

A cross-sectional study to investigate how Teachers' ICT Competence influences the implementation of the new lower secondary curriculum in Gombe Division, Wakiso District.

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ABSTRACT

Background

Teachers' ICT competence is a critical determinant of successful curriculum implementation. The study aimed to investigate how Teachers' ICT Competence influences the implementation of the new lower secondary curriculum in Gombe Division, Wakiso District.

Methodology

The study adopted a convergent parallel mixed-methods design in Gombe Division, Wakiso District, Uganda. Data were collected concurrently using questionnaires, interviews, and observations from 351 participants, including students, teachers, administrators, and municipal education officials selected through stratified random and purposive sampling. Quantitative data were analyzed using descriptive statistics and correlations in SPSS, while qualitative data underwent thematic analysis in NVivo. Instrument validity and reliability were ensured through CVI, Cronbach's alpha, and piloting, alongside strict ethical procedures during curriculum implementation assessment processes across secondary schools.

Results

The study achieved excellent response rates: 310 of 311 student questionnaires were analyzed (99%), and 32 of 40 interviews were completed (80%). Students were 53.2% female and 46.8% male; most were aged 15–17 years (51.0%), with 53.9% in S.3. Among administrators and teachers, 55% were male, 50% held degrees, 30% master's degrees, and 75% had over four years' experience. Teachers' ICT competence showed moderate means (2.77–2.96). Positive perceptions ranged from 44.2% to 48.4%, while disagreement reached 40.7%. Students reported positive or very positive ICT impact (54.9%). Key challenges were limited training (36.1%) and inadequate resources (30.0%). Teacher competence correlated strongly with curriculum implementation ($r = .730$, $p < .001$) and explained 53.3% of variance ($R^2 = .533$). Interviews confirmed that ICT improves engagement despite time and technical constraints across local schools.

Conclusion

ICT utilization significantly improves curriculum implementation, though engagement gaps and resource challenges persist.

Recommendation

Educational policymakers and the Ministry of Education and Sports should provide targeted ICT professional development to strengthen teachers' skills and enhance the delivery of the curriculum.

Keywords: Teachers' ICT Competence, implementation of the new lower secondary curriculum, Gombe Division

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BACKGROUND OF THE STUDY

Teachers' ICT competence is a critical determinant of successful curriculum implementation. Competence encompasses teachers' knowledge, skills, attitudes, and confidence in using ICT tools to plan lessons, deliver content, assess learners, and support learner-centered approaches. Research indicates that teachers trained in ICT are more likely to integrate technology effectively, improving learner engagement and achievement (Ertmer et al., 2012; Mishra & Koehler, 2006).

Historically, Mitra (2005) demonstrated that technology can transform learning environments by promoting self-

directed and collaborative learning. Vygotsky's Social Constructivism Theory emphasizes that learning occurs through interaction, with ICT serving as a mediating tool that supports scaffolding, collaboration, and knowledge construction (Moll, 2015). In Uganda, policies such as the National ICT in Education Policy highlight the importance of equipping teachers with digital skills to support curriculum reforms (Government of Uganda, 2018; Republic of Uganda, 2018).

However, studies reveal persistent gaps in ICT training, low confidence in technology use, and resistance to adopting new pedagogical approaches (Namugera &

Mugisha, 2022; Musoke & Oonyu, 2020). In Gombe Division, Wakiso District, these challenges undermine teachers' ability to implement the New Lower Secondary Curriculum (NLSC), particularly in integrating digital resources, facilitating learner-centered activities, and assessing competencies. The study aimed to investigate how teachers' ICT competence influences the implementation of the NLSC in Gombe Division, Wakiso District.

METHODOLOGY

Research Design

The study employed a convergent parallel mixed-methods design by integrating qualitative and quantitative data collection and analysis concurrently. This design was ideal for the study because it enabled the researcher to gather and analyze both numerical and contextual insights in a real-world educational context, thus providing a robust understanding of how ICT integration influenced curriculum implementation. Quantitative methods, including structured surveys, gathered numerical data on variables such as ICT infrastructure, teachers' ICT competence, and utilization. Simultaneously, qualitative methods, such as interviews and observations, were used to gather in-depth insights into participants' perspectives and the challenges they faced in ICT integration. This approach offered valuable insights for improving educational practices and enhancing digital literacy, ultimately contributing to more informed decisions on ICT integration in education.

Study setting

The study focused on Gombe Division, a socio-economically dynamic region within Nansana Municipality, Wakiso District, Uganda. Gombe Division comprises eleven wards: Gombe, Buwambo, Kiryamuli, Matugga, Migadde, Mwererwe, Kavule, Nasse, Ssanga, Ttikalu, and Wambale, each having at least one secondary school. The division's active participation in various educational programs and ICT initiatives made it an ideal case for exploring the practical integration of Information and Communication Technology (ICT) in implementing the New Lower Secondary Curriculum (NLSC). The study aimed to examine how the unique socio-economic,

technological, and educational dynamics of Gombe Division influence ICT adoption, providing targeted insights that could inform similar interventions in other regions of Uganda.

Study Population

Gombe Division consists of 40 secondary schools, including three (3) government-aided and 37 privately owned institutions. According to the Nansana Municipal Council, the division currently has over 7,989 Senior Two (S.2) and Senior Three (S.3) students. This substantial student population provided a diverse and robust sample for examining the integration of ICT within the New Lower Secondary Curriculum Implementation, ensuring varied insights into the challenges and successes of ICT integration across different school types.

Target Population

This study targeted 36 secondary schools within Gombe Division, selected based on Morgan and Krejcie's (1970) sampling table. To ensure comprehensive representation, one school was randomly selected from each of the eleven wards, totaling 11 schools. The overall target population comprised 4,011 participants, including 22 school administrators (Head/Deputy Head Teachers or Directors of Studies), 22 teachers (one each from Science and Arts subgroups across the eleven schools), 3,965 S.2 and S.3 students, and two education officials from the Municipal Council. School administrators were included due to their role in overseeing ICT integration, providing insights into institutional support and implementation strategies, while teachers were selected for their pivotal role in applying ICT tools in teaching. Students were chosen because they are the primary beneficiaries of the new lower secondary curriculum and are directly impacted by ICT integration. S.2 and S.3 students were prioritized as they have substantial exposure to the curriculum, in contrast to S.1 students, who are relatively new, and S.4 students, who are preoccupied with examinations. The inclusion of education officials allowed for higher-level perspectives on policy implementation and oversight. This distribution ensured a comprehensive representation of key stakeholders, capturing a range of experiences and insights critical for evaluating ICT integration within the curriculum.

Table 1: Target Population Distribution

Area of Coverage	Students (S.2 & S.3)	School Administrators	Teachers (Arts & Sciences)	Municipal Education Officer	Municipal Inspector of Schools
School A	966	02	02		
School B	141	02	02		
School C	687	02	02		
School D	644	02	02		
School E	290	02	02		
School F	132	02	02		

School G	460	02	02		
School H	158	02	02		
School I	177	02	02		
School J	108	02	02		
School K	202	02	02		
District/ Municipal/Div ision				01	01
Total	3965	22	22	01	01

Source: Gombe Division Office Records (2025)

Sample Size

A sample size of 351 participants was utilized, including 311 students, 19 school administrators, 19 teachers, and two education officials (the Municipal Education Officer and the Municipal Inspector of Schools). The sample size

determination followed Morgan and Krejcie's (1970) sampling recommendation for qualitative case studies. The higher proportion of students in the sample reflects their direct involvement in the New Lower Secondary Curriculum, particularly in experiencing ICT-based learning.

Table 2: Sampling Frame

Respondent Category	Population(N)	Sample(S)	Sampling Technique
Students(S.2-S.3)	3965	311	Stratified Random
School administrators	22	19	Purposive Sampling
Teachers	22	19	Stratified Random
MEO &, MIS	02	02	Purposive Sampling
Total	4011	351	

Source: Field Data (2025)

Sampling Techniques

A combination of stratified random sampling and purposive sampling was employed to gather data from various respondent categories in the study of ICT integration and the implementation of the New Lower Secondary Curriculum in Gombe Division, Wakiso District, Uganda. Stratified random sampling was used for selecting students (S.2-S.3) and teachers. For students, this method ensured a representative sample by dividing the population into distinct strata and randomly selecting samples from each stratum, reflecting various subgroups' experiences with ICT integration. Teachers were also stratified by subject (Science and Arts) and then randomly sampled to capture diverse pedagogical practices and challenges. Purposive sampling was applied to school administrators and municipal education officials. These techniques aimed to provide a comprehensive understanding of ICT integration by capturing diverse perspectives and experiences among key stakeholders involved in the educational process.

Data Collection

The study employed a combination of qualitative and quantitative approaches to gather comprehensive data. Primary data were collected through structured interviews with school administrators, teachers, the Municipal Education Officer, and the Municipal Inspector of Schools, as well as surveys conducted among students. Secondary

data were sourced from academic journals, reports, and relevant documents to supplement and provide a broader context for the primary data. This combination of methods provided a comprehensive understanding of ICT integration and the New Lower Secondary Curriculum Implementation in the educational context.

Data Sources

The data for this study on ICT integration and the New Lower Secondary Curriculum Implementation in Gombe Division, Wakiso District, Uganda, were gathered from multiple sources. Primary data were collected through structured interviews with school administrators, teachers, the Municipal Education Officer, and the Municipal Inspector of Schools. Additionally, surveys were conducted among students to gather their perspectives on ICT integration in education. Secondary data sources, such as academic journals, reports, and relevant documents, were also utilized to supplement the primary data and provide a comprehensive analysis of the research topic. These varied data sources contributed to a holistic understanding of the complexities and dynamics of ICT integration within the educational context of Gombe Division.

Data Collection Methods

The data collection methods that were used in the study on ICT Integration and the New Lower Secondary Curriculum

Implementation were interviews and questionnaires. Specifically:

Interviews

The interviews with school administrators, teachers, and Education Officials (from the municipal level) were reported to be vital for several reasons. Firstly, they allowed for in-depth exploration of key themes such as the availability and adequacy of ICT resources in schools, the level of training and preparedness among teachers to integrate ICT into their teaching practices, and the actual use of ICT tools in the classroom. This qualitative approach was essential as it provided rich, detailed insights into participants' perspectives, experiences, and challenges related to ICT integration. Additionally, semi-structured interviews offered flexibility, enabling the researcher to probe deeper into specific areas of interest that emerged during the interviews, thus ensuring comprehensive data collection.

Questionnaires Survey

The use of structured questionnaires among students complemented the qualitative data gathered from interviews. Likert scale questions in the questionnaire provided quantitative data on students' perceptions, attitudes, and experiences regarding ICT integration and the New Lower Secondary Curriculum Implementation, and how it influences their learning outcomes. This quantitative data was crucial for statistical analysis, trend identification, and generalizability of findings to a larger student population. Furthermore, including open-ended questions allowed students to express their views in their own words, providing nuanced insights that enhanced the understanding of their experiences with ICT in education.

Data Collection Instruments Semi-Structured Interviews

Semi-structured interviews were conducted with key informants, including school administrators, teachers, and Education Supervisors. This approach allowed for in-depth exploration of critical themes such as ICT resource availability, teacher preparedness, and the actual use of ICT tools in classrooms. The semi-structured format facilitated flexibility in the conversation, enabling participants to express their experiences and perspectives in a more detailed manner. As a result, these interviews provided rich qualitative data that contributed to a nuanced understanding of the challenges and opportunities associated with ICT integration in the curriculum. The flexibility of the interview format also allowed for follow-up questions, ensuring that significant aspects of the participants' views were fully explored.

Structured Questionnaires

These were administered to students to collect quantitative and qualitative data on their perceptions and attitudes

toward ICT integration and the implementation of the New Lower Secondary Curriculum. The closed-ended questions, primarily in the form of Likert-scale items, allowed students to respond within predefined options, thereby enabling the measurement and comparison of their attitudes across the sample. This format ensured consistency in responses and facilitated statistical analysis. In contrast, the open-ended questions provided students with the freedom to express their personal views, experiences, and suggestions in their own words. These open-ended responses offered rich qualitative insights that complemented the numerical data by capturing perspectives that could not be fully represented through fixed-choice questions (Bryman, 2016). This combination ensured a balanced approach, blending structured measurement with deeper reflection and individual expression.

Observation Guide

Direct classroom observations were conducted across selected schools in Gombe Division using an observation guide to assess the integration of ICT in the New Lower Secondary Curriculum. The observations focused on several key aspects, including the availability of ICT infrastructure (such as computers, projectors, and internet connectivity), teacher ICT competence in utilizing educational technology, and the actual use of ICT tools during class activities like interactive exercises and online resources. Additionally, the alignment of ICT integration with the curriculum objectives and learning outcomes was observed. These observations provided valuable insights into the practical application of ICT in classrooms, complementing the qualitative data gathered from interviews and the quantitative data from the structured questionnaires.

Data Quality Control Validity of Instruments

The validity of instruments in this study on ICT integration and the New Lower Secondary Curriculum Implementation in Gombe Division, Wakiso District, Uganda, was ensured through rigorous procedures. The Content Validity Index (CVI), calculated as the number of relevant items divided by the total number of items, multiplied by 100, ensured the questionnaire's suitability, with a threshold CVI of above 0.70, as recommended by Amin (2005). Expert reviews were conducted to confirm the relevance and comprehensiveness of the items. The Content Validity Index (CVI) was calculated using the formulae;

$$CVI = \frac{\text{Number of items rated as relevant}}{\text{Total number of items}} \times 100$$

$$CVI = \frac{42}{46} \times 100$$

$$CVI = 0.913$$

$$CVI = 0.913 \times 100$$

$$CVI = 91.3$$

Reliability of Instruments

Reliability of instruments in the study referred to the degree to which a measurement tool consistently produced stable and consistent results over time and across different conditions (Trochim & Donnelly, 2008). The reliability of the instruments used in the study on the effectiveness of ICT integration on the New Lower Secondary Curriculum Implementation was assessed to ensure consistency and

accuracy. For the survey designed for students, Cronbach's alpha coefficient was calculated to measure internal consistency across the Likert scale items related to teachers' ICT competence, ICT utilization, ICT infrastructure, and curriculum implementation. The results indicated a high level of internal consistency, with Cronbach's alpha coefficients above the acceptable threshold of 0.70 for each section, confirming that the items within each section reliably measured the intended constructs as presented in Table 3

Table 3: Reliability of Instruments: Cronbach's Alpha Coefficient Summary

Section	Number of Items	Cronbach's Alpha Coefficient
Teachers' ICT Competence	11	0.725
ICT Utilization	11	0.703
ICT Infrastructure	11	0.696
Curriculum Implementation	9	0.698
Total	42	2.822

Source: SPSS v23 Output

The Cronbach's alpha coefficients for teachers' ICT competence (0.725) and ICT utilization (0.703) demonstrate good internal consistency, indicating reliable measurement of these constructs. However, the coefficients for ICT infrastructure (0.696) and curriculum implementation (0.698) are slightly below the ideal threshold of 0.70, suggesting that while the reliability is reasonable, there is room for improvement in these areas. Refining the items for ICT infrastructure and curriculum implementation could enhance their internal consistency and overall measurement reliability.

For the interview schedules, a pilot study was conducted to refine the questions and ensure clarity and relevance. The reliability of the interview questions was tested through this pilot, and adjustments were made based on feedback to enhance their effectiveness in capturing accurate and consistent responses. While Cronbach's alpha is not directly applicable to qualitative data, the reliability of the interview schedule was ensured by thorough testing and refinement, contributing to the overall reliability of the data collection process.

This rigorous approach to evaluating and ensuring the reliability of both the survey and interview instruments supported the consistency of the data collected, enhancing the overall quality and validity of the research outcomes.

Data Collection Procedure

The data collection procedure for investigating ICT integration and the Implementation of the New Lower Secondary Curriculum in Gombe Division, Wakiso District, Uganda, was conducted systematically to ensure ethical compliance and effective stakeholder engagement. The process began with obtaining ethical clearance from the School of Graduate Studies and Research (SGSR), University of Kisubi, followed by presenting an official introduction letter to respondents to establish credibility

and purpose. Key participants, including teachers, school administrators, the Municipal Education Officer, and the Municipal Inspector of Schools, were engaged through email communication, phone calls, and face-to-face meetings, ensuring clear coordination. Data collection instruments included structured interviews with teachers, school administrators, and education officials to gather in-depth insights, surveys for students to capture their perceptions of ICT use, and observations to directly assess classroom ICT integration. Informed consent was obtained from all participants to ensure ethical conduct and respect for their autonomy and rights. This systematic approach enabled the researcher to gather comprehensive and reliable data while upholding professionalism and ethical standards.

Data Processing and Management

Data processing and management for the study involved systematically organizing and cleaning the collected data to ensure accuracy and completeness. This process entailed verifying the data for errors, handling missing values, and ensuring consistency across datasets. The objective was to prepare the data for rigorous analysis by eliminating inaccuracies and inconsistencies that could impact the results. Once the data was organized and cleaned, it was systematically categorized to facilitate the subsequent analysis steps.

Data Analysis

Data analysis for the study included multiple steps to ensure a comprehensive evaluation of ICT integration and Implementation of the New Lower Secondary Curriculum. The Quantitative analysis involved the use of descriptive statistics such as frequencies and percentages to summarize participants' responses, providing a clear overview of their opinions on ICT integration. Correlation analysis was

employed to explore relationships between variables, offering insights into factors influencing successful ICT integration. For qualitative data, thematic analysis was used to identify patterns and themes related to challenges, benefits, and implementation strategies. Quantitative analysis was conducted using SPSS v23, ensuring precision and rigor, while NVivo was utilized for qualitative analysis to enhance credibility and validity.

Research Ethical Considerations

In conducting the study on ICT integration and the New Lower Secondary Curriculum Implementation in Gombe Division, Wakiso District, Uganda, several ethical issues and considerations were addressed. Informed consent was obtained from all participants, ensuring they were fully aware of the study's objectives, procedures, potential risks, and benefits, and that their participation was voluntary with the option to withdraw at any time. Confidentiality measures were implemented to protect participants' identities and data, including anonymizing data in reports, securely storing information, and limiting access to

authorized personnel. Privacy was respected by conducting interviews and data collection in private settings to maintain confidentiality and minimize intrusion. Additionally, the research adhered strictly to ethical guidelines set forth by the University of Kisubi and relevant regulatory bodies to ensure integrity, honesty, and respect for all participants involved.

RESULTS

Response Rate

Out of the 311 questionnaires administered to students, 310 (99%) questionnaires were used in the subsequent analysis, while only one (1%) respondent from some institutions provided fewer students due to a tight school schedule. Additionally, out of the 40 interviews conducted with school administrators, teachers, MEO, and MIS, 32 interviews were successful, resulting in an 80% interview completion rate; a 50% response rate is adequate for analysis and reporting, 60% is good, and over 70% are excellent. Thus, the study achieved an excellent response rate, as shown in Table 4:

Table 4: Response Rate

Data Collection Instrument	No. Administered	No. Returned	Response Rate (%)
Questionnaires (Students)	311	310	99%
Interviews (School Admins, Teachers, MEO, & MIS)	40	32	80%
Total	351	342	

Source: Field Data (2025)

Demographic Characteristics of Respondents

The demographic characteristics of the students in the study provide a comprehensive understanding of the

composition of the respondents, which is crucial for interpreting the study's findings on ICT integration and the New Lower Secondary Curriculum Implementation in Gombe Division, Wakiso District.

Table 5: Demographic Table for Students (S.2-S.3)

Characteristic	Category	Freq. (f)	Percent (%)
Gender	Male	145	46.8
	Female	165	53.2
Total		310	100
Age	12–14	103	33.3
	15–17	158	51.0
	18–20	36	11.6
	21 and above	13	4.2
Total		310	100
Current Class Level	S.2	143	46.1
	S.3	167	53.9
Total		310	100
Years at Current School	Less than 1 year	58	18.7
	1–2 years	112	36.1
	3–4 years	140	45.2
Total		310	100

Source: Field Data (2025)

As shown in Table 5, the gender distribution reveals a fairly balanced sample, with 46.8% male and 53.2% female students. This slight majority of female respondents indicates a gender diversity that can contribute to a broader understanding of how both male and female students interact with ICT in the curriculum.

The age distribution of the respondents shows that the majority of students are within the 15–17 age range, accounting for 51.0% of the sample. This is the typical age range for students in Senior 2 (S.2) and Senior 3 (S.3), reflecting the target population for this study. Additionally, 33.3% of students fall within the 12–14 age range, while a smaller proportion (11.6%) are aged 18–20, and only 4.2% are 21 years or older. This age variation underscores the different stages of cognitive and social development among the students, which may influence their ability to adapt to and benefit from ICT integration in their studies.

In terms of current class level, 46.1% of the respondents are in S.2, while 53.9% are in S.3. This distribution indicates that the study captures insights from students who are at different stages of their 'O' Level education, which is important for understanding how ICT integration impacts students across these crucial years.

The data on the years spent at the current school reveals that 45.2% of students have been at their school for 3–4 years, indicating that nearly half of the respondents have had a considerable amount of time to adapt to their school environment, including its ICT facilities and curriculum

implementation strategies. Meanwhile, 36.1% of students have been at their school for 1–2 years, and 18.7% have been there for less than a year. This variation in duration at the school may reflect differing levels of familiarity and comfort with the ICT resources available, which could influence the effectiveness of ICT integration in their learning experiences.

In summary, the demographic data provides a nuanced understanding of the respondent group, highlighting factors such as gender balance, age diversity, class level distribution, and varying lengths of time at their current school. These characteristics are essential for interpreting the findings of the study, as they offer insights into how different groups of students might experience and benefit from ICT integration in the 'O' Level curriculum.

Demographics for school administrators, teachers, and educational officers

The demographic characteristics of the school administrators, teachers, and other key educational officers (MEO and MIS) gathered through face-to-face interviews, as presented in Table 6, offer valuable insights into the professional composition and experience of the respondents. This information is essential for understanding the context in which ICT integration and 'O' Level curriculum implementation are being assessed in Gombe Division, Wakiso District.

Table 6: Demographics for School Administrators, Teachers, MEO, and MIS

Characteristic	Category	Freq (f)	Percent (%)
Gender	Male	22	55.0
	Female	18	45.0
Total		40	100
Highest Level of Education	Diploma	8	20.0
	Degree	20	50.0
	Master's Degree	12	30.0
Total		40	100
Years of Experience	Below 3 years	10	25.0
	4–7 years	16	40.0
	Above 8 years	14	35.0
Total		40	100

Source: Field Data (2025)

The gender distribution in Table 6 shows that 55.0% of the respondents are male, while 45.0% are female. This near-equal representation suggests a balanced perspective from both genders in the study. Such diversity is important for capturing a comprehensive view of how different gender groups perceive and engage with ICT integration in the curriculum, as well as their roles in implementing educational policies.

Regarding the highest level of education attained by the respondents, the data indicate a diverse range of academic qualifications. A significant portion of the respondents, 50%, hold a bachelor's degree, suggesting that most

participants have received comprehensive training in education. Additionally, 30.0% of the respondents have attained a master's degree, which reflects a considerable level of advanced knowledge and expertise, potentially contributing to more informed and effective decision-making in ICT integration. Meanwhile, 20.0% of the respondents possess a diploma, which is a common qualification for teachers, particularly in earlier stages of their careers.

The years of experience among the respondents vary, with 40.0% having 4–7 years of experience, indicating that a significant portion of the respondents are relatively

seasoned professionals who have likely witnessed and participated in various stages of curriculum implementation and ICT adoption. Additionally, 35.0% of respondents have over 8 years of experience, showcasing a wealth of knowledge and practical experience that can be vital for the successful integration of ICT in the educational system. On the other hand, 25.0% of respondents have less than 3 years of experience, representing a newer generation of educators and administrators who may bring fresh perspectives and innovative approaches to ICT integration.

The demographic data in Table 6 highlights the diverse backgrounds, qualifications, and experiences of the school administrators, teachers, and educational officers involved in the study. This diversity is crucial for interpreting the study's findings, as it provides a broad spectrum of insights

into how different levels of education, professional experience, and gender may influence the implementation and effectiveness of ICT integration within the 'O' Level curriculum.

Teachers' ICT Competence and New Lower Secondary Curriculum Implementation

The statistics provided a comprehensive overview of teachers' ICT competence and its impact on the implementation of the New Lower Secondary Curriculum. These findings are crucial for evaluating the effectiveness of ICT integration in teaching practices. The data was collected using a Likert scale, ranging from 'strongly agree' (5) to 'strongly disagree' (1), with 'neutral' (3) serving as the midpoint. The detailed results are presented in Table 7

Table 7: Teachers' ICT Competence and New Lower Secondary Curriculum Implementation

Statement	Agreed (A+SA)	Neutral (N)	Disagreed (D+SD)	Mean	St dev.
	f(%)	f(%)	f(%)		
Teachers are skillful in using digital tools.	137(44.2%)	50(16.1%)	124(39.7%)	2.95	1.426
Teachers successfully use ICT resources for teaching.	139(44.8%)	45(14.5%)	126(40.7%)	2.96	1.418
Teachers' ICT skills improve learning experiences.	150(48.4%)	60(19.4%)	100(32.2%)	2.77	1.387
Teachers integrate technology well into lessons.	145(46.8%)	40(12.9%)	125(40.4%)	2.94	1.426
Teachers adapt suitable teaching methods to use technology.	140(45.1%)	55(17.7%)	115(37.1%)	2.94	1.357
Teachers' digital skills positively influence learning.	137(44.2%)	50(16.1%)	123(39.7%)	2.93	1.432
Teachers regularly update their ICT skills through professional development.	147(47.4%)	54(17.4%)	109(35.2%)	2.83	1.429
Teachers provide effective support and guidance to students using ICT.	144(46.4%)	60(19.4%)	106(34.2%)	2.87	1.381

Source: Field Data (2025)

The data in Table 7 reveals that 44.2% of respondents agree that teachers are skillful in using digital tools, while 39.7% disagree, and 16.1% remain neutral. The mean score of 2.95, coupled with a standard deviation of 1.426, suggests a relatively moderate perception of teachers' digital skills, indicating that while a significant portion of teachers are competent, there is still a considerable number who may struggle with digital tools.

Similarly, 44.8% of respondents believe that teachers successfully use ICT resources for teaching, with 40.7% disagreeing and 14.5% being neutral. The mean score of 2.96 and a standard deviation of 1.418 indicate a slightly positive, yet mixed, perception of teachers' ability to effectively use ICT in their teaching practices. This suggests that while some teachers are adept at integrating ICT, others may need further support or training.

When considering whether teachers' ICT skills improve learning experiences, 48.4% agree, while 32.2% disagree, and 19.4% are neutral. The mean score of 2.77 and a standard deviation of 1.387 reflect a generally positive perception, though the significant disagreement highlights areas where the potential benefits of ICT might not be fully realized, possibly due to varying levels of ICT competence among teachers.

The data also shows that 46.8% of respondents agree that teachers integrate technology well into their lessons, while 40.4% disagree, and 12.9% remain neutral. The mean score of 2.94 and a standard deviation of 1.426 suggest that while nearly half of the respondents see effective technology integration, there is still a notable percentage of teachers who may face challenges in this area.

Regarding the adaptation of suitable teaching methods to incorporate technology, 45.1% of respondents agree that

teachers do so effectively, whereas 37.1% disagree, and 17.7% are neutral. The mean score of 2.94, with a standard deviation of 1.357, indicates a similar trend where a significant proportion of teachers are seen as competent, but there is room for improvement.

The perception that teachers' digital skills positively influence learning is shared by 44.2% of respondents, with 39.7% disagreeing and 16.1% being neutral. The mean score of 2.93 and a standard deviation of 1.432 reflect a moderate view of the effect of teachers' digital skills on learning outcomes, suggesting that while some benefits are observed, they are not universally felt across the board.

In terms of professional development, 47.4% of respondents agree that teachers regularly update their ICT skills, while 35.2% disagree, and 17.4% remain neutral. The mean score of 2.83 and a standard deviation of 1.429 indicate that while many teachers are engaged in professional development, there is still a significant portion who may not be actively enhancing their ICT competencies, which could impact the overall effectiveness of ICT integration.

Lastly, 46.4% of respondents agree that teachers provide effective support and guidance to students using ICT, while 34.2% disagree and 19.4% are neutral. The mean score of 2.87 and a standard deviation of 1.381 suggest that while many teachers are seen as supportive in their use of ICT, there remains a portion of the teaching staff that may need to improve their support strategies.

The statistics indicate that while there is a generally positive perception of teachers' ICT competence and its impact on new lower secondary curriculum implementation, there are significant areas where improvement is needed.

The mixed responses highlight the varying levels of ICT proficiency among teachers, suggesting that targeted professional development and support could enhance the overall effectiveness of ICT integration in the curriculum. This finding is consistent with that from the interview session with the Teachers who asserted that;

"I'd rate myself above 60%. Well, since physical education is relatively new to many students, and many people are still unfamiliar with it, I primarily use tools like a projector to introduce new topics. The school provides a projector, and I also have my personal computer, and sometimes use my phone for teaching. I show them how things work, and then I let them experiment with the tools during the lesson. The students are always excited when using ICT tools. About 50% of them manage to concentrate on the task, while the other half tends to get diverted. If ICT were made compulsory and if schools provided more resources, it would help us reach a 100% integration rate. Setting up the ICT equipment takes a bit of time, which can cut into the lesson. Also, we occasionally face technical issues that cause delays."

The data summarized in Table 8 reflects students' perceptions of how their teachers' use of ICT has impacted their learning, provides specific examples of how teachers' ICT skills have enhanced their understanding of subjects, and highlights the challenges teachers face in integrating ICT into their classrooms. This additional information complements the Likert scale data by offering deeper insights into the practical applications and obstacles of ICT in education.

Table 8: Students' Perceptions and Examples of Teachers' ICT Use, and Challenges Faced in ICT Integration

How student feel their teachers' use of ICT has impacted their learning	Freq.	Percent (%)
Very positively	61	19.7
Positively	109	35.2
Neutral	46	14.8
Negatively	62	20.0
Very negatively	32	10.3
Total	310	100
Examples of how a teacher's ICT skills have improved students' understanding of a subject		
Using educational videos to explain concepts	78	25.2
Incorporating digital slideshows for better visuals	62	20.0
Sharing online resources like e-books and articles	62	20.0
Improving my skills in research, e.g., through Google	47	15.2
Engaging in Virtue discussion platforms like WhatsApp	61	19.7
Total	310	100
Challenges teachers face in using ICT in the classroom		
Lack of resources	93	30.0
Limited training	112	36.1
Technical issues	46	14.8
Lack of ICT gadgets	59	19.0
Total	310	100

Source: Field Data (2025)

Table 8 shows that the majority of students, 54.9%, perceive the impact of their teachers' ICT use as positive or very positive, indicating a general appreciation of ICT integration in enhancing their learning experiences. However, a significant portion, 30.3%, reported negative or very negative impacts, which could reflect varying levels of ICT competence among teachers or differing student expectations and experiences.

In terms of specific examples, 25.2% of students highlighted the use of educational videos as a major factor in improving their understanding of subjects, followed by the use of digital slideshows and online resources like e-books and articles, each mentioned by 20% of the students. These examples suggest that visual aids and easily accessible digital content are key elements in making lessons more comprehensible and engaging for students. Furthermore, 15.2% of students reported that their research skills improved through tools like Google, while 19.7% found value in engaging with virtual discussion platforms such as WhatsApp, which indicates that ICT also plays a

significant role in fostering independent learning and peer interaction.

However, the table also reveals significant challenges that teachers face in implementing ICT in the classroom. Limited training (36.1%) and lack of resources (30.0%) are the most commonly cited challenges, which suggests that while the potential of ICT is recognized, its full integration is hindered by inadequate support and infrastructure. Additionally, technical issues (14.8%) and the lack of ICT gadgets (19.0%) further compound these challenges, highlighting the need for improved access to technology and ongoing professional development to enable teachers to effectively utilize ICT in their teaching practices.

The general implication of this analysis suggests that while there is evidence that ICT has a positive impact on curriculum implementation, the success of this integration depends on the consistent enhancement of teachers' ICT competencies and the provision of necessary resources and support.

Table 9: Correlation Analysis between Teacher Competence and Implementation of the New Lower Secondary Curriculum

		Implementation of the New Lower Secondary Curriculum	Teacher Competence
Implementation of the New Lower Secondary Curriculum	Pearson Correlation	1	.730**
	Sig. (2-tailed)		.000
	N	310	310
Teacher Competence	Pearson Correlation	.730**	1
	Sig. (2-tailed)	.000	
	N	310	310

****.** Correlation is significant at the 0.01 level (2-tailed).

Source: Field Data (2025)

The correlation analysis in Table 9 shows a strong positive relationship ($r = 0.730$) between teacher competence and Implementation of the New Lower Secondary Curriculum, indicating that as teacher competence, particularly in ICT integration, improves, so does the effectiveness of curriculum implementation. This means that teachers proficient in using ICT tools, such as multimedia resources, virtual learning platforms, and interactive technologies, can

enhance student engagement and understanding, thus leading to better curriculum delivery. The p-value of 0.000 confirms that this correlation is statistically significant at the 1% level, meaning the relationship is highly reliable. This highlights the importance of investing in teacher professional development, particularly in ICT skills, and ensuring schools have the necessary infrastructure to support the integration of digital tools in teaching.

Linear Regression Analysis of Teacher Competence and Implementation of the New Lower Secondary Curriculum

Table 10: Combined Regression Analysis

Model	R	R ²	Adjusted R ²	Std. Error of the Estimate	F	Sig. (F)	Unstandardized Coefficients (B)	Standardized Coefficients (Beta)	t	Sig. (t)
Constant	.730	.533	.531	.37463	351.245	.000	1.391		16.988	.000
Teacher Competence							.520	.730	18.742	.000

Source: Field Data (2025)

The regression analysis in Table 9 reveals a strong positive relationship between teacher competence and the effective implementation of the New Lower Secondary Curriculum, with a correlation (R-value) of .730. As one interviewee noted, *"The more proficient teachers are in using ICT tools, the more successful they are at implementing the curriculum."* This is supported by the model explaining 53.3% of the variance in curriculum implementation ($R^2 = .533$), indicating that teacher competence significantly impacts curriculum delivery. For example, teachers who use online resources and digital platforms to enhance their lessons find that *"their ability to deliver the curriculum improves substantially."* The F-value of 351.245 and a p-value of .000 underscore that this relationship is highly significant, with teacher competence improving curriculum implementation by .520 units for every unit increase in competence. One interviewee emphasized, *"When teachers are skilled in ICT, such as using interactive smart boards and educational software, it makes a considerable difference in meeting the curriculum's demands."* The t-value of 18.742 and a p-value of .000 further confirm that this effect is statistically significant, reinforcing the critical role of ICT skills in modern education and highlighting that effective integration of technology is essential for enhancing curriculum implementation and providing engaging learning experiences for students.

DISCUSSION

The study found that teachers' ICT competence significantly influences curriculum implementation, with higher competence linked to more effective teaching practices (Namugera & Mugisha, 2022; Musoke & Oonyu, 2020). Regression analysis indicated that teachers' ICT skills accounted for a substantial portion of variance in curriculum delivery, underscoring the transformative potential of digital literacy (Ertmer et al., 2012).

Vygotsky's Social Constructivism Theory provides a useful framework for understanding this relationship. ICT tools, such as computers, projectors, digital whiteboards, and e-learning platforms, act as mediators enabling teachers to scaffold learning, facilitate collaboration, and enhance student engagement (Moll, 2015; Mishra & Koehler, 2006). For instance, teachers with strong ICT skills can integrate interactive quizzes, simulations, and video lessons into their teaching strategies, creating dynamic learning environments aligned with the NLSC.

Professional development emerged as a critical factor. Teachers participating in regular ICT training programs demonstrated higher competence and confidence in integrating technology into lessons (García, Pérez, & Ruiz, 2020; Wylie & McMahon, 2019). Such programs not only improve technical skills but also foster a mindset that embraces innovation, enabling teachers to adapt pedagogical methods and overcome challenges associated with digital integration.

However, ICT competence alone is insufficient. Teachers reported challenges such as inadequate infrastructure, unreliable internet connectivity, and outdated equipment (Lee & Park, 2021; Musoke & Oonyu, 2020). These systemic barriers can hinder effective curriculum implementation, indicating that training must be paired with investments in ICT infrastructure and technical support.

Collaboration among teachers also enhances ICT competence and curriculum delivery. Peer mentorship and collaborative workshops allow teachers to share innovative strategies, troubleshoot challenges, and build a supportive community (Mitra, 2005; Wylie & McMahon, 2019). This aligns with Vygotsky's emphasis on social interaction in learning and highlights the importance of professional networks in supporting effective use of ICT.

CONCLUSION

It is concluded that ICT utilization has a significant positive impact on the implementation of the new lower secondary curriculum. The strong correlation and regression results highlight that increased use of digital tools and resources is associated with more effective curriculum delivery. However, the variability in student engagement and the presence of significant obstacles indicate that while ICT tools enhance educational outcomes, there are areas needing improvement to fully realize their potential.

RECOMMENDATION

It is recommended that educational authorities establish and implement comprehensive professional development programs specifically targeting ICT skills for teachers. These programs should include training on the use of digital tools and strategies for integrating technology into lessons. By providing teachers with the necessary skills and resources, these programs can help enhance their ICT competence, ultimately leading to more effective curriculum delivery and improved student outcomes. This recommendation is directed to educational policymakers, school administrators, and professional development coordinators to ensure that teachers receive the support they need to excel in integrating technology into their teaching practices.

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LIST OF ABBREVIATIONS

CVI	Content Validity Index
DEO	District Education Officer
DES	Division Education Supervisor
EAC	East African Community
ESD	Education for Sustainable Development
ICR	Internal Consistency
Reliability	
ICT	Information and Communication Technology
MIS	Municipal Inspector of Schools
NGOs	Non-Governmental Organizations
NLSC	New Lower Secondary Curriculum
SDGs	Sustainable Development Goals
SGSR	School of Graduate Studies and Research
SPSS	Statistical Package for the Social Sciences
UBOS	Uganda Bureau of Statistics
UCC	Uganda Communications Commission
UNCST	Uganda National Council for Science and Technology
UNESCO	United Nations Educational, Scientific, and Cultural Organization
UNICEF	United Nations Children's Fund
VSCT	Vygotsky's Social Constructivism Theory
ZPD	Zone of Proximal Development

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CONFLICT OF INTEREST

The authors declare no conflict of interest.

DATA AVAILABILITY

Data is available upon request from the author.

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IK: collected the data.

AS: supervised the study.

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