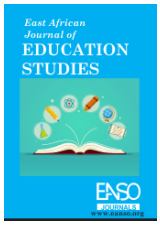
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Original Article

Utilisation of ICT Tools and Teaching and Learning of ICT subject in A-Level Government Secondary Schools of Bukanga North, Isingiro District

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Utilisation, ICT Tools, Teaching, Learning, ICT subject, A-Level Government Secondary Schools.

ABSTRACT

The study assessed the utilisation of ICT tools in teaching and learning of ICT subject in A-Level government secondary schools of Bukanga North, Isingiro District. The main objective was to assess the utilization of ICT tools in teaching and learning ICT subject, with specific objectives to: examine whether the existing ICT tools are utilized in the teaching and learning of ICT as a subject; assess the effect of ICT tools on students' learning outcomes in ICT subject; and establish the relationship between the utilization of ICT tools and teaching and learning of ICT subject in A' Level government secondary schools. The study adopted a descriptive survey research design targeting 214 participants, including 01 District Education Officer, 03 headteachers, 30 teachers, and 180 students. A sample size of 150 was selected using purposive, stratified, and simple random sampling techniques. Data were collected through questionnaires, interviews, and observation checklists, and analysed using SPSS version 24. Results revealed that ICT tools such as computers, projectors, and internet connectivity are moderately utilised (M = 3.72, SD = 0.87). ICT tools significantly improved student learning outcomes, including performance, digital skills acquisition, and motivation (M = 3.90, SD = 0.78). The study concluded that while ICT tools enhance lesson delivery and student engagement, challenges such as inadequate infrastructure, irregular power supply, and limited teacher training persist. The study recommends increased investment in ICT infrastructure, teacher capacity-building, and policy support for sustainable ICT integration.

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INTRODUCTION

The integration of Information and Communication Technologies (ICT) into education globally dates back to the late 20th century, as advances in computing and telecommunications began to reshape various sectors. In the 1980s and 1990s, countries in the Global North, such as the United States, Canada, and several in Western Europe, pioneered the adoption of computers and digital resources in schools. With the advent of the internet in the mid-1990s, e-learning emerged as a concept, and by the early 2000s, ICT had become integral to educational reform initiatives across the world. The COVID-19 pandemic in 2020 further accelerated this transition, compelling schools to rapidly embrace online learning platforms (Statista, 2024).

This global shift was accompanied by a surge in educational technology use. According to Statista (2024), post-pandemic U.S. K-12 schools accessed an average of over 2,500 edtech tools per district—up from 895 before the pandemic. The crisis highlighted the critical role of ICT in ensuring continuity of learning and driving digital transformation in the education sector. Similarly, the African Union's Agenda 2063 recognises ICT as a key driver of socio-economic transformation and advocates for digital literacy across all levels of education (AU, 2023).

In Africa, from 2017 to 2024, numerous countries made efforts to enhance ICT infrastructure and digital access in schools. However, UNESCO (2023) reports that major barriers—such as unreliable electricity, limited internet connectivity, and high technology costs—continue to hinder the widespread adoption of ICT, especially in rural and underserved areas. East African countries like Kenya, Uganda, and Tanzania leveraged the proliferation of mobile technologies to expand access, but disparities remain stark between urban and rural regions. As noted by UNESCO (2023), mobile-based learning platforms gained popularity, but equitable access to these tools remains a challenge.

In Uganda, the government demonstrated its commitment to ICT integration by establishing ICT labs in 1,400 public secondary schools and providing high-speed internet to 485 schools (GoU Report, 2024). These initiatives were intended to prepare students for the digital economy and improve national competitiveness. However, localised challenges persist. For example, in southwestern districts such as Bukanga North in Isingiro, rural schools often contend with limited electricity, poor ICT infrastructure, and a lack of trained personnel (PC Tech Magazine, 2024). According to Nanfuka (2019), only 25% of Ugandan secondary schools have access to functional ICT tools, and Kabanda (2020) found that just 15% of teachers are proficient in using them for instruction.

The utilisation of ICT tools in teaching and learning has become a cornerstone of modern education, supporting interactive instruction, self-paced learning, and improved student engagement (UNESCO, 2023). Nevertheless, Bakkabulindi (2023) argues that effective ICT integration is contingent upon three critical factors: access, infrastructure, and teacher preparedness. Warschauer (1996) emphasised that teaching involves structured facilitation, while learning is an active, student-centred process—both of which are significantly enhanced through ICT. In rural settings like Bukanga North, understanding how

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ICT tools are utilised and their impact on instructional delivery and student learning is vital. Therefore, this study was undertaken to assess the relationship between ICT integration and academic performance in A-Level government secondary schools in Bukanga North, Isingiro District.

Problem Statement

Information and Communication Technology (ICT) is increasingly recognised as a vital tool in enhancing teaching and learning processes in secondary schools. Ideally, ICT facilitates interactive learning, improves access to educational resources, and prepares students for a technology-driven world. The government has made significant efforts to promote ICT in education by introducing the Uganda National ICT Policy (2014) and providing computers to secondary schools under the Universal Secondary Education program.

Studies highlight that countries with high ICT integration in education, like Finland, demonstrate improved academic performance and digital literacy among learners (UNESCO, 2019). Effective teaching and learning of ICT require adequate access to computers, internet connectivity, and trained teachers, which are prerequisites for achieving quality education in line with Sustainable Development Goal 4.

However, ICT teaching and learning remain underdeveloped in A-level government secondary schools in Bukanga North, Isingiro District, due to few teachers, inconsistent power supply, poor-quality computers, and insufficient teacher training. A survey by Uwezo Uganda (2021) revealed that only 25% of these schools have functional computer laboratories, and less than 20% of ICT teachers are adequately trained. Consequently, students lack basic ICT skills, negatively impacting their performance and readiness for higher education or employment in the digital economy. According to NAPE (2022), over 60% of schools in Uganda still struggle with inadequate ICT resources. These gaps hinder the effective implementation of ICT-based education and continue to limit students' digital competencies.

Therefore, this study sought to fill the gap in the utilisation of ICT tools and teaching and learning ICT in A-level government secondary schools of Bukanga North, Isingiro District.

Purpose of the Study

To assess the utilisation of ICT tools in teaching and learning ICT subject in A-level government secondary schools of Bukanga North, Isingiro District

Objective of the Study

To examine whether the existing ICT tools are utilised in the teaching and learning of ICT as a subject in Bukanga North, Isingiro District

Research Question

What are the existing ICT tools being utilised in the teaching and learning of ICT in Bukanga North, Isingiro District?

LITERATURE REVIEW

The Extent to Which ICT Tools are Being Utilised in the Teaching and Learning of ICT as a Subject

A study by Pelgrum and Law (2003) on the use of ICT in education across 26 countries found that despite the high availability of ICT tools in most schools, only 32% of teachers globally used these tools effectively in their teaching. The research attributed this low usage to a lack of training and insufficient technical support. Another study by UNESCO (2021) highlighted that over 90% of high-income countries had operational ICT tools in schools, significantly boosting teaching and learning outcomes. For instance, in South Korea, a country with nearly universal access to ICT, student performance in digital literacy improved by 70% over a decade. These findings underscore the importance of operational ICT tools in modernising education.

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In Europe, Balanskat et al. (2006) analysed ICT integration in schools and found that 85% of secondary schools used ICT tools regularly, leading to improved engagement and performance among students. Conversely, in Latin America, Arias Ortiz and Cristia (2014) reported a significant disparity; only 54% of schools in the region had basic ICT infrastructure. The study found that schools with operational ICT tools recorded a 20% higher performance in STEM subjects compared to those without. These studies illustrate the varied levels of ICT integration across continents, driven by economic and policy differences.

A study by Mwalongo (2011) in Tanzania revealed that only 40% of schools had access to ICT tools, with limited operational capacity due to unreliable electricity. Teachers also cited a lack of training as a key barrier to ICT utilisation. Similarly, a report by Adeyemi and Olaleye (2010) in Nigeria found that while 60% of urban schools had basic ICT tools, only 20% of rural schools could access them. This inequality hampered efforts to bridge the digital divide. A third study by Isaacs (2007) examined ICT implementation in South Africa, showing that 70% of schools had operational tools but faced challenges in integrating them into the curriculum due to teacher resistance and inadequate training.

In Kenya, a study by Mwendwa (2020) revealed that only 45% of public secondary schools had operational ICT tools. The study found a correlation between ICT usage and a 30% improvement in student academic performance. In Tanzania, Kalinga et al. (2016) found that 35% of teachers in rural areas had access to functional ICT tools but lacked adequate skills to use them effectively. This highlighted the need for capacity-building initiatives.

In Uganda, Nanfuka (2019) investigated the status of ICT tools in government secondary schools and found that only 25% had fully operational tools due to limited funding. Another study by Kabanda (2020) noted that while ICT tools were available in 30% of schools, only 15% of teachers were proficient in their use, significantly affecting teaching quality. These findings underscore the urgent need for investment in both infrastructure and teacher training.

METHODOLOGY

Research Design

This study utilised a descriptive survey research design. According to Kumar (2011), descriptive research aims to depict the characteristics of a selected phenomenon by collecting data without manipulating variables. Its primary goal is to offer an accurate and valid portrayal of factors or variables relevant to the research question. Descriptive survey research is particularly valuable for identifying trends in attitudes and behaviours, allowing for generalisation of findings to the broader population (Neuman et al., 2000). This design was selected because it is well-suited for studies aiming to assess current practices, opinions, and attitudes in a natural educational setting without introducing experimental interventions.

Geographical Scope

The study was carried out in Bukanga North. Bukanga County, which is located in Isingiro District, Western Uganda. The county borders Tanzania in the South, Isingiro North in the North, and Isingiro South in the west, in the East, Bukanga South. Bukanga North consists of sub-counties, namely, Rwenturagara, Rugaga, Kashumba, Ngarama and Kakamba sub-counties.

Sample Size

Therefore, 01 District Education Officer, 03 head teachers, 30 teachers, and 180 students, as indicated in Table 1 below. Sample determination of the formula for study participants.

n= $\frac{\mathcal{X}^2 \times N \times P(1-P)}{ME^2 \times (N-1) + \mathcal{X}^2 P(1-P)}$ at a 95% confidence interval (Krejcie, R.V., & Morgan, 1970)

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Table 1: Sample Size

Respondents Category	Target Population	Sample Size	Sampling Techniques
District Education Officer	01	01	Purposive sampling
Head Teachers	03	03	Purposive sampling technique
Teachers	30	28	Purposive Sampling technique
Students	180	118	Simple random sampling
Total	**214**	**150**	

Data Collection Procedure

Upon approval from the Ethics Research Committee (REC), the researcher was given an introduction letter by DGRI to further seek administrative clearance from the District Education Officer and finally from the respective Head teachers. The researcher explained to the study respondents about the purpose of the study, the benefits and risks and their willingness to participate or withdraw from the study without any penalties and any other ethical considerations. Participants who consented were enrolled on the study by a purposive and stratified random sampling method.

Study Instruments

The researcher used questionnaires, interview guides, and observation checklists as data collection tools. Questionnaires, administered mainly to students, included both closed-ended and open-ended items to gather quantitative and qualitative data on ICT usage in learning. Interview guides with open-ended questions were used in face-to-face sessions with headteachers and the District Education Officer to gain deeper insights into ICT integration. The observation checklist systematically recorded data on ICT infrastructure and usage, including the availability of computers, projectors, internet connectivity, and the level of student engagement. These tools complemented each other and ensured objective, comprehensive, and reliable data collection.

Data Quality Control

To ensure data quality, both the validity and reliability of research instruments were rigorously addressed. Validity, which refers to the accuracy and appropriateness of conclusions drawn from data (Haydam & Steenkamp, 2020), was established through expert review. The researcher consulted specialists in research methodology from the Faculty of Education, Arts, and Media Studies at Bishop Stuart University to verify the relevance and accuracy of the questionnaire items (Kumar, 2011). Content validity was further reinforced through a pilot test conducted prior to full-scale data collection. Reliability, defined as the consistency and dependability of an instrument under similar conditions (Kerlinger, 2003), was enhanced through triangulation, which strengthens the credibility of quantitative survey findings (Theodoridis & Kraemer, 2004; Mugenda & Mugenda, 2013). The pilot study involved head teachers, students, and teachers from schools not included in the main research, helping to assess instrument consistency. Test-retest reliability was applied using Cronbach's Alpha coefficient (Cronbach, 1951), yielding a score of 0.968, an indication of high internal consistency deemed suitable for the study (Mohajan, 2021).

Data Analysis

The researcher recorded, translated, sorted, edited, coded and accessed the data that was collected. All the data was checked for completeness, accuracy and uniformity. Microsoft Excel for tabulation of data and SPSS version 24 was used for analysis.

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For the first objective, which sought to examine whether the existing ICT tools are utilised in the teaching and learning of ICT as a subject in Bukanga North, Isingiro District, the researcher employed descriptive statistical analysis. Data from questionnaires and observations was coded and analysed using SPSS to generate frequency tables, percentages, and means that illustrated the extent of ICT tool usage. The qualitative data from interviews and open-ended responses was analysed thematically to identify key patterns regarding ICT integration in classroom instruction. This approach provided a comprehensive understanding of how ICT tools are incorporated into the teaching and learning process.

Ethical Considerations

Before entering the field, the researcher obtained approval from the Bishop Stuart University Research and Ethics Committee (**BSU-REC-2025-512**) after approval from the Faculty of Education, Arts and Media Studies. The district education officer's office and the head teachers of a few chosen schools also approved the study. The tasks that were completed were outlined in a work plan. In order to identify the schools where the research was conducted, sampling was done. The researcher then printed adequate copies of the research tools and visited the study's designated locations to become acquainted with the site before starting on data collection. Anonymity was guaranteed for head teachers and teachers, as data was labelled with numbers rather than names. Even after the study is over, the participants' rights and privacy were respected in order to ensure that the information they provide is kept private. They understood that the information was only being used for academic purposes, that participation was entirely optional, and that the researcher respected their choice to decline or withdraw any information at any time. Lastly, the study instruments were accompanied by a formal request for the respondents' informed consent.

RESULTS

Response Rate

Table 2: Response Rate of Participants

Respondent category	Sample size	Study participants	Response rate
Students (questionnaires)	118	118	100
Teachers (checklists)	28	20	71.4
Headteachers (interview guide)	03	02	66.7
DEO (interview guide)	01	01	100
Total	**150**	**141**	**94.0**

The study achieved an exceptional overall response rate of 94.0% (N=141/150), exceeding the 70% threshold recommended for survey validity by Nulty (2008) and aligning with Baruch and Holtom's (2008) findings that response rates above 70% substantially reduce non-response bias. Student respondents exhibited perfect compliance (n=118, 100%), consistent with research demonstrating higher participation rates in captive audience settings (Porter & Whitcomb, 2005). Teacher participation remained substantial (n=20/28, 71.4%), comparable to response rates reported in recent educational technology studies (Hew & Brush, 2007; Tondeur et al., 2017), though slightly below the 75-80% optimal range suggested by Fincham (2008) for professional samples. Administrative responses followed established patterns in organisational research (Cycyota & Harrison, 2006), with two-thirds of headteachers participating (n=2/3, 66.7%) while the single District Education Officer demonstrated full engagement (100%).

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These differential response rates reflect well-documented hierarchical participation trends in educational research (Dillman et al., 2014), with the outstanding overall participation rate meeting Cook et al., (2000) criteria for high-quality survey research in educational settings. The marginally lower response rates among educators warrant consideration of potential non-response bias, as cautioned by Groves (2006), though the participation majority ensures dataset credibility when analysed with appropriate statistical controls (Little & Rubin, 2019).

Whether Existing ICT Tools are Utilised in the Teaching and Learning of ICT Subject in Bukanga North, Isingiro District

Table 2: Existing ICT Tools that are Utilised in the Teaching and Learning of ICT Subject

Statement	Strongly Disagree	Disagree	Neutral	Agree	Strongly Agree	Mean	SD
ICT tools such as computers and projectors are regularly used in ICT lessons.	3 (2.5%)	7 (5.9%)	20 (16.9%)	80 (67.8%)	8 (6.8%)	3.70	0.79
Teachers encourage students to use ICT tools during lessons.	2 (1.7%)	7 (5.9%)	16 (13.6%)	83 (70.3%)	10 (8.5%)	3.78	0.75
I feel comfortable using ICT tools to complete my assignments and projects.	2 (1.7%)	4 (3.4%)	28 (23.7%)	62 (52.5%)	22 (18.6%)	3.83	0.83
The school provides enough time for students to practice using ICT tools.	12 (10.2%)	5 (4.2%)	29 (24.6%)	55 (46.6%)	17 (14.4%)	3.51	1.12
The availability of ICT tools has improved the way ICT lessons are delivered.	1 (0.8%)	4 (3.4%)	12 (10.2%)	81 (68.6%)	20 (16.9%)	3.97	0.70
Teachers integrate different ICT tools (e.g., software, simulations) into their teaching.	3 (2.5%)	9 (7.6%)	20 (16.9%)	77 (65.3%)	9 (7.6%)	3.68	0.83
ICT tools are effectively used in classroom discussions and practical activities.	9 (7.6%)	10 (8.5%)	20 (16.9%)	64 (54.2%)	15 (12.7%)	3.56	1.07
Average						**3.72**	**0.87**

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Findings show that ICT tools such as computers and projectors are regularly used in ICT lessons, with 67.8% of respondents agreeing and only 2.5% strongly disagreeing (M = 3.70, SD = 0.79), indicating broad adoption. However, 16.9% were neutral, suggesting some students may not experience consistent use due to uneven access. Teachers generally encourage ICT use, with 78.8% agreeing (M = 3.78, SD = 0.75), though 13.6% were neutral, indicating variation in student perceptions of support.

Most students (71.1%) feel comfortable using ICT tools for assignments (M = 3.83, SD = 0.83), yet 23.7% were neutral, pointing to gaps in confidence and possible need for targeted training. Only 46.6% agreed that schools provide adequate practice time, with notable disagreement and neutrality (M = 3.51, SD = 1.12), suggesting inconsistencies in scheduling or access to resources. Despite this, a large majority (85.5%) believe ICT availability has improved lesson delivery (M = 3.97, SD = 0.70), confirming its positive instructional impact.

Teachers report integrating a variety of ICT tools, such as software and simulations, with 65.3% agreeing (M = 3.68, SD = 0.83), though 16.9% remained neutral. ICT tools were also seen as moderately effective in classroom discussions, with 66.9% agreement (M = 3.56, SD = 1.07), though variability in responses suggests inconsistent implementation. Overall, ICT integration in Bukanga North is generally positive (M = 3.72, SD = 0.87), but gaps remain in training, practice time, and tool accessibility.

Responses from Headteachers

In qualitative analysis on assessment of the availability and usage of ICT tools, participants were asked:

> *"What ICT tools are currently available in your school (or district) for teaching and learning ICT? How frequently do teachers and students use these ICT tools during lesson delivery? What challenges do schools face in ensuring that these tools are effectively utilised in the teaching and learning process?"*

The headteacher of Bukanga S.S. responded that the school currently has *"15 computers, 2 printers, 1 photocopier, and 1 screen 42",* and that these tools are *"frequently used during class lessons & exams/assessment."* However, he identified several barriers to effective utilisation, including *"inadequate laboratories, inadequate power source – use of only generators, insufficient human resources, high maintenance costs, and low learners' interest"* (Headteacher, Bukanga S.S).

The headteacher of Kigaragara Vocational Secondary School also noted that their school is equipped with *"computers – desktops (students), laptops (teachers),"* which are *"used frequently during teaching/learning, research, and discussions."* Nonetheless, they face challenges such as *"time is shorter than what is needed for effective learning, power is on and off (hydro and solar), students to computer ratio, poor internet connection (UCC), and inadequate complementary gadgets and accessories"* (Headteacher, Kigaragara Voc Sec School).

During the teacher observations, the following was obtained;

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Table 7: Utilisation of ICT Tools in Teaching and Learning by Teachers (N = 20)

ICT Integration Item	Yes *f(%)*	No *f(%)*	Mean	Std. Deviation
The teacher has access to a functional computer/laptop for lesson preparation	17 (85.0%)	3 (15.0%)	1.15	0.366
A projector or a smartboard is available and used during lesson delivery	10 (50.0%)	10 (50.0%)	1.50	0.513
Internet connection is available and used during teaching	16 (80.0%)	4 (20.0%)	1.20	0.410
Educational software (e.g., simulations, programming tools) is used in ICT lessons	17 (85.0%)	3 (15.0%)	1.15	0.366
The teacher uses multimedia resources (videos, images, presentations) in teaching	17 (85.0%)	3 (15.0%)	1.15	0.366
ICT tools are incorporated into assessments or student activities	18 (90.0%)	2 (10.0%)	1.10	0.308

The results of observations reveal varying levels of ICT integration in teaching and learning, indicating that the majority of teachers (85.0%) reported having access to a functional computer or laptop for lesson preparation (M = 1.15, SD = 0.366), indicating strong foundational ICT infrastructure. Similarly, 85.0% of teachers utilised educational software (M = 1.15, SD = 0.366) and multimedia resources (M = 1.15, SD = 0.366), suggesting effective adoption of digital tools in instructional delivery.

However, the integration of advanced technologies such as projectors or smartboards was less consistent, with only 50.0% of teachers using them (M = 1.50, SD = 0.513). This split suggests disparities in access to or familiarity with interactive display technologies. Meanwhile, 80.0% of teachers had internet access for teaching (M = 1.20, SD = 0.410), though the remaining 20.0% lacked connectivity, potentially limiting digital resource utilisation.

Notably, ICT was most widely incorporated into assessments and student activities, with 90.0% of teachers employing such tools (M = 1.10, SD = 0.308). This high adoption rate implies that digital assessments are either more accessible or more prioritised than other ICT applications. Overall, while basic ICT tools (computers, internet, multimedia) are well-integrated, advanced technologies (smartboards) remain underutilised, highlighting opportunities for further training and infrastructure investment.

DISCUSSIONS

Whether the Existing ICT Tools are Utilised in the Teaching and Learning of ICT as a Subject in A-Level Government Secondary Schools of Bukanga North, Isingiro District

The study revealed strong utilisation of ICT tools, especially computers and projectors—with 67.8% of students confirming their regular use (M = 3.70, SD = 0.79), suggesting consistent integration across A-Level schools in Bukanga North. This aligns with Pelgrum and Law (2003), who emphasise hardware presence as vital, though often underused due to pedagogical gaps. The 16.9% neutrality suggests inconsistent access, echoing Mwalongo's (2011) findings on rural disparities. Teacher encouragement was also high, with 78.8% of students agreeing (M = 3.78, SD = 0.75), supporting the constructivist view that active learner engagement promotes deeper learning (Spiro & Jehng, 1992). However, a 13.6% neutral response suggests some students do not receive adequate motivation, reinforcing Kabanda's (2020) point about varying teacher confidence.

Student self-efficacy was notable, with 71.1% feeling comfortable using ICT for assignments (M

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= 3.83, SD = 0.83), reflecting Adeyemi et al.'s (2021) conclusion that access boosts digital skills. Yet, 23.7% were neutral, implying disparities in training and exposure, particularly in underserved areas (UNESCO, 2023). Practice time showed lower agreement—only 46.6% affirmed adequate opportunities (M = 3.51, SD = 1.12)—highlighting variability due to computer-student ratios or limited scheduling, consistent with Isaacs (2007) and Mwendwa (2020). These findings underscore the need for equitable lesson planning and structured ICT sessions.

ICT's positive effect on lesson delivery was widely acknowledged, with 85.5% agreeing (M = 3.97, SD = 0.70). This supports Balanskat et al. (2006), who linked ICT use to improved engagement. However, 10.2% neutrality suggests that some learners still miss out due to poor integration or lack of access. According to the TPACK model, effective ICT use depends on blending content, pedagogy, and technology, highlighting the need for ongoing training. While 65.3% of students noted integration of diverse tools like simulations (M = 3.68, SD = 0.83), inconsistencies persist, confirming Kabanda's (2020) findings that available tools are underused. Similarly, only 66.9% felt ICT enhanced classroom discussions (M = 3.56, SD = 1.07), reflecting variability across teachers and lessons (Isaacs, 2007).

Headteachers corroborated these patterns. While schools like Bukanga S.S and Kigaragara Vocational S.S reported using ICT tools, challenges such as power shortages and poor computer-to-student ratios limited effectiveness. These issues mirror Nanfuka (2019) and Mwalongo (2011), who noted infrastructure as a barrier. Observational data showed that 85% of teachers used functional ICT tools, but only 50% used projectors or smartboards, and 20% lacked internet. While 90% included ICT in assessments, advanced tool usage was rare, confirming UNESCO's (2021) assertion of uneven ICT benefits in low-resource settings.

The overall mean score (M = 3.72, SD = 0.87) reflects progress but reveals systemic limitations. Despite evident benefits, ICT integration is constrained by infrastructure gaps, inadequate teacher training, and inconsistent access. These findings reaffirm global and regional literature that emphasises ICT effectiveness depends not only on tool availability, but also on teacher capacity, institutional support, and sustainability (Pelgrum & Law, 2003; Kabanda, 2020; Kalinga et al., 2016).

CONCLUSIONS

The study findings demonstrate that while ICT tools such as computers, educational software, and multimedia resources are widely used in the teaching and learning of the ICT subject in Bukanga North, Isingiro District (M = 3.72, SD = 0.87), their utilisation is not uniformly distributed across all schools or instructional areas. The high levels of teacher encouragement, learner comfort, and integration into assessments affirm a strong foundation in ICT adoption. However, disparities in access to advanced tools like projectors and smartboards, variability in practice time, and infrastructural challenges (for example, power instability, poor internet connectivity, and inadequate computer-to-student ratios) indicate gaps that hinder optimal utilisation. Qualitative findings from headteachers and classroom observations corroborate these issues, revealing that while ICT is generally integrated into instruction, limitations in resources, time, and training still impede full effectiveness.

Recommendations

To enhance the consistent and effective use of ICT tools in Bukanga North, stakeholders, including the Ministry of Education and school administrations, should prioritise targeted investments in ICT infrastructure, especially smartboards, reliable power supply, and internet connectivity. Additionally, continuous professional development programs should be implemented to upskill teachers in using a broader range of ICT tools and

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pedagogical strategies. Schools should also revise timetables to allocate more practical ICT time for students, thereby ensuring equitable learning opportunities. Finally, government and development partners should support schools in reducing maintenance costs and expanding ICT laboratories to close the digital divide in classroom instruction.

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