



FACTORS INFLUENCING THE IMPLEMENTATION OF COMPUTER-BASED TEST IN SECONDARY SCHOOLS IN BALI LOCAL GOVERNMENT AREA OF TARABA STATE.

BY

WYCLIFF OBED JATAU

Information & Communication Technology Unit (ICT)

Federal Polytechnic Bali Taraba State, Nigeria

E-Mail:obedwycliff@gmail.com

08037313140, 08083557181

AND

MOHAMMED HAMIDU

Information & Communication Technology Unit (ICT)

Federal Polytechnic Bali Taraba State, Nigeria

E-Mail:mohammedhamidu0671@gmail.com

08037141828, 07089580736

Abstract

This paper examined factors influencing the implementation of computer-based tests in senior secondary schools in Bali local government area of Taraba State. It is seen that several factors can influence the implementation of computer-based tests (CBTs) in secondary schools. These factors are categorized into technological, infrastructure, resource-related, educational, and governmental factors. Two research questions guided the study. The study adopted a survey research design. The population for the study comprised 600 students from selected senior secondary schools in Bali Local Government Area of Taraba State. All students were used for the study, hence there was no sampling technique adopted for the study. Data for the study was collected through a self-designed questionnaire. Arithmetic Mean and Standard Deviation were used to analyze the data. The findings of the study revealed among others that several factors affect the implementation of computer-based tests such as inadequate computer systems, non-availability of appropriate hardware, software, and networking infrastructure, power supply, and shortage of well-trained ICT personnel. Based on the foregoing, the study concludes that addressing those challenges would contribute immensely to the success of

implementing the CBT system in secondary schools in Bali and will help achieve better results. It was recommended among others Government in collaboration with educational authorities should adequately provide computer facilities, power supply, and network infrastructure that support internet connectivity that is necessary for implementing the CBT system. Schools need to train IT support staff and teachers who can handle technical issues related to computers, networks, and software and administer CBT respectively.

Keywords: Computer Based Test, UTME, Secondary School Students, Implementation

Introduction:

Teaching and learning activities have been enhanced through the use of Information and Communication Technology (ICT). It stands as one of the most effective tools for advancing knowledge and skills. The presence of ICT is imperative for ensuring quality education in secondary schools (Dhital 2018). The learning setting is in a constant state of transformation, propelled by technological progress and the necessity to equip students for the digital era. A notable shift in educational evaluation practices is the adoption of computer-based tests (CBTs) within secondary schools. CBTs involve the administration of assessments through computer interfaces, facilitated by software platforms, effectively replacing traditional pen-and-paper exams. This transition holds the potential to enhance assessment practices, augment learning outcomes, and equip students with indispensable computer proficiencies. Nevertheless, the successful integration of CBTs in secondary school education relies on a multitude of factors. The advent of technology has prompted many secondary schools to adopt computer-based testing systems. Teachers must obtain a comprehensive understanding of the possible importance of shifting from traditional paper-based assessments to computer-based assessments on the school successes of students (Joy 2023). This is especially important as classroom technology continues to advance and teachers gradually become more skillful in technological aspects. This becomes even more critical when teachers can develop computer-based assessments that are used by students in various classrooms and for learning purposes.

The successful implementation of computer-based tests (CBT) heavily relies on its application and efficiency. The introduction of CBTs represents a substantial deviation from conventional assessment methods. Consequently, understanding the basics that impact this implementation is critical for teachers, policy-makers, and other interested parties. (Soto, Fernandez, and Diaz 2021). CBTs is an exam assessment method where the questions and answer options are presented on a computer screen. Various secondary schools have adopted this method of assessment for students to familiarize themselves with the set-up before they take the Unified Tertiary Matriculation Examination (UTME). Fadilah, Rosdiana, and Rosdiana (2018) discoursed that a Computer Based Test (CBT) is a test conducted using a computer as the main

medium for administering and processing exam scores where the test questions and answer sheets are carried out digitally by the computer. Accordingly, Fedorak. (2015) also agreed that a computer-based test is a method used to assess students' knowledge using technological advancements, thereby eliminating subjective elements and improving objectivity.

The harmonization of computer-based tests (CBTs) with educational objectives and instructional approaches is an indispensable element. Inconsistencies between assessment techniques and teaching approaches can impede the learning benefits of CBTs. The incorporation of technology into teaching and assessment has become increasingly vital in the learning setting of today. The implementation of computer-based tests in secondary schools is gaining ample acceptance due to its several benefits. These benefits include improved test administration, enhanced security measures, and cost-effectiveness. However, the successful execution of such tests relies on several factors, including the presence of a robust technology infrastructure, comprehensive teacher training and support, proficient student computer skills, cost-effectiveness, security concerns, adherence to standardized test requirements, and acceptance by both students and parents. ICT policy equally plays a vital role in implementing CBT in secondary schools, (Njoroge, Margaret, and Joab (2017).

The implementation of computer-based tests is subjective to numerous factors, such as student support, availability of facilities, infrastructure, learning tools, and cognitive factors. Challenges such as limited resources, including qualified teachers, hardware, software, and electricity, as well as inadequate project implementation strategies, hinder these accomplishments (Dhital, 2018). Similarly, Sofiyatul, and Nujmatul, (2018) and Williams, and Gift (2016) Revealed that power supply, network facilities, and availability of internet service has affected the full implementation of computer-based test in secondary schools. Additionally, agreed that inadequate technological infrastructure, support of policymakers, and training obstruct the implementation of computer-based tests in secondary schools. However, to overcome these challenges there is a need for adequate preparation and provision of technological infrastructure, and teachers' training. According to Michael, James, Igenewari, and Lawrence (2022), the underutilization of technological facilities by teachers and several other challenges contribute immensely to the implementation of computer-based tests in secondary schools. The implementation of computer-based tests in secondary schools is an advanced learning practice that has the potential to improve assessment methods, improve learning outcomes, and prepare students for computer assessment. Nevertheless, the effective integration of CBTs into secondary learning requires a comprehensive examination of numerous influential factors.

Richard, and Augustine (2011) and Rafiu, Ademola, and Olatoye (2017), Have asserted that the insufficiency of budgets, shortage of well-trained teachers, and inadequate facilities have created difficulty in the implementation of computer-based tests in secondary schools. Furthermore, the inadequacy of technological infrastructure and its associated facilities serve as impediments to the introduction of computer-based tests in secondary schools. To effectively incorporate CBTs in secondary schools, a comprehensive approach must be adopted, considering various factors such as technological readiness, infrastructure development, resource availability, pedagogical considerations, organizational support, security and reliability, and stakeholder acceptance. Equally, Ogundile, Bishop, Okagbue, Ogunniyi, and Olanrewaju (2019), affirm that addressing these factors can enable secondary schools in our immediate environment to link the breach in ICT usage as compared to other societies. This would result in better preparation of students for employment and entrepreneurship, and would also contribute to the nation's pursuit of achieving sustainable development goals. The continuous and purposeful adoption of ICT in our secondary schools is imperative as it would not only reduce unemployment but also enhance the overall educational experience. Similarly, Biantoro and Arfianti (2019) concur that the integration of computer-based tests in secondary schools has been proven to enhance the quality of assessment and improve students' computer skills. Although various factors impact the implementation of computer-based assessment, an understanding of these issues would be influential in effectively implementing a guide for future societies. The integration of computer-based examinations (CBT) within secondary schools is subject to an array of various factors. These factors possess the ability to exert influence on the success and efficiency of CBT within the realm of learning.

Statement of Problem

Purpose of the study

Purpose of the study- specifically, it sought to:

1. Find out if inadequate infrastructures affect the implementation of computer-based tests in secondary schools in Bali local government area of Taraba State
2. Find out if the computer skills of teachers affect the implementation of computer-based tests in secondary schools in Bali local government area of Taraba State

Research Questions

The following research questions guided the study

1. How does inadequate infrastructures affect the implementation of computer-based test in secondary schools in Bali local government area of Taraba State?

2. How does the computer skills of teachers affect the implementation of computer-based test in secondary schools in Bali local government area of Taraba State?

Methodology

The study adopted a survey research design in obtaining data for the study. The population for the research comprises seven hundred (600) students from SSS II-III (Government Secondary School Bali (218), Burba Secondary School Bali (212), Creme-de-La-Crème Secondary School (14), Government Day Secondary School Suntai (13) Garba-Chede secondary school (85), Government Day Secondary School Mai-Hula (58) all in Bali local government area of Taraba State. There were no sample techniques adopted for the study due to the manageable size of the population. The instrument adopted for the study was a structured questionnaire.

Research questions one and two adopted a five-point Likert Scale which will consist of Strongly Agree (SA) 5-point, Agree (A) 4 points, Undecided (UN) 3-points, Strongly Disagree (SD) 2-points, Disagree (DA) 1-point options. Likert Scale which according to Likert (1932) is used to gauge attitudes, values, and opinions is consistent with the survey research design that this study has adopted. The instrument was titled: to find out if inadequate infrastructures affect the implementation of computer-based test in secondary schools in Bali LGA and also to find out if the computer skills of teachers affect the implementation of computer-based test in secondary schools in Bali LGA. The questionnaires were administered and collected by the researchers and research assistants. Data collected were analyzed using mean and standard deviation. Any item with a mean rating of 3.00 and above was regarded as agreed while any item with a mean rating below 3.00 was regarded as rejected. Each of the means will be multiplied by the frequency of each response.

Research Question 1: How does inadequate infrastructure affect the implementation of computer-based test in secondary schools in Bali local government area of Taraba State? N=600

Questionnaire items 1-10: were used to answer this research question. The data on research question 1 are summarized and presented in the Table below

| S/N | Questions | SA | A | UD | D | SD | Mean | SD | Remarks |
|-----|---|-----|-----|----|----|----|-------------|-------------|----------|
| 1 | non-availability of computers or tablets and other network facilities for students has affected the feasibility of CBT implementation in Bali secondary schools | 349 | 176 | 33 | 25 | 15 | 4.36 | 2.09 | Accepted |
| 2 | power outages or unreliable electricity supply has affected the use of computer-based tests | 321 | 182 | 45 | 30 | 20 | 3.08 | 1.76 | Accepted |

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|----|--|-----|-----|----|----|----|-------------|-------------|----------|
| 3 | Inadequate provision of functional computers/Outdated Equipment such as Hardware and Software | 277 | 216 | 54 | 27 | 24 | 3.65 | 1.91 | Accepted |
| 4 | issues related to hardware maintenance and the condition of existing equipment have obstructed CBT implementation | 244 | 231 | 67 | 34 | 22 | 3.81 | 1.95 | Accepted |
| 5 | High cost of ICT facilities, maintenance, technical support, and poor network services | 279 | 218 | 58 | 26 | 17 | 4.18 | 2.05 | Accepted |
| 6 | Difficult to adapt to computer-based tests due to being accustomed to traditional paper-and-pencil exams. | 206 | 117 | 62 | 30 | 19 | 2.94 | 1.71 | Rejected |
| 7 | financial constraints or budgetary limitations have contributed to inadequate infrastructures for the full implementation of CBT | 289 | 215 | 56 | 26 | 12 | 3.64 | 1.91 | Accepted |
| 8 | Poor implementation of ICT policies in basic schools (Poor ICT Culture) | 252 | 216 | 73 | 35 | 22 | 4.06 | 2.01 | Accepted |
| 9 | Inadequate classroom space that will accommodate a large number of computers limit the proper implementation of CBT | 277 | 191 | 64 | 39 | 27 | 2.89 | 1.70 | Rejected |
| 10 | secondary schools in Bali are faced with the challenge of unreliable or inconsistent internet access for CBT) | 310 | 173 | 55 | 36 | 24 | 4.17 | 2.04 | Accepted |

Sources: Field Survey 2023

Table 1 revealed the mean responses on inadequate infrastructures affecting the implementation of computer-based tests in Bali secondary schools. Based on the cut-off point of 3.00, the result indicates that items 6 and 9 with a mean score of 2.94 and 2.89 from the responses were rejected which shows their level of inadequate infrastructures affecting the implementation of computer-based tests in secondary schools in Bali. However, items 1,2,3,4,5, 7, 8, and 10 with the mean score of 4.36, 3.08, 3.65, 3.81, 4.18, 3.64, 4.06, and 4.17 respectively, which is above the cut-off mark of 3.00 revealed the level of inadequate infrastructures affecting the implementation of computer-based test in secondary schools in Bali.

Research Question 2: How does the computer skills of teachers affect the implementation of computer-based test in secondary schools in Bali local government area of Taraba State? **N=600**

Questionnaire items 1-10: were used to answer this research question. The data on research question 1 are summarized and presented in the Table below

| S/N | Questions | SA | A | UD | D | SD | Mean | SD | Remarks |
|-----|--|-----|-----|----|----|----|-------------|-------------|----------|
| 1 | teachers' computer skills influence their confidence in implementing CBT as an assessment method | 378 | 162 | 35 | 15 | 4 | 4.46 | 2.11 | Accepted |
| 2 | training or professional development opportunities would improve teachers' computer skills for CBT implementation. | 270 | 217 | 55 | 34 | 18 | 4.12 | 2.03 | Accepted |
| 3 | A shortage of well-trained teachers with technical know-how in troubleshooting influences the full implementation of CBT | 298 | 211 | 47 | 21 | 17 | 3.53 | 1.88 | Accepted |
| 4 | Inability to conduct CBT examinations at the Secondary School level by teachers | 264 | 204 | 65 | 37 | 24 | 4.05 | 2.01 | Accepted |
| 5 | there is a connection between the computer skills of teachers and the academic performance of students in CBT assessments | 301 | 195 | 52 | 28 | 18 | 2.82 | 1.68 | Rejected |
| 6 | Assisting teachers by schools and other government agencies would enhance their computer skills to facilitate the successful implementation of CBT | 282 | 225 | 34 | 32 | 21 | 3.47 | 1.86 | Accepted |
| 7 | teachers in secondary schools lack proficiency in using computer-based testing tools and software | 233 | 198 | 76 | 34 | 13 | 3.13 | 1.77 | Accepted |
| 8 | Implementation of the ICT policies on basic education, | 272 | 218 | 57 | 31 | 16 | 4.14 | 2.03 | Accepted |
| 9 | One of the major challenges of teachers in secondary school is that they are not trained to use ICT in their teaching. | 290 | 201 | 59 | 30 | 14 | 3.19 | 1.79 | Accepted |
| 10 | skill of teachers in using computers influences their ability to create digital test content for computer-based testing | 351 | 133 | 57 | 27 | 26 | 3.40 | 1.84 | Accepted |

Sources: Field Survey 2023

The result in Table 2 shows the level of computer skills of teachers that affect the implementation of computer-based tests in secondary schools in Bali. Based on the cut-off points, the result reveals that all 9 items from the responses were accepted as it shows the

level of computer skills of teachers that affect the implementation of computer-based tests in secondary schools in Bali. However, only item 5 with a mean score of 2.82 was rejected which is below the cut-off mark.

Study's findings

The findings of the study reveal that:

Inadequate technological Infrastructure such as computers, software, and network connectivity in secondary schools is a critical factor in the implementation of computer-based tests. Financial Resources and budget constraints have significantly affected the implementation of CBT.

Subsequently, on the computer skills of teachers that affect the implementation of computer-based tests in secondary schools in Bali, the findings show that teacher training among other factors influences the effective implementation of computer-based tests. If proper strategies are implemented this will help students, teachers, and proprietors better prepare for computer-based testing, and raise awareness of the importance of computer skills in today's digital society. It would also add to the development and improvement of computer-based tests, leading to better testing results for secondary schools and learning systems.

Discussion of findings

The result of the study relating to research question one on inadequate infrastructures that affect the implementation of computer-based test in secondary schools in Bali local government reveals that only two items were rated below cut-off points, this shows that inadequate technology Infrastructure such as computers, software, and network connectivity in the secondary schools is a critical factor in the implementation of computer-based tests. Similarly, teacher training and support Financial Resources, and other factors influence the effective implementation of computer-based testing. The findings of the study are in agreement with the study of Sofiyatul, and Nujmatul, (2018) and Rafiu, Ademola, and Olatoye (2017) who noted that inadequate technological infrastructure and its facilities are factors that affected the full implementation of computer-based tests in secondary schools. However, to overcome these challenges there is a need for adequate preparation and provision of technological infrastructure, teacher training

Research question two results on the computer skills of teachers that affect the implementation of computer-based tests in secondary schools in Bali local government reveal that teachers in secondary schools lack proficiency in using computer-based testing tools and software. This is in line with Region and Mubila, (2020) and Oladimeji, Yusuf, Njoku, and Owolabi, (2018),

who maintain that Insufficient proficiency in computer skills and a shortage of adequately trained personnel within schools hurt the readiness of teachers to effectively impact and achieve computer-based testing (CBT). Implementing computer-based tests in secondary schools has confirmed a significant improvement in the value of assessment and an increase in computer skills among both teachers and students. The provision of training and opportunities for professional development would serve to enhance the computer skills of teachers, thereby facilitating the successful implementation of CBT.

Conclusion

In conclusion, inadequate infrastructures significantly affect the implementation of computer-based tests in secondary schools in Bali local government area of Taraba State. These issues include inadequate computer facilities, power supply, unreliable internet connections, and budget limitations. Government policies and funding play a vital role in addressing these problems. Practical solutions and strategies are required to overcome infrastructural challenges, ensuring a more reasonable implementation of computer-based testing.

Similarly, the computer knowledge of teachers has a significant role in the implementation of computer-based tests. Proficient teachers show more confidence in embracing this assessment method, leading to more effective utilization of computer-based test resources. Training and professional development are essential for improving teachers' computer skills and encouraging their commitment to computer-based tests. Overcoming these challenges requires addressing teacher perceptions, offering support, and providing resources to improve their computer proficiency. The implementation of computerized assessments in secondary schools in Bali local government area of Taraba State aligns with the establishment of a conducive learning environment and equips the students with the necessary skills for success in the age of technology.

Recommendations

Based on the findings and conclusion of this study, the research recommended the following:

1. The government in collaboration with educational authority should adequately make available the physical infrastructure that is necessary to set up computer labs or provide individual computer access for students. This includes having a stable power supply, suitable seating arrangements, and network infrastructure to support internet connectivity and smooth functioning of CBTs.
2. There is a need for teacher training and IT support staff by schools who can handle technical issues related to computers, networks, and software. Equally, teaching and learning resources should be made available and accessibility for teachers such as

digital content and online practice exams, are important for students and teachers to prepare for computer-based tests effectively. Similarly, Teachers need to be trained to administer computer-based tests and prepare students for such assessments.

3. School administrators and policymakers should play their part in assisting in the implementation of CBTs. This entails the allocation of essential funds to foster the development of infrastructure, offer technical support, and provide training for both teachers and students. It is imperative to establish policies and guidelines to guarantee uniform practices and equitable accessibility to CBTs.
4. Parents and Stakeholders should be involved in the policymaking process and addressing their concerns, this can enable the smooth implementation of computer-based tests.

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