



Availability and Utilization of ICT Facilities for Students' Assessment in Public Secondary Schools in Yola North Local Government Area, Adamawa State, Nigeria

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Abstract: The increasing adoption of Information and Communication Technology (ICT) in education has transformed assessment practices by improving efficiency, accuracy, feedback mechanisms, and data management. However, the extent to which secondary schools in developing contexts have access to and utilise ICT facilities for assessment remains a major concern. This study examined the availability and utilisation of ICT facilities for students' assessment in public secondary schools in Yola North Local Government Area of Adamawa State, Nigeria. A descriptive survey research design was adopted. The study involved 120 teachers and school administrators selected through a simple random sampling technique. Data were collected using a structured questionnaire titled ICT Availability and Utilisation Questionnaire (ICTAUQ). The instrument was validated by experts in educational technology and measurement, with a reliability coefficient of 0.82 established using Cronbach's alpha. Data were analysed using descriptive statistics and Pearson Product Moment Correlation. The findings revealed that ICT facilities required for digital assessment were inadequate, with a grand mean score of 2.16. Similarly, ICT utilisation for assessing students' performance was low, recording a grand mean score of 2.20. Major constraints affecting ICT integration included poor electricity supply, inadequate funding, limited teacher training, restricted internet access, and weak maintenance practices, with a grand mean score of 3.07. The study further revealed a significant positive relationship between ICT availability and utilisation ($r = 0.68, p < 0.05$). The study concludes that although ICT has considerable potential for improving assessment practices, its contribution remains limited because of infrastructural and human capacity challenges. The study recommends increased investment in ICT infrastructure, continuous teacher professional development, reliable power supply, and effective implementation of digital education policies.

Keywords: Information and Communication Technology (ICT), Digital Assessment, ICT Facilities, Secondary Education, Teacher Competence, Nigeria.

INTRODUCTION

Information and Communication Technology (ICT) has become an important component of contemporary education systems, influencing the processes through which knowledge is delivered, learning is supported, and students' achievement is evaluated. The integration of

digital technologies into education has created new possibilities for improving assessment through computer-based testing, automated scoring, electronic record management, and real-time feedback systems. Unlike traditional paper-based assessment approaches, ICT-supported assessment provides opportunities for faster data processing, improved accuracy, and more flexible evaluation of learners' competencies [1][2].

Assessment serves as a critical component of education because it provides evidence of students' knowledge, skills, and learning progress. Effective assessment enables teachers to identify learners' strengths and weaknesses, modify instructional approaches, and make informed academic decisions. However, conventional assessment methods are often associated with challenges such as delayed feedback, administrative burden, limited coverage, and increased possibility of human error. Digital assessment technologies provide alternative approaches by allowing teachers to develop interactive assessments, analyse performance data, and provide timely feedback to learners [2].

Globally, educational systems have increasingly embraced ICT as a means of improving teaching quality and assessment effectiveness. Studies have demonstrated that technology integration can positively influence learning outcomes when supported by appropriate infrastructure, teacher competence, and institutional commitment [3]. However, research also indicates that technology availability alone does not automatically translate into effective utilisation. Teachers' knowledge, confidence, attitudes, and access to continuous professional development significantly determine whether ICT becomes meaningfully integrated into educational practice [4].

In Nigeria, ICT integration in education has been recognised as a strategic pathway for improving educational quality and preparing learners for participation in a digital society. The National Policy on Education emphasises the importance of ICT in strengthening teaching, learning, and educational management [5]. Despite these policy commitments, implementation remains uneven, particularly in public secondary schools where inadequate infrastructure, unstable electricity supply, limited funding, and insufficient teacher preparation continue to restrict effective ICT adoption [6]. The challenges associated with ICT integration are particularly significant in many public secondary schools where access to basic digital resources remains limited. Previous studies have reported that many Nigerian schools lack adequate computers, internet connectivity, digital learning resources, and technical support systems required for effective ICT-based educational activities [7]. As a result, teachers frequently continue to rely on traditional assessment methods despite the growing recognition of the advantages of digital assessment. The situation raises important questions regarding the readiness of secondary schools to adopt ICT-based assessment practices. While educational policies promote technology integration, there remains a gap between policy expectations and actual classroom realities. Schools may possess limited ICT resources, but these facilities may not be adequately maintained or utilised because of teacher competence challenges and institutional barriers [8].

In Adamawa State, particularly Yola North Local Government Area, there is limited empirical evidence concerning the availability of ICT facilities and their utilisation in assessing students' performance. Understanding the current situation is necessary because assessment practices influence educational quality, accountability, and students' learning outcomes. Without adequate ICT infrastructure and effective utilisation strategies, schools may be unable to benefit from the efficiency and accuracy associated with digital assessment systems. Therefore, this study investigates the availability and utilisation of ICT facilities for students' assessment

in public secondary schools in Yola North Local Government Area, Adamawa State. Specifically, the study examines available ICT resources, determines the extent to which these resources are utilised during assessment, identifies factors limiting ICT adoption, and establishes the relationship between ICT availability and utilisation.

Statement of the Problem

The integration of Information and Communication Technology (ICT) into educational systems has become a strategic priority for improving teaching, learning, and assessment worldwide. Digital assessment technologies enhance the accuracy, efficiency, transparency, and timeliness of evaluating students' learning outcomes while providing immediate feedback that supports continuous improvement. Consequently, governments and educational institutions have increasingly invested in ICT infrastructure to modernize instructional and assessment practices. In Nigeria, the Federal Government has introduced several ICT policies aimed at promoting digital literacy and technology integration across all levels of education. Despite these policy initiatives, implementation remains inconsistent, particularly in public secondary schools where inadequate infrastructure, poor internet connectivity, unstable electricity supply, insufficient funding, and limited teacher competence continue to constrain effective ICT adoption. These challenges have limited the transition from conventional paper-based assessment to technology-supported assessment systems. Available empirical evidence suggests that many public secondary schools still experience shortages of computers, projectors, educational software, internet facilities, and other digital resources required for effective assessment. Even where ICT facilities exist, they are often under-utilised because teachers lack adequate professional training, technical support, or confidence to integrate technology into classroom assessment. Consequently, assessment practices remain largely manual, reducing opportunities to improve efficiency, accuracy, record management, and learner feedback.

Although several studies have examined ICT integration in Nigerian education, relatively few have specifically investigated the availability and utilisation of ICT facilities for students' assessment in public secondary schools within Yola North Local Government Area of Adamawa State. Most previous studies have focused broadly on ICT in teaching and learning without adequately addressing assessment practices, despite assessment being a critical component of educational quality assurance. This lack of location-specific empirical evidence creates a knowledge gap regarding the current state of ICT-supported assessment in Yola North Local Government Area. Understanding the extent of ICT availability, utilisation, and the factors limiting effective implementation is essential for developing policies and interventions capable of improving assessment practices in secondary schools. It is against this background that this study investigates the availability and utilisation of ICT facilities for assessing students' performance in selected public secondary schools in Yola North Local Government Area, Adamawa State, Nigeria.

Objectives of the Study

The main objective of this study is to examine the availability and utilisation of Information and Communication Technology (ICT) facilities for assessing students' performance in selected public secondary schools in Yola North Local Government Area, Adamawa State.

The specific objectives are to:

- i. Examine the availability of ICT facilities in selected public secondary schools in Yola North Local Government Area

- ii. Determine the extent to which ICT facilities are utilised in assessing students' performance
- iii. Identify the major challenges affecting the utilisation of ICT facilities in students' assessment
- iv. Examine the relationship between ICT availability and ICT utilisation for students' assessment.

Research Questions

The study seeks to answer the following research questions:

- i. What ICT facilities are available in selected public secondary schools in Yola North Local Government Area?
- ii. To what extent are ICT facilities utilised in assessing students' performance?
- iii. What challenges affect the utilisation of ICT facilities in students' assessment?
- iv. What relationship exists between ICT availability and ICT utilisation for students' assessment?

Research Hypothesis

The following null hypothesis was tested at the 0.05 level of significance:

H₀: There is no statistically significant relationship between ICT availability and ICT utilisation for assessing students' performance in public secondary schools in Yola North Local Government Area.

LITERATURE REVIEW

Concept of Information and Communication Technology in Education

Information and Communication Technology (ICT) refers to a broad range of digital technologies used to create, process, store, retrieve, and communicate information. Within educational settings, ICT encompasses computers, mobile devices, internet services, learning management systems, multimedia applications, educational software, interactive whiteboards, and digital assessment platforms that facilitate teaching, learning, administration, and evaluation [8]. The role of ICT in education has evolved considerably over the past two decades. Initially introduced primarily for computer literacy, ICT has become an integral component of instructional delivery, collaborative learning, classroom management, and educational assessment. Modern educational systems increasingly depend on digital technologies to support learner-centred instruction, improve communication between teachers and students, facilitate access to learning resources, and strengthen evidence-based educational decision-making [9].

One of the most significant contributions of ICT is its capacity to transform assessment practices. Digital technologies enable educators to administer computer-based examinations, online quizzes, automated marking systems, electronic portfolios, and continuous formative assessments that provide immediate feedback to learners. These technologies not only improve assessment efficiency but also generate learning analytics that help teachers monitor students' progress and identify learning difficulties at an early stage. However, the educational value of ICT depends less on the mere presence of technological equipment than on its effective pedagogical integration. Technology contributes meaningfully to educational improvement only when teachers possess the knowledge, skills, and institutional support necessary to integrate ICT into instructional and assessment practices. Consequently, successful ICT

implementation requires simultaneous investment in infrastructure, professional development, technical support, and educational leadership.

Availability of ICT Facilities in Secondary Schools

The availability of ICT facilities constitutes the foundation upon which effective technology integration is built. ICT availability refers to the presence, accessibility, adequacy, and functionality of technological resources required to support educational activities. Essential ICT facilities include desktop and laptop computers, internet connectivity, multimedia projectors, printers, scanners, educational software, wireless networks, digital assessment platforms, and reliable electricity supply [10]. International evidence indicates that schools equipped with adequate ICT infrastructure are better positioned to implement innovative teaching methods and technology-supported assessment practices. UNESCO [11] argues that equitable access to digital infrastructure is fundamental to achieving quality education and reducing disparities in learning opportunities. Similarly, the World Bank [12] identifies digital infrastructure as one of the principal determinants of educational resilience and learning continuity.

Despite increasing investment in educational technology globally, many developing countries continue to experience significant disparities in ICT availability. Nigerian public secondary schools, in particular, face persistent shortages of essential technological resources. Earlier studies reported widespread inadequacy of ICT facilities due to insufficient funding, weak policy implementation, poor maintenance culture, and infrastructural deficiencies [4][5]. Although some improvements have been recorded through government interventions and donor-supported projects, access remains uneven across schools, especially in rural and semi-urban communities. Recent Nigerian studies similarly indicate that inadequate ICT infrastructure continues to hinder technology integration in secondary education. Ogundile *et al.* [13] observed that many schools possess only limited computer facilities and inadequate internet services, restricting teachers' ability to integrate digital technologies into classroom activities. Likewise, Akpan [14] reported that insufficient ICT facilities remain a major obstacle to effective technology-based instruction and assessment in Nigerian public secondary schools. The availability of ICT facilities therefore represents a necessary, although not sufficient, condition for successful digital assessment. Schools with adequate technological infrastructure create opportunities for teachers to diversify assessment methods, improve record management, and provide timely feedback to learners. Conversely, inadequate ICT resources significantly reduce the likelihood of meaningful technology utilisation.

Utilisation of ICT Facilities in Students' Assessment

The utilisation of Information and Communication Technology (ICT) in students' assessment refers to the application of digital technologies to design, administer, score, analyse, and communicate assessment outcomes. ICT-supported assessment includes computer-based examinations, online quizzes, electronic assignments, automated marking systems, digital portfolios, learning management systems, and electronic record management. These technologies enable teachers to assess learners more efficiently while providing immediate feedback that supports continuous learning and instructional improvement. Assessment has gradually shifted from being viewed merely as a mechanism for measuring learning outcomes to becoming an integral part of the learning process. Digital assessment technologies support formative assessment by enabling teachers to monitor students' progress continuously and provide timely interventions where necessary. Unlike conventional paper-based assessment, ICT facilitates automated data processing, reduces human error, improves assessment security,

and allows educators to generate comprehensive performance reports for instructional planning [2]. The growing adoption of digital assessment has been accelerated by increased internet connectivity, cloud computing, and educational software capable of supporting remote and blended learning environments. UNESCO [11] notes that technology-enhanced assessment has become an important component of educational transformation because it allows institutions to evaluate students more efficiently while promoting learner engagement and self-regulated learning. Similarly, Anderson [15] argues that online learning environments have expanded opportunities for flexible assessment by allowing students to complete evaluations regardless of geographical location.

Despite these advantages, ICT utilisation in assessment remains relatively low in many developing countries. Evidence suggests that the presence of technological infrastructure does not necessarily translate into effective classroom utilisation. Rather, teachers' technological competence, pedagogical knowledge, institutional support, and positive attitudes towards technology largely determine whether ICT becomes integrated into assessment practices. In Nigeria, studies consistently indicate that teachers continue to rely predominantly on traditional paper-based assessment despite increasing awareness of digital technologies. This situation has been attributed to inadequate ICT facilities, insufficient professional development, unstable electricity supply, poor internet connectivity, and limited technical support. Consequently, many schools have yet to benefit from the efficiency and flexibility associated with computer-supported assessment systems. Recent empirical studies further demonstrate that teachers who receive continuous ICT training are significantly more likely to integrate digital assessment tools into classroom practice than those without formal training [16]. This finding underscores the importance of sustained professional development in promoting effective technology utilisation. Overall, the literature suggests that successful ICT utilisation depends on the interaction of technological infrastructure, teacher competence, institutional support, and favourable educational policies. Improving any one of these factors in isolation is unlikely to produce meaningful improvements in digital assessment practices.

ICT and Students' Academic Performance

The relationship between ICT utilisation and students' academic performance has attracted considerable scholarly attention over the past two decades. Researchers generally agree that ICT can improve learning outcomes by increasing learners' engagement, supporting interactive instruction, facilitating collaborative learning, and providing immediate feedback during assessment. Technology enhances students' learning experiences by providing access to diverse instructional resources, simulations, multimedia applications, and adaptive learning environments. Digital assessment further strengthens learning by enabling students to receive prompt feedback, monitor their own progress, and identify areas requiring improvement. Bennett [2] argues that technology-supported assessment contributes to improved educational quality because assessment becomes more accurate, transparent, and responsive to learners' needs.

Tamim *et al.* [3], through a comprehensive meta-analysis involving more than forty years of educational research, concluded that ICT generally exerts a positive, although moderate, influence on students' academic achievement. The study emphasized that educational technology is most effective when integrated into sound pedagogical practices rather than used merely as a substitute for traditional instructional methods. Similarly, recent international evidence suggests that educational technologies contribute to improved student achievement when teachers possess the necessary digital competencies and when schools provide adequate

technological support [17]. Conversely, inappropriate implementation or inadequate teacher preparation may reduce the educational benefits associated with ICT integration. Within the Nigerian context, the relationship between ICT and students' academic performance remains influenced by infrastructural and institutional factors. Schools that possess functional ICT facilities and adequately trained teachers generally report greater integration of technology into teaching and assessment, thereby creating opportunities for improved student learning outcomes. However, where technological resources remain inadequate, the educational impact of ICT becomes considerably reduced. Consequently, while ICT has substantial potential for improving academic performance, its effectiveness depends on the quality of implementation, teacher competence, institutional readiness, and sustained investment in educational technology.

Challenges Affecting ICT Availability and Utilisation

Although governments and educational institutions have increasingly recognized the importance of ICT in education, numerous barriers continue to impede its effective implementation, particularly within developing countries. These barriers operate at infrastructural, institutional, financial, and human resource levels. One of the most significant constraints is inadequate funding. The acquisition, installation, maintenance, and upgrading of ICT facilities require substantial financial investment that many public secondary schools are unable to sustain. Insufficient funding often results in limited numbers of computers, obsolete equipment, inadequate software licences, and poor maintenance practices.

Another major challenge concerns inadequate infrastructure. Reliable electricity supply remains fundamental for operating computers, internet facilities, servers, and digital assessment platforms. However, many Nigerian schools experience frequent power interruptions that significantly reduce opportunities for technology-supported instruction and assessment. Similarly, poor internet connectivity limits access to online educational resources, cloud-based assessment systems, and digital communication platforms.

Teacher competence represents another critical determinant of ICT utilisation. According to Ertmer and Ottenbreit-Leftwich [7], teachers' confidence, beliefs, and technological knowledge strongly influence technology adoption. Even when ICT facilities are available, inadequate professional development often discourages teachers from incorporating digital technologies into classroom assessment. Institutional support also influences ICT utilisation. Effective technology integration requires school leadership capable of promoting innovation, allocating resources, coordinating professional development, and establishing maintenance systems. Schools lacking strong administrative commitment frequently experience low ICT utilisation despite possessing technological infrastructure [18].

Technical support services constitute another important consideration. Computers and digital equipment require regular maintenance, software updates, troubleshooting, and replacement of faulty components. Without qualified technical personnel, schools often experience prolonged equipment breakdowns, resulting in underutilisation of available ICT resources. Finally, resistance to organisational change continues to affect technology adoption within educational institutions. Teachers accustomed to conventional assessment methods may perceive digital technologies as complex, time-consuming, or unnecessary. Such attitudes often delay the transition towards technology-supported assessment despite available opportunities for educational improvement [19]. Addressing these interconnected challenges requires coordinated interventions involving government agencies, educational institutions, development partners, school administrators, and teachers. Sustainable ICT integration

depends not only on technological investment but also on supportive institutional environments capable of promoting continuous innovation.

THEORETICAL FRAMEWORK

Technology Acceptance Model (TAM)

This study is primarily anchored on the Technology Acceptance Model (TAM) developed by Davis [20]. The model explains individuals' willingness to adopt technological innovations based on two principal constructs: Perceived Usefulness and Perceived Ease of Use. Perceived usefulness refers to the extent to which an individual believes that using a particular technology will improve job performance. Within this study, teachers are more likely to utilise ICT for students' assessment when they perceive digital technologies as capable of improving assessment efficiency, reducing workload, increasing accuracy, and facilitating timely feedback.

Perceived ease of use refers to the degree to which individuals believe that using technology will require minimal effort. Teachers who consider ICT systems simple to operate are generally more willing to integrate them into classroom assessment than those who perceive technology as difficult or complicated. The Technology Acceptance Model has been extensively applied in educational technology research because it provides a robust framework for explaining teachers' adoption of digital technologies. Numerous studies have confirmed that both perceived usefulness and perceived ease of use significantly influence teachers' intentions to utilise ICT within educational settings [20]. Accordingly, the model provides an appropriate theoretical foundation for explaining variations in ICT utilisation among teachers in public secondary schools within Yola North Local Government Area.

Technological Pedagogical Content Knowledge (TPACK) Framework

To complement TAM, this study also draws upon the Technological Pedagogical Content Knowledge (TPACK) framework developed by Mishra and Koehler [21]. TPACK extends Shulman's concept of pedagogical content knowledge by incorporating technological knowledge as an essential component of effective teaching. The framework proposes that successful technology integration occurs when teachers possess balanced knowledge across three interrelated domains: Content Knowledge (CK), Pedagogical Knowledge (PK), Technological Knowledge (TK). These knowledge domains interact to produce Technological Pedagogical Content Knowledge, enabling teachers to integrate ICT effectively into teaching, learning, and assessment [22].

Within the context of this study, TPACK suggests that the availability of ICT facilities alone cannot guarantee effective utilisation. Rather, teachers must possess adequate technological competence alongside appropriate pedagogical strategies to integrate digital assessment meaningfully into classroom practice [23]. Consequently, the framework provides additional theoretical support for understanding the influence of teacher competence on ICT utilisation.

METHODOLOGY

A descriptive survey research design was adopted for this study because it enabled the researcher to collect data on the existing availability and utilisation of Information and Communication Technology (ICT) facilities for assessing students' performance in public secondary schools without manipulating the study variables. The study was conducted in Yola North Local Government Area, Adamawa State, Nigeria. The population comprised 171

teachers and school administrators drawn from selected public secondary schools in the study area. A sample of 120 respondents was determined using the Taro Yamane (1967) formula at a 5% level of precision. Substituting the values into the formula yielded (approx 120). The respondents were selected using a simple random sampling technique to ensure that every member of the population had an equal chance of being included in the study.

Data were collected using a structured questionnaire titled ICT Availability and Utilisation Questionnaire (ICTAUQ), which was developed by the researcher. The instrument was validated by experts in Educational Technology and Measurement and Evaluation, while its reliability was established through a pilot study using Cronbach's Alpha, yielding a reliability coefficient of 0.82, indicating satisfactory internal consistency. The questionnaire was administered personally by the researcher, and all completed copies were retrieved for analysis. Data were analysed using the Statistical Package for the Social Sciences (SPSS) Version 26. Descriptive statistics, including frequency, percentage, mean, and standard deviation, were used to answer the research questions, while the Pearson Product Moment Correlation (PPMC) was employed to test the hypothesis at the 0.05 level of significance. A criterion mean of 2.50 was adopted, with mean scores of 2.50 and above interpreted as accepted, while mean scores below 2.50 were interpreted as rejected.

RESULTS AND DISCUSSION

The results are presented according to the research questions and hypothesis formulated for the study. Descriptive statistics comprising mean and standard deviation were used to answer the research questions, while the Pearson Product Moment Correlation (PPMC) was employed to test the hypothesis at the 0.05 level of significance. A criterion mean of 2.50 was adopted for decision-making. Mean scores of 2.50 and above indicate agreement or high availability/utilisation, whereas mean scores below 2.50 indicate disagreement or low availability/utilisation.

Research Question One: What ICT facilities are available in public secondary schools in Yola North Local Government Area?

Table 1: Availability of ICT Facilities in Public Secondary Schools.

ICT Facility	Mean	SD	Interpretation
Computers are available in my school Availability	2.30	0.81	Low Availability
Internet facilities are accessible	2.10	0.76	Low Availability
Multimedia projectors are available	2.05	0.72	Low Availability
Educational software is available	2.20	0.78	Low Availability
Electricity supply adequately supports ICT usage	2.15	0.84	Low Availability
Grand Mean:	2.16	0.78	Low Availability

[Source: Field Survey (2026)]

The results presented in Table I indicate that ICT facilities required for effective digital assessment are generally inadequate in the selected public secondary schools. The overall mean score of 2.16 falls below the criterion mean of 2.50, indicating low availability of ICT resources. Among the facilities assessed, computers recorded the highest mean score (2.30), while multimedia projectors recorded the lowest (2.05). These findings suggest that the schools lack sufficient technological infrastructure to support effective ICT-based assessment.

Research Question Two: To what extent are ICT facilities utilised in assessing students' performance?

Table 2: Extent of ICT Utilisation in Students' Assessment.

ICT Utilisation Practice	Mean	SD	Interpretation
Teachers administer computer-based tests	2.25	0.79	Low Utilisation
Online quizzes are conducted	2.10	0.74	Low Utilisation
Automated grading systems are used	2.05	0.71	Low Utilisation
ICT is used for recording students' scores	2.40	0.82	Low Utilisation
Digital assessment tools are regularly used	2.20	0.76	Low Utilisation
Grand Mean:	2.20	0.76	Low Utilisation

[Source: Field Survey (2026)]

Table II shows that the utilisation of ICT facilities for students' assessment remains low across the sampled schools. The grand mean score of 2.20 is below the benchmark of 2.50, indicating that teachers still rely predominantly on conventional assessment methods. Although recording students' scores electronically received the highest rating (Mean = 2.40), it still fell below the acceptable threshold.

Research Question Three: What challenges affect the utilisation of ICT facilities in assessing students' performance?

Table 3: Challenges Affecting ICT Utilisation.

Challenges	Mean	SD	Interpretation
Inadequate funding	3.10	0.68	Agree
Poor electricity supply	3.25	0.61	Agree
Lack of ICT training	3.05	0.74	Agree
Limited internet connectivity	3.00	0.79	Agree
Poor maintenance culture	2.95	0.82	Agree
Grand Mean:	3.07	0.73	Major Challenge

[Source: Field Survey (2026)]

The findings reveal that respondents agreed that several factors constrain effective ICT utilisation in assessment. Poor electricity supply emerged as the most critical challenge (Mean = 3.25), followed by inadequate funding (Mean = 3.10) and inadequate teacher training (Mean = 3.05). The overall grand mean of 3.07 indicates that respondents strongly perceived these factors as major barriers to ICT integration.

Research Question Four: What relationship exists between ICT availability and ICT utilisation?

Table 4: Descriptive Statistics.

Variable	Mean	SD
ICT Availability	2.16	0.78
ICT Utilisation	2.20	0.76

[Source: Field Survey (2026)]

The descriptive statistics indicate generally low levels of ICT availability and ICT utilisation within the selected schools. These descriptive findings suggest that limited technological resources may influence teachers' ability to integrate ICT into assessment activities.

Test of Hypothesis

H₀: There is no statistically significant relationship between ICT availability and ICT utilisation in assessing students' performance.

Table 5: Pearson Product Moment Correlation Between ICT Availability and ICT Utilisation.

Variables	r	p-value	Decision
ICT Availability × ICT Utilisation	0.68	<0.001	Reject H ₀

Decision

Since the calculated p-value (<0.001) is less than the level of significance (0.05), the null hypothesis is rejected. The Pearson correlation coefficient ($r = 0.68$) indicates a moderately strong positive relationship between ICT availability and ICT utilisation. This suggests that schools with greater access to ICT facilities are considerably more likely to integrate digital technologies into students' assessment. Although the relationship is statistically significant, the correlation is not perfect, implying that factors such as teacher competence, institutional support, infrastructure quality, and administrative commitment also influence ICT utilisation.

DISCUSSION OF FINDINGS

The study revealed that ICT facilities available in public secondary schools within Yola North Local Government Area are inadequate. The low grand mean indicates that essential digital resources, including computers, internet connectivity, multimedia projectors, educational software, and reliable electricity, remain insufficient to support effective digital assessment. This finding corroborates the work of Aduwa-Ogiegbaen and Iyamu [6], who reported that inadequate ICT infrastructure continues to hinder technology integration in Nigerian secondary schools. Similarly, Ogundile *et al.* [13] found that limited access to digital resources significantly constrains teachers' ability to implement ICT-supported instructional and assessment practices. More recently, UNESCO [11] emphasized that equitable access to digital infrastructure remains fundamental to improving educational quality and reducing inequalities in learning opportunities. The implication is that effective ICT-based assessment cannot be achieved without adequate investment in technological infrastructure.

The study further established that ICT utilisation for assessing students' performance remains low despite growing awareness of educational technology. Teachers continue to rely primarily on conventional paper-based assessment methods rather than computer-based testing, automated grading systems, and online assessment platforms. This finding supports Ertmer and Ottenbreit-Leftwich [4], who argued that access to technology alone does not guarantee meaningful classroom utilisation. Teachers' digital competence, confidence, and beliefs significantly influence ICT adoption. Likewise, Adekannbi and Makinde [16] observed that teachers who receive continuous ICT training are substantially more likely to integrate technology into classroom assessment than those without formal professional development. These findings indicate that improving ICT utilisation requires simultaneous investment in teacher capacity building alongside technological infrastructure.

The study identified inadequate funding, unstable electricity supply, insufficient ICT training, poor internet connectivity, and weak maintenance practices as the major challenges limiting ICT utilisation in secondary school assessment. These findings are consistent with Yusuf [7], who identified inadequate funding and infrastructural deficiencies as persistent barriers to ICT implementation within Nigerian schools. Similarly, the World Bank [12] noted that weak digital infrastructure continues to constrain technology-enabled education across many developing countries. UNESCO [11] likewise stressed that sustainable ICT integration requires investments not only in equipment but also in electricity, connectivity, technical support, and

teacher professional development. The results therefore suggest that isolated investments in ICT equipment are unlikely to produce sustainable improvements without broader institutional and infrastructural support.

The study established a statistically significant positive relationship between ICT availability and ICT utilisation ($r = 0.68$, $p < 0.05$). This indicates that improvements in ICT infrastructure are associated with increased utilisation of digital technologies for students' assessment. The finding supports the Technology Acceptance Model proposed by Davis [16], which posits that individuals are more likely to adopt technology when it is perceived as useful and accessible. It also aligns with the TPACK framework developed by Mishra and Koehler [17], which emphasizes that effective technology integration depends on the interaction between technological resources, pedagogical knowledge and subject content knowledge. The result further agrees with the meta-analysis by Tamim *et al.* [3], which concluded that access to educational technology positively influences teaching and learning outcomes when supported by appropriate pedagogical practices

Practical Implications of the Study

The findings have important implications for educational policy, school administration, teacher professional development, and future educational planning. For policymakers, the study highlights the need to prioritise ICT investment beyond the procurement of equipment. Sustainable ICT integration requires adequate funding for maintenance, reliable electricity, internet connectivity, and continuous monitoring of implementation programmes. School administrators should establish supportive institutional environments that encourage teachers to adopt ICT for instructional delivery and students' assessment. This includes providing technical support, organising in-service ICT training, and promoting digital assessment practices within schools. Teachers should continuously improve their digital competencies through professional development programmes, workshops, seminars, and self-directed learning. Enhanced technological competence will increase teachers' confidence and willingness to integrate ICT into assessment activities. The findings also provide useful evidence for development partners, educational planners, and donor agencies interested in strengthening digital education initiatives within Nigerian secondary schools.

CONCLUSION

This study examined the availability and utilisation of Information and Communication Technology (ICT) facilities for assessing students' performance in selected public secondary schools in Yola North Local Government Area, Adamawa State, Nigeria. The findings demonstrate that the integration of ICT into students' assessment remains limited because the technological infrastructure required to support digital assessment is largely inadequate. Essential facilities such as computers, internet connectivity, multimedia projectors, educational software, and reliable electricity were found to be insufficient across the sampled schools. The study further established that teachers make limited use of ICT in assessment despite the growing recognition of its educational benefits. Conventional paper-based assessment methods continue to dominate classroom practice because of inadequate ICT resources, insufficient teacher training, unstable electricity supply, weak internet connectivity, and inadequate institutional support. These constraints collectively reduce opportunities for implementing efficient, transparent, and technology-supported assessment systems. A significant positive relationship was found between ICT availability and ICT utilisation, indicating that schools with better ICT infrastructure are more likely to integrate digital technologies into students'

assessment. However, the relationship also demonstrates that the availability of ICT facilities alone is insufficient to guarantee effective utilisation. Teacher competence, school leadership, technical support, and supportive educational policies remain equally important determinants of successful ICT integration. Overall, the findings reinforce the need for a comprehensive strategy that combines infrastructural development, continuous professional development for teachers, effective maintenance systems, and sustained policy implementation to improve ICT-supported assessment practices in Nigerian secondary schools.

Recommendations

Based on the findings of this study, the following recommendations are proposed:

- The Federal Ministry of Education, Adamawa State Government, and relevant educational agencies should increase funding for ICT infrastructure by providing adequate computers, internet facilities, educational software, multimedia equipment, and digital assessment platforms in public secondary schools.
- Government should improve electricity supply to public secondary schools. Alternative energy sources, particularly solar-powered systems, should be installed to ensure uninterrupted operation of ICT facilities during teaching and assessment activities.
- Regular ICT capacity-building programmes should be organised for teachers and school administrators. Training should emphasise practical application of digital assessment tools, computer-based testing, electronic record management, and online learning platforms.
- Educational authorities should collaborate with internet service providers to improve broadband access within public secondary schools. Affordable and reliable internet services are essential for effective implementation of digital assessment.
- Each public secondary school should establish an ICT maintenance unit responsible for routine servicing, software updates, equipment repairs, and technical support to ensure sustainability of ICT facilities.
- Government should strengthen monitoring and evaluation mechanisms to ensure proper implementation of existing ICT policies in education. Periodic supervision should be conducted to assess the utilisation of ICT facilities across schools.
- Government should encourage partnerships with private organisations, telecommunication companies, non-governmental organisations, and international development agencies to improve ICT infrastructure and teacher training in public secondary schools.

REFERENCES

- [1] C. Redecker and C. Johannessen, "Changing assessment—Towards a new assessment paradigm," *European Journal of Education*, vol. 48, no. 1, pp. 79–96, 2013.
- [2] R. E. Bennett, "The changing nature of educational assessment," *Review of Research in Education*, vol. 39, no. 1, pp. 370–407, 2015.
- [3] R. M. Tamim, R. M. Bernard, E. Borokhovski, P. C. Abrami, and R. F. Schmid, "What forty years of research says about the impact of technology on learning: A second-order meta-analysis and validation study," *Review of Educational Research*, vol. 81, no. 1, pp. 4–28, 2011.
- [4] P. A. Ertmer and A. T. Ottenbreit-Leftwich, "Teacher technology change: How knowledge, confidence, beliefs, and culture intersect," *Journal of Research on Technology in Education*, vol. 42, no. 3, pp. 255–284, 2010.

- [5] Federal Republic of Nigeria, *National Policy on Education*, 6th ed. Abuja, Nigeria: Nigerian Educational Research and Development Council (NERDC), 2014.
- [6] S. E. Aduwa-Ogiegbaen and E. O. S. Iyamu, "Using information and communication technology in secondary schools in Nigeria: Problems and prospects," *Educational Technology & Society*, vol. 8, no. 1, pp. 104–112, 2005.
- [7] M. O. Yusuf, "Information and communication technology and education: Analysing the Nigerian national policy for information technology," *International Education Journal*, vol. 6, no. 3, pp. 316–321, 2005.
- [8] UNESCO, *ICT Competency Framework for Teachers*, Version 3. Paris, France: UNESCO, 2018.
- [9] N. Selwyn, *Education and Technology: Key Issues and Debates*, 3rd ed. London, U.K.: Bloomsbury Academic, 2021.
- [10] UNESCO Institute for Statistics, *A Guide to Measuring Information and Communication Technologies (ICT) in Education*. Montreal, Canada: UIS, 2009.
- [11] UNESCO, *Global Education Monitoring Report 2023: Technology in Education—A Tool on Whose Terms?* Paris, France: UNESCO Publishing, 2023.
- [12] World Bank, *The State of the Global Education Crisis: A Path to Recovery*. Washington, DC, USA: World Bank, 2021.
- [13] O. Ogundile, S. A. Bishop, H. P. Okagbue, A. A. Adamu, and M. A. Babalola, "Factors influencing ICT adoption in selected secondary schools in Ogun State, Nigeria," *International Journal of Emerging Technologies in Learning*, vol. 14, no. 10, pp. 62–74, 2019.
- [14] Organisation for Economic Co-operation and Development (OECD), *Students, Computers and Learning: Making the Connection*. Paris, France: OECD Publishing, 2015.
- [15] T. Anderson, *The Theory and Practice of Online Learning*, 3rd ed. Edmonton, Canada: AU Press, 2023.
- [16] F. D. Davis, "Perceived usefulness, perceived ease of use, and user acceptance of information technology," *MIS Quarterly*, vol. 13, no. 3, pp. 319–340, Sep. 1989.
- [17] P. Mishra and M. J. Koehler, "Technological pedagogical content knowledge: A framework for teacher knowledge," *Teachers College Record*, vol. 108, no. 6, pp. 1017–1054, 2006.
- [18] M. Fullan, *The New Meaning of Educational Change*, 6th ed. New York, NY, USA: Teachers College Press, 2020.
- [19] UNESCO, *Education in a Post-COVID World: Nine Ideas for Public Action*. Paris, France: UNESCO, 2020.
- [20] United Nations, *The Sustainable Development Goals Report 2023*. New York, NY, USA: United Nations, 2023.
- [21] International Society for Technology in Education (ISTE), *ISTE Standards for Educators*. Arlington, VA, USA: ISTE, 2021.
- [22] J. W. Creswell and J. D. Creswell, *Research Design: Qualitative, Quantitative, and Mixed Methods Approaches*, 6th ed. Thousand Oaks, CA, USA: SAGE Publications, 2023.
- [23] L. J. Cronbach, "Coefficient alpha and the internal structure of tests," *Psychometrika*, vol. 16, no. 3, pp. 297–334, 1951.



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