination malpractice has become a source of concern for all stakeholders in the education sector. Researchers spend sleepless nights trying to find ways to curb this ugly phenomenon that is threatening the Nigerian educational system. The value and functionality of any educational system lie in its ability to effectively achieve the goals of education. The goals of national educational systems and indeed national development become like a mirage if examination ethics are not encouraged and instituted. Any action that undermines examinations

poses a great threat to the validity and reliability of examination results and certification. Computer-Aided Testing (CAT) has become a recent emerging trend in the developing countries of the world with Nigeria not being an exception as an attempt to align their educational systems with global best practices. With the introduction of Computer-Aided testing in the Nigerian educational system, it seems there would be light at the end of the tunnel. It is with this in mind that the researchers conducted a survey to find out the extent to which the Computer-Aided Testing would help in solving the scourge of examination malpractice in Benue State, Nigeria. The study was guided by two research questions. The design adopted for the study was the descriptive survey. The population of the study was made up of all students in the tertiary institutions in the three senatorial zones of Benue State. The instrument used for data collection was the questionnaire. It was subjected to both content and face validation by test and measurement experts. The instrument was administered on a sample size of 300 comprising of 100 respondents each randomly selected from the three senatorial zones of the state. Pearson Product Moment Correlation (PPMC) was used to establish the reliability coefficient of the instrument at .68. A mean (\bar{X}) and standard deviation was used to answer the research questions. The conclusions were drawn based on the result obtained.

Key Words: Computer-Aided Test, Examination Malpractice, Panacea.

Introduction

The use of computer technology in testing is becoming more and more widespread and fast replacing the traditional pen and paper testing. Various terms are found in the literature to describe it. These include e-Examination, e-Assessment, Computer Based Assessment (CBA), Computer-Based Testing (CBT), Computer-Aided Testing (CAT). These terms are used

interchangeably to describe the use of computer for testing, assessment and examination purpose (Onuekwusu & Agoha, 2015).

Computer-Aided Testing (CAT) is a process whereby, a testee is expected to access questions which have already been inputted and saved in a Computer system, answer the questions using a system to feedback answers into the system within a specified time for assessment and grading through the use of a computer (Boris & Awudun 2012). It is a paper free, software means of testing. Computer - aided testing can be used to examine a few candidates in which case, the programme will be used by the testees. It may also be done through the use of local Access Network (LAN) or internet as done in some organizations and institutions; it is also possible to use CAT in a wider network especially when there are many candidates spread out in different locations.

Evolution of Tests.

The idea of using tests to assess performance of students in schools is said to have began with the Chinese who were the first country to appoint civil servants on the basis of their competitive performance in achievement tests as pointed out by Alonge in Boris and Awodun (2012). The authors further explained that by 155 BC, Civil Service Examinations were in place and were used to select candidates for employment in the Chinese Imperial Service. These examinations were quite strict and aimed at controlling the learners' ideology and supervising their learning.

In Nigeria, the same scenario existed with the introduction of western education by the colonial masters. Examinations were exclusively in the hands of foreign external examination bodies. However, as time went on, some examination bodies were established to replace the activities of the colonial examination bodies that were initially charged with this responsibility.

These include the West African Examinations Council (WAEC) which conducts the West African Senior School Certificate Examination (WASSCE); the National Teachers Institute (NTI) which is responsible for the regulation and control of quality of teachers leading to the award of the Nigerian Certificate in Education (NCE); the National Business and Technical Examinations Board (NABTEB), which is responsible for the conduct of the National Technical Certificate (NTC)/National Business Certificate (NBC) examinations as well as the advance level versions in the following trades/discipline: General Education, Business Trades, Engineering/Construction Trades and Miscellaneous Trades; National Examinations Council (NECO) is responsible for the conduct of Senior School Certificate Examination (SSCE) and The Joint Admissions And Matriculations Board (JAMB) which conducts the Unified Tertiary Matriculation Examination (UTME) replaced examination bodies like the university of Cambridge Local Examination Syndicate (UCLE), the University of London Matriculation Examination (ULME) and London City and Guides.

Factors Underlying Examination Malpractice.

Despite the strategic importance of examination for diagnostic, placement, classification and quality control in Nigerian institutions, the integrity and credibility of public examinations have been greatly eroded and corrupted with increasing incidence of examination malpractice (Arijesuyo & Adeyoju, 2012). Examination malpractice is anything done by the examinee during an examination that is likely to render the assessment useless. Examination malpractice therefore, is anything made by the stake-holders such as examination administrators, teachers, parents, or a student that is likely to render the assessment or the examination result invalid, ineffective or useless. It is any illegal act committed by a student single handedly or in collaboration with others like fellow students , parents, teacher, supervisors, invigilators, printers

and anybody or group of people before, during or after examination in order to obtain undeserved marks or grades (Wilayat, 2009).

Cheating during examination has become a global menace with developing nations not left out. The situation is not different in Nigeria as pointed out by Obi & Jimoh in Ojonemi, Enejoh, Audu & Omisore (2013) when they said, students do not only cheat during examination but they are also employing more and more sophisticated means of cheating. They use mobile phones and other electronic means to cheat during examinations. Most worrisome is the fact that, some of the parents even assist by soliciting for assistance for their children to pass examination by dubious means. It is also alleged that, some invigilators and supervisors also collect gratifications and let loose invigilation. The trend of examination malpractice is assuming a threatening dimension as further reiterated by Ojonemi et al that, it has been embraced by all and sundry in Nigeria, to an extent that people no longer see examination as what you can sit and pass on your own without aid. This scourge according to them is the order of the day in our primary, secondary and tertiary institutions.

Examination malpractice is not a recent phenomenon in countries of the world including Africa and Nigeria in particular. This fact is established by Barnett & Dalton (1981) and Sule (2009) in Ojonemi et al when he explained that examination malpractice has been a social problem for most of recorded history. They cited the case of ancient China where applicants for the civil service positions were made to take the examination in individual cubicles to prevent copying from one another and were thoroughly searched for cheating materials before entering the cubicles. It is on record that death sentence was imposed as a final deterrent in ancient China as pointed out by Brickman in Ojonemi et al (2013). In Nigeria, a total of seventeen examination offences are identified and various sanctions specified ranging from cancelation of result to

imprisonment and fine of the offenders depending on the gravity of the offense (Boris & Awodun, 2012; Adewale, 2004).

Incidences of Examination Malpractice in Nigeria.

The incidence of examination malpractice has become a common problem in Nigeria to such an extent that every examination season witnesses the emergence of new ingenious ways of cheating. Perhaps, evidence surrounding us attest to the fact that schools have apparently failed in their responsibility of producing citizens that are worthy, both in character and learning but instead are now serving as a mere gateway to meaningless certification. This view is shared by Boris et al.

The west African Examinations Council (WAEC) reported as captured by Adewale (2004) that, as many as 6.22% of candidates that registered for November/December examination were involved in examination malpractice. WAEC (2004) in Ojonemi et al reports major incidences of examination malpractices as Follows: 1963, 1967, 1970, 1973, 1977, 1979, 1981, 1991, 1994, 1995, 1995, 1997, 1997, 1998, 1999, 2000, 2001, 2002, and 2003. These records are worrisome. They attest to the fact that examination malpractice is a serious threat to the system of assessment in the West African sub-region. It is a menace that requires all stakeholders' attention to fight it to the roots.

The Joint Admissions and Matriculation Board JAMB also reported cases of examination malpractice which lead to the with-holding of results as follows: 2.01% of total candidates in 1999, 2.2% in 2000, 1.137% in 2001, 4.8%in 2002, 11.3 in 2003, 6,9%in 2004 and 10.9% in 2005.

Omeri (2012) opined that, Nigeria occupies the number one position in the world's examination malpractice index. Indeed, report on examination malpractice in Nigeria contains very disturbing

information as it puts the average annual examination malpractice index at 12% in May/June School Certificate Examination by NECO, a total of 7,615,010 cases of malpractice were recorded while 439,529 were recorded in 2011 examination (<http://www.naijalatestnews.com/Nigeria-rank-top-in-world-examination-malpractice/-br>).

In Nigeria, the effort to fight this monster led the Joint Admissions and Matriculation Board (JAMB), the agency regulating admissions into Nigerian tertiary institutions to introduce Computer –Aided Testing (CAT) in 2013 as a pilot study (Ojeriunde, 2014) for writing the Unified Tertiary Matriculation Examination (UTME) as an option of the three modes of the examination. The other two modes were the Conventional Paper and Pencil Test (PPT) and Dual Based Test (DBT) in which questions were on computer but answers were shaded on physical paper.

Available records in the literature showed that out of the one million, seven hundred and thirty five thousand, eight hundred and eight (1,735,808) candidates that took the examination , only ninety one thousand, six hundred and ninety-four (91,694) opted for CAT (Ojerinde 2014) representing 5.28%. In the year 2014, a total of 617,000 out of 1,632,172 registered Jamb candidates opted for CAT translating into 37.8% of the total number. The increase in preference for the CAT was as a result of the prompt release of the result which had less problems associated with it as compared to the paper and pencil test (PPT).

In 2015, JAMB fully used CAT for the conduct of UTME for one million, four hundred and seventy five thousand, four hundred and seventy seven (1,475,477) candidates in 400 centers across the country and seven overseas countries. Many observers considered it as a welcome development aimed at curbing examination malpractices (Ojerinde 2014).

Forms of Examination Malpractice.

There are different forms of examination malpractice as captured in the literature. They include bringing in foreign materials to examination halls, collusion, impersonation, leakage, mass cheating, and insult/assault on supervisors. Others include assistance of candidates by invigilators to answer or have clue to difficult concepts. There are also some malpractices we can call pre-examination and post examination malpractices. In the pre-examination malpractice, candidates offer to give gratification to somebody (examiner, messenger, typist, examination officer, invigilator or head of department) so that examination materials could be released to them before hand. Registering of non-school candidates for examinations is another form of pre-examination malpractice (Ojenide 2004). Registration to allow for impersonation is another pre-examination malpractice. The candidates register with his/her name but submits the photograph of another person with whom arrangement has been made to take the examination on his/her behalf.

Efforts at Curbing Examination Malpractice in Nigeria.

Examination bodies in Nigeria have tried out a lot of strategies aimed at curbing malpractices. Uzoigwe (2005) confirmed this when he said “for a long time, the west African Examination Council was a lone voice in the fight against examination malpractice in Nigeria. The situation has however shown tremendous improvements as government (states and federal) and other stakeholders have not only expressed concern over the cankerworm but have indeed taken tangible steps to further the fight against it”. Some of the strategies include public enlightenment which gave birth to Examination ethics crusade in the country.

Besides, information is disseminated to candidates both in book form and on examination bodies’ website concerning the rules and regulations guiding the examinations. Various offences and the sanctions associated with them are clearly spelt out. Again, sensitization of governments

(Federal and States) and stakeholders about the decisions taken on reported cases of examination malpractice by committees set up for investigations of such cases is another strategy aimed at getting the backing of government and stakeholders. Any candidate caught cheating is promptly sanctioned while teachers and other operatives found collaborating to cheat are reported to their employers for appropriate sanctions. Employees of examination bodies in Nigeria caught in examination irregularities/malpractices are summarily dismissed since it is regarded as a security risk.

As a strategy to checkmate malpractice, examination bodies in Nigeria have further embraced the embossment of certificates as a means of curbing examination malpractice. Pictures of candidates are embossed on their certificates to do away with the incidence of impersonation in examinations. The use of security bags for the collection of security materials like question papers by supervisors is another way of curbing incidences of malpractice. Security bags containing sensitive examination materials like question papers and answer booklets are locked and keys kept with the examination bodies' staff at the custodian point of collection of the papers and the schools examinations officers at the point of delivery to the school centre.

Other measures include the creation of post examination departments to handle cases of irregularities and malpractices. Administration of oath of secrecy for newly recruited staff of examination bodies on assumption of duty. Swapping of examination centre supervisors on daily bases is used so that even if you want to bribe, you would find it difficult and to guide against familiarity that might lead to undue influence from schools.

Governments and Non-Governmental Organizations have joined the fight against examination malpractice in Nigeria. The deployment of senior officials of ministries of education

both at state and federal levels to inspect the conduct of examinations to ensure strict adherence to examination ethics is another way of checking malpractice. Monitoring of the registration of candidates for the school examinations to prevent non-school candidates from registering for the examination. Besides, erring schools are sanctioned including principals, supervisors and other examination officers.

Examination malpractice is capable of destroying the entire educational system of any country and casting doubts on the credibility, reliability and validity of its assessment system. It is on the basis of this that the Joint Admissions and Matriculation Board have evolved the Computer-Aided Testing strategy to help in redeeming the image of assessment system in Nigeria. Based on this background therefore, the study is aimed at investigating the extent to which this strategy has helped to curb examination menace.

Theoretical Foundation.

The consistency exhibited in measurement is termed reliability. It could also be explained in terms of the degree of confidence that can be placed on measurement. Brown in Alonge (2004) states that, "Reliability is the ratio of the variance in the set of test scores to the total, or obtained variance". Reliability can be explained with the introduction of the idea of a true score. A true score is the score a person would obtain if a test could measure a trait without error. Brown in Alonge (2004) alternatively defined a true score as the average score the individual would make over an infinite number of repeated administrations of the test. Due to examination malpractice as one of the errors in measurement, the scores obtained may not be the true scores of students. This work is therefore hinged on the theoretical framework of the reliability.

Research questions

The study is guided by the following research questions:

- (i) To what extent has Computer-Aided testing curbed examination malpractice in Benue State?
- (ii) How successful has the implementation of Computer-Aided testing been in Benue State?

Hypothesis: The following hypothesis was tested at alpha level of 0.05%.

H₀: There is no significant difference between the responses of the respondents within the three zones.

Methodology

The study adopted a survey research design. The instrument used for data collection was the questionnaire titled “Questionnaire for use of Computer Aided Test as a Solution to Examination Malpractice (QCATSEM)”. The questionnaire was positively rated with improved four point rating scales of Strongly Agree (SA =4 points), Agree (A = 3 points), Disagree (D = 2 Points) and Strongly Disagree (SD = 1point). The instrument was subjected to both content and face validation by test and measurement experts. Pearson Product Moment Correlation (PPMC) was used to establish the reliability coefficient of the instrument at 0.68. The population of the study was made up of all students in tertiary schools in the three zones of Benue State. A sample of 300 students was selected using random sampling technique. Mean (X) and standard deviations were used to analyze the data to answer the research questions. The decision rule for answering the research questions was that, any response category with a mean value of equal to or greater than 2.50 would be considered a positive response while that which ranges below 2.50 was considered as a disagreement. ANOVA was used to test the hypothesis at 0.05 level of significance.

DATA ANALYSIS

Results

Research Question 1

To what extent has Computer-Aided testing curbed examination malpractice in Benue State?

The result of the study as shown in Table 1 indicates the extent to which examination malpractice has been curbed in Benue State with the use of CAT. It could be noted that, items 1-15 all had mean rating of 2.50 and above which shows the respondents agreed to all the fifteen items on the use of CAT to curb examination malpractice.

Table 1

Responses of respondents on the extent to which Computer-Aided testing has curbed examination malpractice in Benue State (n=300)

S/N	STATEMENT	SD	Mean	Remarks
1	Computer-Aided Testing has eliminated examination leakage	1.31	2.79	Agree
2	Impersonation of candidates is no longer possible with the adoption of CAT	1.07	3.30	Agree
3	Bringing of foreign materials into examination hall has been eliminated through the use of computer aided testing.	0.67	3.67	Agree
4	Mass cheating is no longer possible with the use of CAT as a testing strategy.	1.31	2.79	Agree
5	Insult/assault of supervisors by candidates is no longer experienced.	0.69	3.46	Agree
6	Registration of too many candidates over and above facilities is not noticed.	1.05	3.20	Agree
7	Supervision has become easier with the introduction of CAT.	0.97	3.32	Agree
8	The introduction of CAT has eliminated multiple registration of candidates.	0.48	3.66	Agree
9	Smuggling out of question papers from the examination hall is no longer possible.	0.67	3.67	Agree
10	Dictation of answers for candidates is eliminated.	0.63	3.78	Agree

11	Submission of examination scripts written outside examination hall on arrangement is no longer possible.	1.20	3.27	Agree
12	Copying of answers on the chalkboard is eliminated	0.89	3.38	Agree
13	Substitution of examination scripts already prepared under special arrangement is no longer experienced	1.03	3.05	Agree
14	Changing of candidates scores by officers of examination bodies is no longer possible	1.06	2.50	Agree
15	Tracing of papers by candidates to marking centers has been discouraged through CAT.	1.31	2.80	Agree

Research Question 2

How successful has the implementation of Computer-Aided testing been in Benue State?

From Table 2, the result shows the extent to which the use of CAT has been successful in Benue State. The respondents agreed to items 16, 19, 21, 22, and 27 while they disagreed to Items 17, 18, 20, 23, 24, 25, 26 and 28.

Table 2

Responses of respondents on the successful implementation of Computer-Aided testing in Benue State (n = 300)

S/N	ITEM	SD	Mean	Remarks
16	There were no fluctuations in internet network service during the testing sessions.	1.16	2.60	Agree
17	Power supply irregularities are not experienced which would make testing process ineffective.	1.25	2.49	Disagree
18	There are no logistics and technical hitches to affect the timing of the computer-Aided tests.	0.80	2.37	Disagree
19	There are no issues of slow booting of computers	0.81	2.98	Agree
20	There are no issues of biometric capture machines failure.	1.06	2.00	Disagree
21	Results of Computer Aided Tests are promptly released.	1.05	3.33	Agree

22	Confidentiality of the questions is guaranteed through CAT.	0.55	3.09	Agree
23	There are adequate computers for registered candidates.	1.04	2.29	Disagree
24	There are spacious accommodation for the machines	1.05	2.35	Disagree
25	There is sufficient lighting	1.26	2.36	Disagree
26	Competent personnel to assist candidates with technical hitches.	1.13	2.23	Disagree
27	Good sitting arrangements are made	1.12	2.81	Agree
28	There is availability of safety gadgets.	1.05	2.36	Disagree

Hypothesis

H₀: There is no significant difference between the responses of the respondents within the three zones.

Table 3.

Analysis of variance of responses indicating there is no significant difference in the responses of respondents between the three senatorial zones of Benue State.

S/N	Item	Between Groups Within Group	Sum of squares	df	Mean square	F	Sig	Decision
1	Computer-Aided Testing has eliminated examination leakage	Between Within Total	262.860 248.910 511.770	2 297 299	131.430 0.838	156.823	.000	Reject
2	Impersonation of candidates is no longer possible with the adoption of CAT	Between Within Total	103.920 241.080 354.000	2 297 299	51.960 0.812	64.012	.000	Reject
3	Bringing of foreign materials into examination hall has been eliminated through the use of computer aided testing.	Between Within Total	21.280 110.550 132.330	2 297 299	10.890 0.372	29.257	.000	Reject
4	Mass cheating is no longer possible with the use of CAT as a testing strategy.	Between Within Total	262.860 248.910 511.770	2 297 299	131.430 0.838	156.823	.000	Reject
5	Insult/assault of supervisors by	Between	32.327	2	16.163	44.338	.000	Reject

	candidates is no longer experienced.	Within	108.270	297	0.365			
		Total	140.597	299				
6	Registration of too many candidates over and above facilities is not noticed.	Between	11.487	2	5.743	5.366	.005	Reject
		Within	317.910	297	1.070			
		Total	329.397	299				
7	Supervision has become easier with the introduction of CAT.	Between	92.487	2	46.243	72.610	.000	Reject
		Within	189.150	297	0.637			
		Total	281.637	299				
8	The introduction of CAT has eliminated multiple registration of candidates.	Between	0.047	2	0.023	0.103	.903	Retain
		Within	67.590	297	0.228			
		Total	67.637	299				
9	Smuggling out of question papers from the examination hall is no longer possible.	Between	21.840	2	10.920	29.093	.000	Reject
		Within	111.480	297	0.375			
		Total	133.320	299				
10	Dictation of answers for candidates is eliminated.	Between	29.040	2	14.520	48.761	.000	Reject
		Within	88.440	297	0.298			
		Total	117.480	299				
11	Submission of examination scripts written outside examination hall on arrangement is no longer possible.	Between	92.940	2	46.470	40.810	.000	Reject
		Within	338.190	297	1.139			
		Total	431.130	299				
12	Copying of answers on the chalkboard is eliminated	Between	49.887	2	24.943	39.290	.000	Reject
		Within	188.550	297	0.635			
		Total	238.437	299				
13	Substitution of examination scripts already prepared under special arrangement is no longer experienced	Between	91.487	2	45.743	60.205	.000	Reject
		Within	225.660	297	0.760			
		Total	317.147	299				
14	Changing of candidates scores by officers of examination bodies is no longer possible	Between	13.807	2	6.903	6.344	.002	Reject
		Within	323.190	297	1.088			
		Total	336.997	299				
15	Tracing of papers by candidates to marking centers has been discouraged	Between	129.780	2	64.890	49.900	.000	Reject
		Within	386.220	297	1.300			

through CAT.	Total	516.00	299
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Discussion of Findings.

The first finding shows that the introduction of computer- Aided Testing has curbed examination malpractice in Benue state. The result agreed with the views of Ojerinde (2014) when he was appraising the general conduct of the Computer based Testing examination as introduced by JAMB.

The second finding of the study shows that, though CAT has helped in curbing examination malpractice, the implementation of Computer-Aided Testing in Benue state has not been completely successful. It is hampered by power fluctuations, logistics and technical hitches, failure of biometric verification machines, inadequate computers, and lack of spacious accommodation, insufficient lighting of the examination halls, insufficient personnel to assist candidates in times of challenges and lack of safety gadgets were among the reasons that marred the successful implementation of CAT in Benue state.

The third finding was that, there was a significant difference in the responses of the respondents within the three senatorial zones of the state.

Recommendations/Conclusion

The result of Table 3 shows that, there is significant difference in the responses of the respondents in all the fifteen items within the three senatorial zones of Benue State. We therefore reject the null hypothesis which says there is no significant difference between the responses of respondents within the zones.

<i>S/N</i>	<i>Item</i>	Between	Sum of	df	Mean	F	Sig	Decision
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The result in Table 4 shows the analysis of variance of the responses of respondents on the successful implementation of CAT in Benue State. The results indicates that, apart from item 2 which shows that there is no significant difference in the responses of respondents, the rest of the items indicates that there is significant difference in the responses of respondents within the three zones leading to the rejection of the null hypothesis in each of the items.

Table 4

Analysis of variance of respondents on the extent of successful implementation of CAT within the three senatorial zones of Benue State.

		Groups Within Group	squares		square			
1	There were no fluctuations in internet network service during the testing sessions.	Between Within Total	24.807 375.390 400.197	2 297 299	12.403 1.264	9.813	0.000	Reject
2	Power supply irregularities are not experienced which would make testing process ineffective.	Between Within Total	5.447 463.500 468.947	2 297 299	2.723 1.561	1.745	0.176	Retain
3	There are no logistics and technical hitches to affect the timing of the computer-Aided tests.	Between Within Total	18.107 175.500 193.667	2 297 299	9.053 0.591	15.316	0.000	Reject
4	There are no issues of slow booting of computers	Between Within Total	22.927 173.910 196.837	2 297 299	11.463 0.586	19.577	0.000	Reject
5	There are no issues of biometric capture machines failure.	Between Within Total	202.020 133.980 336.000	2 297 299	101.010 0.451	223.914	0.000	Reject
6	Results of Computer Aided Tests are promptly released.	Between Within Total	19.860 310.470 330.330	2 297 299	9.930 1.045	9.499	0.000	Reject
7	Confidentiality of the questions is guaranteed through CAT.	Between Within Total	27.007 64.380 91.387	2 297 299	13.503 0.217	62.294	0.000	Reject
8	There are adequate computers for registered candidates.	Between Within Total	90.907 232.440 323.347	2 297 299	45.453 0.783	58.078	0.000	Reject
9	There are spacious accommodation for the machines	Between Within Total	82.027 247.920 329.947	2 297 299	41.013 0.835	49.133	0.000	Reject
10	There is sufficient lighting	Between Within Total	152.880 318.240 471.120	2 297 299	76.440 1.072	71.338	0.000	Reject
11	Competent personnel to assist candidates with technical hitches.	Between Within Total	204.660 178.470 383.130	2 297 299	102.330 0.601	170.292	0.000	Reject

12	Good sitting arrangements are made	Between	111.660	2	55.830	62.688	0.000	Reject
		Within	264.510	297	0.891			
		Total	376.170	299				

The authors recommend that, other examination bodies should also adopt the use of computer – Aided Testing so as to solve the problem of examination malpractice. Efforts should be made by government, voluntary and donor agencies to assist in funding so as to improve on the facilities that can ensure the smooth implementation of CAT.

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