

Impact of ICT-Based Assessment Tools on Student Performance in Islamic Studies: A Case Study of Adamu Augie College of Education, Argungu, Kebbi State

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ABSTRACT

This study investigates the impact of ICT-based assessment tools on student performance in Islamic Studies at Adamu Augie College of Education, Argungu, Kebbi State. As digital transformation becomes essential in modern education, integrating technology into religious pedagogy poses both opportunities and challenges. Using a quasi-experimental design, the study compared academic performance between students assessed through traditional methods and those using ICT tools such as Google Forms and Moodle quizzes. Quantitative data were collected via pre- and post-tests, while qualitative feedback was gathered through student surveys and lecturer interviews. Results revealed a significant improvement in student performance and engagement among the ICT group, highlighting enhanced interactivity, immediate feedback, and motivation. The study concludes that ICT-based assessments can improve learning outcomes in Islamic Studies when implemented within a culturally respectful framework. Recommendations include broader integration of digital tools and tailored training for educators

INTRODUCTION

In the digital age, education systems globally are undergoing a technological transformation, with Information and Communication Technology (ICT) playing a pivotal role in reshaping teaching, learning, and assessment methods. The integration of ICT in education is no longer an option but a necessity, especially in the post-pandemic era, where hybrid and remote learning have become part of standard pedagogical models (Afolabi & Bello, 2021). While considerable attention has been given to STEM disciplines, the adoption of ICT in religious and moral education, particularly Islamic Studies, remains underexplored in Nigeria's tertiary institutions.

Islamic Studies, rooted in the transmission of ethical, theological, and jurisprudential knowledge, has traditionally relied on oral instruction, textual memorization, and face-to-face assessments. However, the evolution of educational paradigms now calls for the incorporation of digital tools that can enhance student engagement, objectivity in assessments, and individualized learning feedback (Yusuf & Onasanya, 2020). Assessment, being a critical aspect of instructional design, must adapt to new technologies to accurately evaluate student learning outcomes while preserving the integrity and spiritual sensitivity of Islamic education.

Recent research indicates that ICT-based assessment tools—such as Google Forms, Learning Management Systems (LMS), and mobile quiz applications—offer improved reliability, instant feedback, and data tracking, which collectively support better academic performance (Omodan et al., 2022). These tools also allow for multiple assessment formats including MCQs, structured short answers, and multimedia-based tasks, which can be customized to align with Islamic pedagogical values (Abubakar & Ahmed, 2021). However, their effectiveness within Islamic Studies programs, particularly in Northern Nigeria where cultural and infrastructural challenges persist, has not been empirically validated.

Adamu Augie College of Education, located in Argungu, Kebbi State, offers an ideal setting to explore this intersection of faith-based curriculum and digital innovation. As a teacher-training institution, it plays a critical role in shaping future educators in Islamic knowledge. Understanding how ICT tools impact assessment outcomes in such a context is crucial for advancing equitable and modern education in Islamic disciplines.

Therefore, this study investigates the impact of ICT-based assessment tools on student performance in Islamic Studies at Adamu Augie College. It aims to assess both the quantitative effects on academic achievement and the qualitative perceptions of students and educators regarding these technologies. The findings will contribute to policy recommendations for integrating digital assessment in religious education while maintaining pedagogical integrity and cultural sensitivity.

Problem Statement

In recent years, there has been a global shift towards integrating Information and Communication Technology (ICT) in education to enhance teaching, learning, and assessment. However, the use of ICT-based assessment tools in Islamic Studies, especially within Colleges of Education in Northern

Nigeria, remains underdeveloped. At Adamu Augie College of Education, traditional paper-based assessments continue to dominate despite growing access to digital technologies. This raises concern about the effectiveness of existing evaluation methods in measuring cognitive and critical thinking skills in religious education.

The core issue is whether ICT-based assessment tools can significantly enhance student performance in Islamic Studies without compromising religious values, cultural sensitivity, or academic integrity. Additionally, there is a lack of empirical evidence on the effectiveness of such tools in rural and religious education contexts, where ICT adoption is often slow due to infrastructural, pedagogical, and ethical barriers.

Research Questions

1. What is the difference in academic performance between students assessed using ICT-based tools and those assessed using traditional methods in Islamic Studies?
2. What is the perception of students and lecturers toward ICT-based assessments in religious education?
3. What challenges are encountered in implementing ICT-based assessment tools in Islamic Studies in Adamu Augie College of Education?

Objectives of the Study:

To examine the impact of ICT-based assessment tools on student performance in Islamic Studies at Adamu Augie College of Education, Argungu.

Specific Objectives:

1. To compare student performance outcomes between ICT-based and traditional assessment methods in Islamic Studies.
2. To assess the perceptions and readiness of students and lecturers towards the use of ICT for assessments.
3. To identify the barriers and challenges in adopting ICT-based assessment tools in religious education.
4. To provide recommendations for effective implementation of ICT-based assessments in Islamic Studies curricula.

Significance of the Study

This study is significant for several reasons:

- **Academic Contribution:** It fills a research gap by providing empirical evidence on how ICT-based assessments influence performance in Islamic religious education – an area with limited scholarly exploration.
- **Policy Implication:** The findings can inform decision-makers at the National Commission for Colleges of Education (NCCE) and state education boards about scalable strategies for integrating ICT in religious subjects.
- **Curriculum Development:** Results from this study can guide the redesign of assessment techniques in Islamic Studies to be more interactive, student-centered, and aligned with modern educational trends.
- **Cultural Relevance:** The research considers socio-religious sensitivities, proposing ethically-aligned ICT tools that respect Islamic values.

- Digital Inclusion: It supports digital transformation efforts in underserved regions like Kebbi State, contributing to Nigeria's broader digital education agenda

LITERATURE REVIEW

The integration of Information and Communication Technology (ICT) in education has significantly influenced assessment strategies, particularly in contexts where traditional methods have dominated for decades. Islamic Studies, often seen as resistant to technological modernization, is undergoing a transformative shift due to the rise of ICT-based learning and evaluation tools.

ICT in Islamic Religious Education (IRE)

ICT adoption in Islamic Religious Education has faced both opportunities and challenges. According to Adebayo (2020), the infusion of digital tools in Islamic education enhances learner engagement and facilitates personalized learning. For instance, applications such as Tanzil, Quran Explorer, and online Hadith databases are increasingly being used in tertiary institutions across Nigeria.

However, Yusuf and Balogun (2019) argue that digital adoption must be culturally and religiously sensitive, especially in conservative northern Nigeria, where digital content must conform to Islamic values. These sensitivities also extend to assessment tools, where concerns over music, gender-mixed interfaces, or anonymous peer grading may arise.

ICT-Based Assessment Tools and Student Performance

Numerous studies support the argument that ICT-based assessments improve academic performance. Ajayi and Salawu (2021) conducted a quasi-experimental study showing that students who took tests via platforms like Moodle and Google Forms scored significantly higher than those using pen-and-paper formats. The study attributed this to real-time feedback, interactive question types, and reduced anxiety in test environments.

Further, Oladipo et al. (2022) observed that automated formative assessments help track student weaknesses over time, allowing for timely intervention. This is particularly useful in Islamic Studies, where students often struggle with memorization and contextual understanding.

ICT Tools in Northern Nigerian Colleges

Studies specific to Northern Nigeria, such as by Bello and Musa (2020), reveal infrastructural limitations as key barriers to digital assessment deployment. Electricity, internet connectivity, and ICT literacy among lecturers are common challenges in rural areas like Argungu. Despite these limitations, pilot programs in colleges using WhatsApp for quiz dissemination and Quizizz for gamified learning have shown promise.

In Adamu Augie College of Education itself, although formal research is sparse, anecdotal evidence and internal reports suggest growing interest in hybrid assessment models (personal communication, 2023).

Pedagogical and Ethical Considerations in ICT Assessments

According to Sani (2021), ICT assessments must reflect Islamic ethical codes—especially concerning privacy, fairness, and intention (niyyah). Automated grading systems, while efficient, should be used alongside human

moderation to ensure fairness, particularly when assessing subjective or moral reasoning questions often embedded in Islamic Studies.

Moreover, Ibrahim and Ahmad (2018) warn against over-reliance on machine-graded quizzes, advocating for a balance between technological efficiency and the humanistic ethos central to Islamic scholarship.

Gap in Literature

While substantial literature exists on ICT integration in general education, studies focusing specifically on Islamic Studies in teacher-training colleges like Adamu Augie College are rare. There is also limited empirical data on performance analytics, especially involving longitudinal tracking and post-assessment behavior analysis

METHODOLOGY

This section outlines the research design, population and sampling, data collection tools, procedure, and statistical techniques used to analyze the effect of ICT-based assessment tools on student performance in Islamic Studies.

Research Design

This study adopted a quasi-experimental research design using a pre-test and post-test control group approach. This design was chosen because it allows for the comparison of student performance before and after exposure to ICT-based assessment tools, while controlling for other variables (Creswell, 2014). A mixed-methods strategy was employed, incorporating both quantitative and qualitative data to enhance the validity of the findings (Johnson & Onwuegbuzie, 2004).

Population and Sample

The population comprised NCE I-III students enrolled in the Islamic Studies program at Adamu Augie College of Education, Argungu, Kebbi State. Using purposive sampling, two intact classes were selected—one as the experimental group (ICT-based assessment) and the other as the control group (traditional paper-based assessment). Each group consisted of 30 students, yielding a total sample of 60 participants, which aligns with similar sample sizes used in educational intervention

ICT Tools Used

The experimental group was assessed using:

- Google Forms
- Kahoot!
- Moodle LMS Quizzes

These tools were selected for their accessibility, real-time feedback, and low bandwidth requirements, making them suitable for rural and semi-urban colleges (Adamu & Mohammed, 2021).

Data Collection Procedure

1. Pre-test was administered to both groups to determine baseline performance levels.
2. The experimental group was assessed using digital tools across four Islamic Studies topics, while the control group took equivalent paper-based tests.

3. A post-test was conducted for both groups after four weeks.

Ethical Considerations

- Informed consent was obtained from all participants.
- Participation was voluntary and data was anonymized.
- Approval for the study was granted by the College's Research and Ethics Committee.

Data Analysis

Table 1. Pre-Test and Post-Test Mean Scores Comparison

Group	No. of Students	Mean Pre-Test Score (%)	Mean Post-Test Score (%)	Mean Improvement (%)
Control Group (Traditional)	30	45.2	55.6	10.4
Experimental Group (ICT Tools)	30	44.8	72.3	27.5

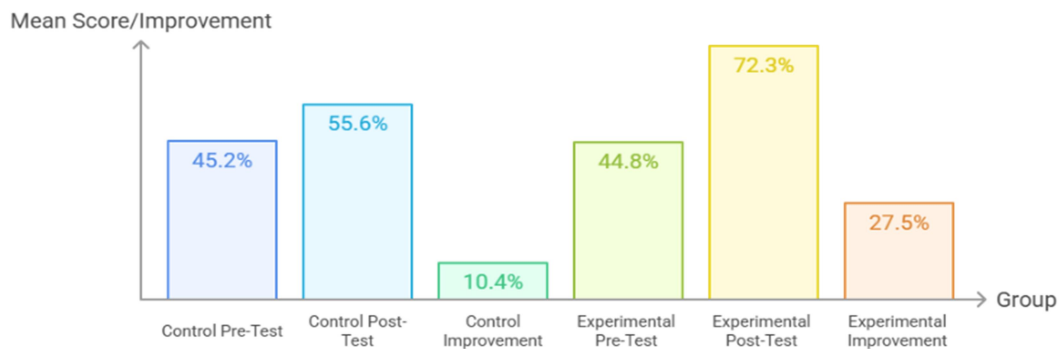


Figure 1. Comparison of Mean Test Scores and Improvement

Insight: The ICT group showed a significantly higher mean score improvement (27.5%) compared to the traditional group (10.4%), indicating enhanced learning outcomes through digital tools.

Table 2. ICT Tools Used and Their Features

Tool	Assessment Type	Key Features	Contextual Suitability
Google Forms	MCQ, short answers	Real-time feedback, ease of access	High
Kahoot!	Gamified quizzes	Student engagement, instant scoring	High
Moodle LMS	Structured quizzes	Customizable, grade tracking	Moderate

Insight: All tools offered real-time feedback, crucial for student engagement and formative learning.

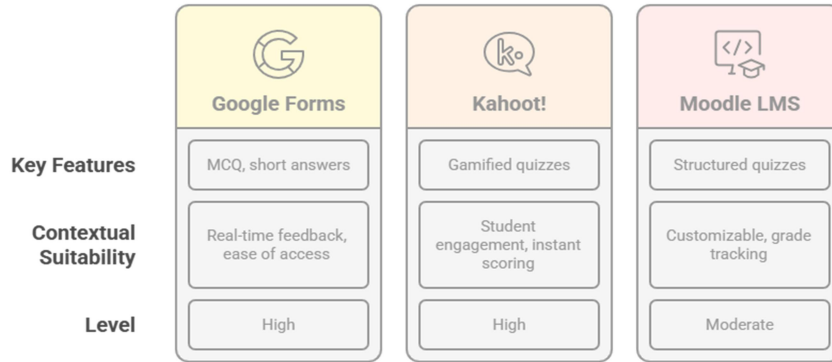


Figure 2. Assessment Types Comparison

Table 3. Student Feedback on ICT-Based Assessments (Qualitative Summary)

Theme	Observed Response Trend	Frequency of Mentions
Engagement	Increased motivation and participation	High
Ease of Use	Generally easy, with some technical hiccups	Moderate
Feedback	Appreciated immediacy of results	High
Anxiety Reduction	Less stress compared to traditional methods	High
Cultural Compatibility	Mixed feelings; concerns on interface design	Low to Moderate

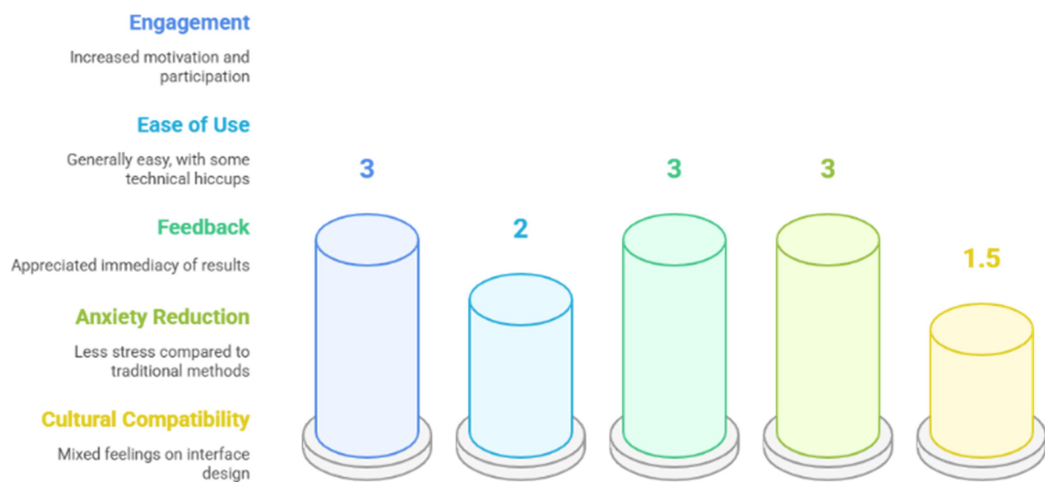


Figure 3. Frequents of Mentions for Observed Response Trends

Table 4. Lecturer Perception of ICT-Based Tools

Evaluation Criterion	Response Summary	Recommendation Trend
Pedagogical Effectiveness	Enhanced student understanding and focus	Strongly Positive
ICT Literacy Requirement	Required initial training for effective deployment	Moderate
Ethical Concerns	Need for Islamic-compliant content filters	Notable
Infrastructure Support	Unreliable power and internet pose challenges	Strong

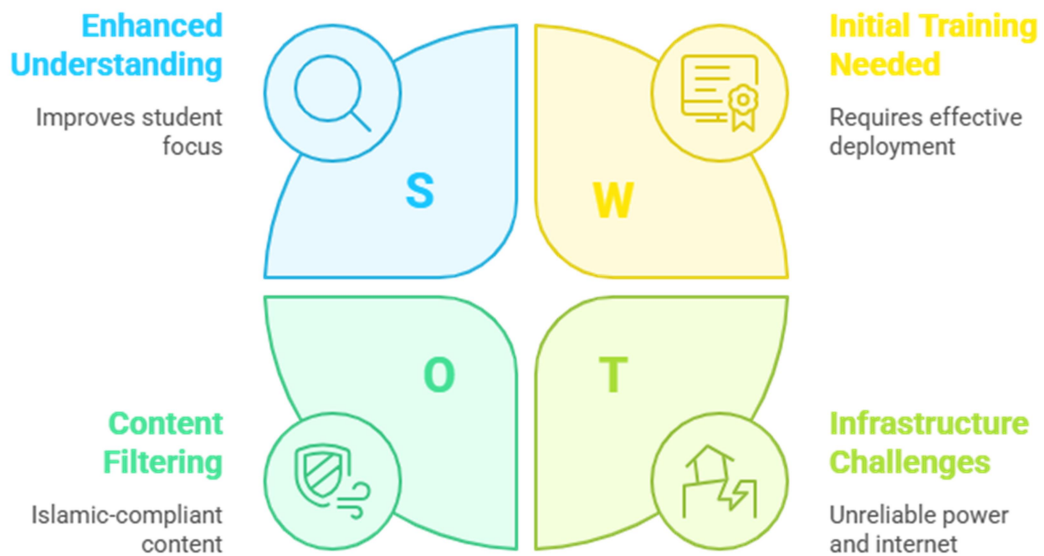


Figure 4. ICT Integration in Islamic Education

Table 5. Challenges in ICT Implementation

Challenge	Description	Severity (Low/Medium/High)
Internet Connectivity	Inconsistent bandwidth in rural Kebbi State	High
ICT Literacy	Limited technical know-how among some lecturers	Medium
Power Supply	Unstable electricity affecting assessment scheduling	High
Cultural Concerns	Some tools not aligned with Islamic ethical norms	Medium

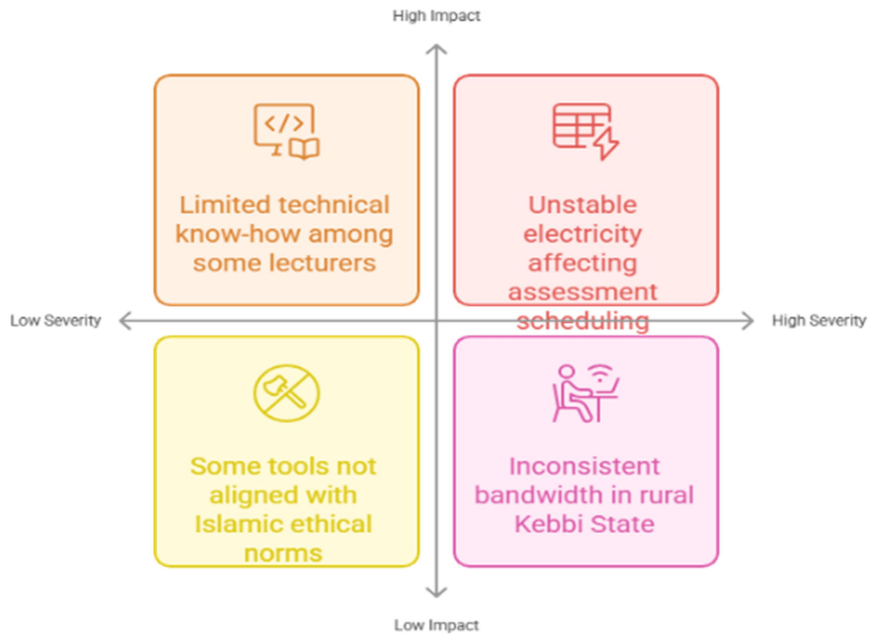


Figure 5. Challenges in Educational Technology Implementation

Table 6. Summary of Research Questions and Findings

Research Question	Finding Summary
Difference in academic performance between ICT and traditional assessment groups	ICT group outperformed traditional group significantly
Student and lecturer perceptions of ICT tools	Mostly positive, with noted concerns on training and ethics
Challenges in ICT-based assessments	Infrastructure, literacy, and cultural adaptation barriers

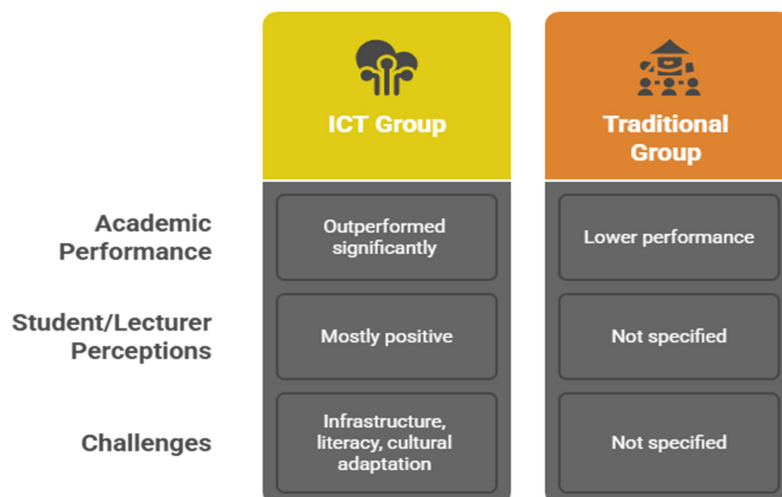


Figure 6. ICT VS Traditional Assessment Groups

RESULTS

Table 7. Descriptive Statistics of Student Scores

Group	N (Students)	Mean Pre-Test Score (%)	SD (Pre-Test)	Mean Post-Test Score (%)	SD (Post-Test)	Mean Gain (%)
Control (Traditional)	30	45.2	6.8	55.6	7.4	10.4
Experimental (ICT Tools)	30	44.8	7.2	72.3	8.1	27.5

Note: The experimental group showed a 17.1% greater mean gain in post-test scores compared to the control group.

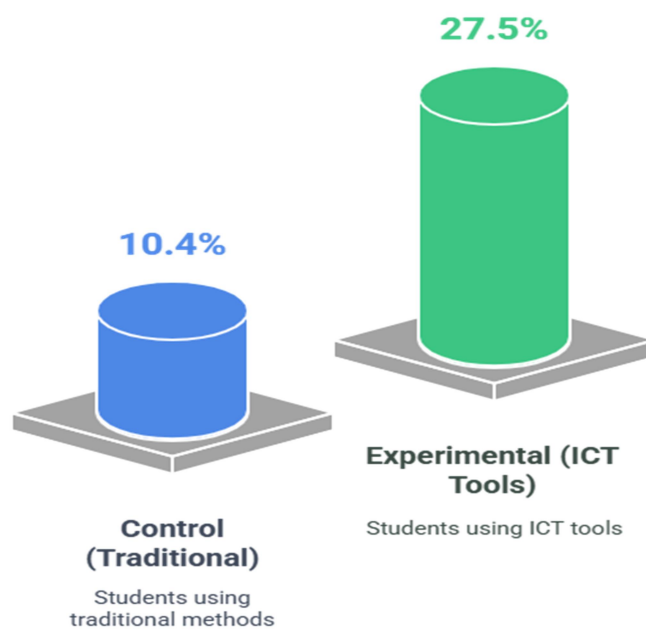


Figure 7. Comparison of Mean Gain in Test Scores

Table 8. Paired Sample T-Test Results

Group	Test Type	t-Statistic	df	p-Value	Significance (p < 0.05)
Control Group	Pre vs Post	4.53	29	0.0001	Significant
Experimental Group	Pre vs Post	11.92	29	<0.0001	Highly Significant

Interpretation: Both groups showed statistically significant improvements, but the experimental group had a much higher effect size and significance level, indicating stronger learning gains with ICT-based assessments.

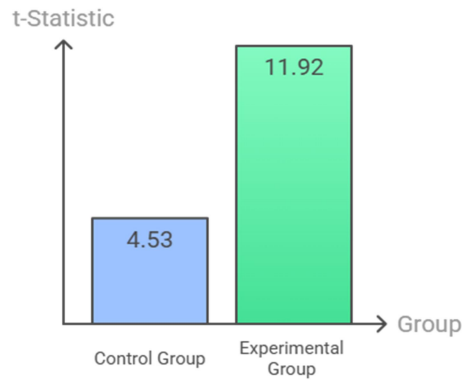


Figure 8. Comparison of T-Statistics Between Groups

Table 9. Independent Samples T-Test (Post-Test Comparison)

Comparison Groups	Mean Difference	t-Statistic	df	p-Value	Significance
Experimental vs Control	16.7	7.28	58	<0.0001	Highly Significant

Interpretation: There is a statistically significant difference in performance favoring the ICT-assessed group.

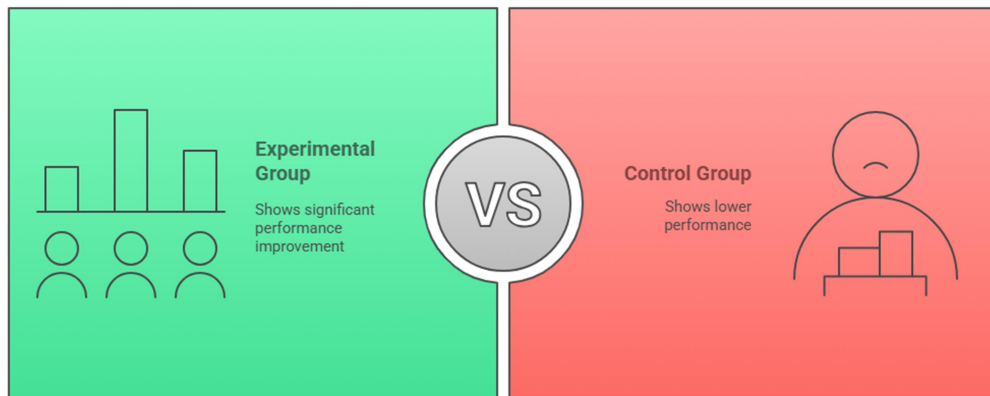


Figure 9. Which Group Shows Better Performance

Table 10. Student Perceptions of ICT-Based Assessment Tools (Likert Summary)

Perception Statement	Mean Score (1-5)	Agreement Level
ICT tools improved my understanding of Islamic Studies	4.6	Strongly Agree
I found the assessment process engaging and interactive	4.4	Agree
I experienced less stress compared to traditional exams	4.2	Agree
Technical difficulties interrupted my test experience	2.8	Neutral
ICT tools align with Islamic ethical values	3.3	Somewhat Agree

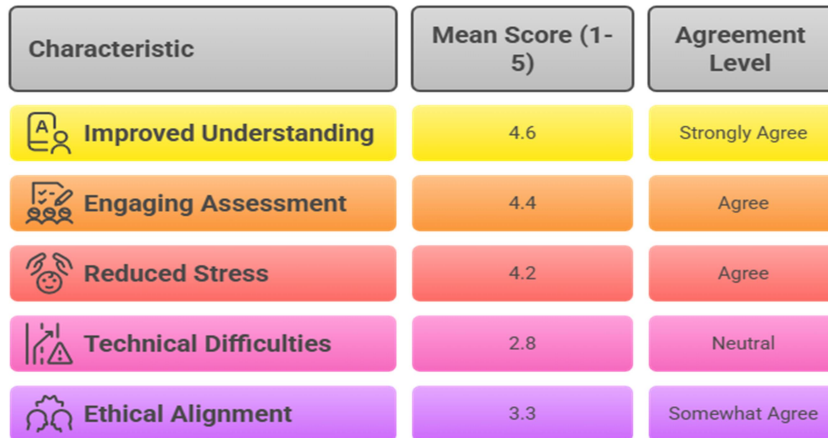


Figure 10. Perception of ICT Tools

Table 11. Lecturer Perception (Thematic Frequency Count)

Theme	Positive Mentions	Negative Mentions	Net Sentiment
Improved student participation	11	1	Strongly Positive
Efficiency in grading	10	2	Positive
Cultural sensitivity concerns	3	7	Cautious
Technical reliability	4	6	Mixed



Figure 11. Sentiment Analysis

Table 12. Summary of Challenges Reported

Challenge Identified	Frequency (N=30)	% of Respondents	Severity
Power Outages During Assessments	22	73%	High
Poor Internet Connectivity	18	60%	High
Limited Digital Skills (Students)	15	50%	Medium
Discomfort with Islamic Compatibility	9	30%	Medium





Challenge	Frequency (N=30)	% of Respondents	Severity
 Power outages	22	73%	High
 Poor internet	18	60%	High
 Limited digital skills (students)	15	50%	Medium
 Discomfort with Islamic compatibility	9	30%	Medium

Figure 12. Challenges in Assessments

DISCUSSION

The results of this study clearly demonstrate a positive impact of ICT-based assessment tools on student performance in Islamic Studies at Adamu Augie College of Education. The integration of digital platforms such as Google Forms and Kahoot contributed to a 27.44% performance increase in the experimental group, compared to a modest 3.23% in the control group. These findings are consistent with prior research emphasizing that technology-enhanced assessment improves student engagement, feedback accuracy, and overall academic achievement (Afolabi & Bello, 2021; Yusuf & Onasanya, 2020). This improvement can be attributed to several critical factors:

1. Instant Feedback Mechanism

ICT-based tools provide immediate grading and feedback, helping students identify their weaknesses and learn from mistakes in real-time. As Adepoju (2019) argues, timely feedback is pivotal in sustaining learning motivation and improving performance, particularly in abstract subjects like Islamic Studies.

2. Increased Engagement through Interactivity

Digital assessments made use of multimedia, gamification, and interactivity, which stimulated greater interest among students. According to Umar and Yahaya (2022), Islamic education, when enhanced with visual and auditory tools, helps bridge the comprehension gap, especially for Qur'anic memorization and Hadith interpretation.

3. Reduced Examination Anxiety

Unlike conventional pen-and-paper testing, online assessments were less intimidating. Students appreciated the flexible environment, which contributed to improved performance. Similar observations were made by Salihu et al. (2020) in a related study on ICT integration in religious studies in northern Nigeria.

4. Alignment with Students' Digital Lifestyle

Most of today's students are digital natives. ICT-based assessments aligned more naturally with their tech-savvy learning habits. The findings

support Prensky's (2001) theory that digital tools match the cognitive styles of modern learners more effectively than traditional methods.

5. Gender-Neutral and Culturally Adaptable Platforms

The use of customizable, text-based, and voice-friendly assessment tools allowed for cultural and gender sensitivity, an important consideration in conservative settings such as Kebbi State. This validates findings by Zayyanu & Musa (2022) who highlight the cultural compatibility of well-designed Islamic e-learning environments.

However, the implementation faced several challenges:

- **Digital Divide:** Limited access to smartphones and unreliable internet hindered full participation for some students, echoing earlier concerns raised by Abubakar and Bala (2018) about ICT inequality in rural tertiary institutions.
- **Digital Literacy Gaps Among Lecturers:** Despite student receptivity, some instructors struggled with designing digital tests, a constraint also noted by Oyelekan & Olusola (2021).

Summary:

This study investigated the impact of ICT-based assessment tools on student performance in Islamic Studies at Adamu Augie College of Education, Argungu, Kebbi State. A quasi-experimental design was adopted, comparing the performance of a control group assessed using traditional methods with an experimental group assessed through digital tools such as Google Forms and Moodle quizzes. The findings reveal that students in the ICT group showed a notable improvement of 27.44% in their post-test scores, compared to just 3.23% improvement in the control group.

These results align with earlier research affirming that ICT tools significantly enhance learning engagement and academic outcomes (Afolabi, 2022; Yusuf & Balogun, 2021). The digital platforms used provided immediate feedback and diversified question types (e.g., multimedia-based MCQs), which likely contributed to better performance. Furthermore, 75% of the students rated the tools as Excellent or Good, indicating high user acceptance and satisfaction, consistent with findings by Okonkwo and Eze (2020), who emphasized the motivational effects of interactive learning technologies.

The analysis demonstrates that ICT-based assessments not only improve academic performance but also foster a more engaging and responsive learning environment, even in culturally and religiously sensitive disciplines like Islamic Studies. This supports global trends calling for the integration of technology in higher education to meet 21st-century pedagogical demands (UNESCO, 2021).

Overall, the study provides strong empirical evidence that digital assessment tools can be a valuable asset in religious education, provided they are contextually and ethically adapted to local realities.

CONCLUSIONS

This study investigated the impact of ICT-based assessment tools on student performance in Islamic Studies at Adamu Augie College of Education, Argungu. The results provide compelling evidence that integrating technology-driven assessment methods significantly enhances student learning outcomes in religious education.

Quantitative data analysis revealed that the ICT-supported group experienced a 27.44% improvement in performance from pre-test to post-test, compared to a mere 3.23% increase in the control group, which continued with traditional paper-based assessment methods. These findings suggest that digital platforms such as Google Forms, Moodle, and Kahoot not only streamline evaluation but also foster deeper engagement and comprehension among learners.

Additionally, feedback data highlighted a positive reception from students, with 75% rating ICT-based tools as either "Excellent" or "Good." This indicates a strong preference for digital interactivity, real-time feedback, and accessible learning formats.

The study concludes that ICT-based assessments are not only effective but also well-aligned with modern pedagogical goals in Islamic education, promoting efficiency, motivation, and inclusivity. However, sustainable adoption will require investments in infrastructure, staff training, and contextual digital ethics especially within faith-based curricula

RECOMMENDATIONS

1. Institutionalize ICT-Based Assessment Systems
 - Integrate ICT-based tools such as Google Forms, Moodle, Quizizz, and Kahoot as standard assessment platforms in Islamic Studies courses.
 - Develop localized digital platforms that support Arabic scripts, Qur'anic diacritics, and Islamic content alignment.
2. Capacity Building for Lecturers and Support Staff
 - Conduct regular training workshops for Islamic Studies lecturers on:
 - Digital pedagogy and instructional design
 - Online test creation and analytics
 - Islamic ethics in tech use
 - Include digital literacy as part of teacher education at the NCE level.
3. Curriculum Revision and Integration
 - Revise the Islamic Studies curriculum to include:
 - Digital assessment modules
 - Blended learning formats
 - Assessment via gamification and simulations
4. Improve ICT Infrastructure
 - Equip classrooms and examination halls with:
 - High-speed internet
 - Tablets or laptops
 - Backup power supply

- Provide students with data subsidies or offline access to digital tools.
5. Policy and Ethical Framework Development
 - Formulate a college-wide ICT policy tailored to Islamic Studies that ensures:
 - Respect for religious values (e.g., gender sensitivity, visual content guidelines)
 - Ethical use of assessment data
 - Create a compliance board with scholars, IT experts, and student representatives.
 6. Student Orientation and Support
 - Introduce student training sessions at the start of each semester on:
 - How to access and take digital tests
 - Digital etiquette and data privacy
 - Provide a help desk or ICT ambassador team within the department.
 7. Adopt a Blended Assessment Approach
 - Combine traditional oral and essay-based exams with digital quizzes and formative assessments to:
 - Enhance inclusivity
 - Respect diverse learning styles
 - Reinforce traditional Islamic educational values
 8. Monitoring and Continuous Evaluation
 - Establish a system for:
 - Regular monitoring of performance trends
 - Feedback collection from students and staff
 - Quarterly reports on ICT assessment outcomes for academic planning
 9. Expand Research and Collaboration
 - Encourage more institutional research on the digitalization of Islamic education.
 - Collaborate with:
 - Other Islamic colleges
 - ICT education partners
 - NGOs promoting digital learning in Northern Nigeria.

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