INTEGRATION OF INFORMATION COMMUNICATION TECHNOLOGY IN TEACHING OF THE LOWER SECONDARY CURRICULUM: A CASE STUDY OF IBANDA DISTRICT

CHARLES KUWEREKA

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UGANDA CHRISTIAN UNIVERSITY
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DECLARATION

I Charles Kuwereka, declare that this Dissertation titled, “Integration of information communication technology in teaching of the lower secondary curriculum: a case study of Ibanda district” is my original work and it has never been presented or submitted to any Institution for any Academic award.

Sign -  Date 20/8/2025

CHARLES KUWEREKA

APPROVAL

Undersigned certifies that he has read and here by recommend for acceptance to the Uganda Christianity University a research proposal titled, “Factors Affecting the Integration of Information and Communication Technology in Teaching and Learning of the Lower Secondary Curriculum: A Case Study of Ibanda District”.

Signature:  Date: 25/-08/-2025

MR. PATRICK LUGEMWA

DEDICATION

This work is dedicated to my beloved wife and entire family members, who gave me moral support throughout the course. Thank you for the unconditional moral, spiritual and financial support throughout my period of study. And my headteacher Ms Amanya Celia for all the support given to me.

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GLOSSARY OF TERMS AND ACRONYMS

CFT	Cognitive Flexibility Theory
CVI	Content Validity Index
DCI	Data Collection Instrument
GoU	Government of Uganda
ICT	Information and Communication Technology
MoES	Ministry of Education and Sports
MVA	Multivariable Analysis
NIDF	National ICT Development Fund
SPSS	Statistical Package for Social Sciences
UCU	Uganda Christian University

ABSTRACT

Integrating technology into classroom practices remains a major challenge in the 21st century. The purpose of this study was to investigate the integration of Information and Communication Technology (ICT) in teaching the lower secondary curriculum, using Ibanda District as a case study. The study specifically examined the influence of teacher-related challenges, administrative challenges, and curriculum-related challenges (independent variables) on teaching and learning outcomes (dependent variable).

A cross-sectional design with a triangulation approach was employed. The target population comprised teachers, students, and ICT coordinators, totaling 275 participants. Students were selected using simple random sampling, while teachers, administrators, and ICT coordinators were selected purposively. Data were collected through questionnaires and interview guides and analyzed both quantitatively and qualitatively.

The findings revealed a strong positive correlation between teacher-related challenges and teaching and learning outcomes ($r = 0.610$, $n = 70$, $p < 0.01$), indicating that lack of ICT skills, training, and negative attitudes hinder effective ICT integration. Administrative challenges also showed a strong positive relationship ($r = 0.816$, $p < 0.01$), highlighting that inadequate ICT infrastructure, financial constraints, and poorly maintained facilities limit ICT use in teaching. Furthermore, curriculum-related challenges demonstrated a very strong positive correlation ($r = 0.812$, $p < 0.01$), showing that misalignment of the curriculum with ICT objectives, limited technical support, and insufficient training impede ICT integration.

The study concludes that teacher-related, administrative, and curriculum-related challenges collectively affect the integration of ICT in teaching and learning in Ibanda District. It is recommended that the Ministry of Education and Sports organize regular in-service training for teachers to improve ICT skills and provide adequate infrastructure to support effective digital learning.

CHAPTER ONE

INTRODUCTION

1.0 General Introduction

The integration of Information and Communication Technology (ICT) into education has become a key factor in improving teaching and learning processes. In Uganda, the government has implemented several initiatives to enhance ICT access in schools, aiming to equip students and teachers with digital skills. Despite these efforts, challenges remain in fully integrating ICT in classrooms, particularly in lower secondary schools. This study focused on investigating the factors affecting ICT integration in teaching and learning of the lower secondary curriculum in Ibanda District. The findings provide insights into the barriers and opportunities for effective ICT adoption in Ibanda District. This chapter focused on the background of the study, statement of the problem, purpose and objectives of the study, research questions, scope of the study, justification of the study, the significance of the study and the conceptual framework of the study.

1.1 Background to the Study

This segment of the study presents four sub-sections: historical, theoretical, conceptual and contextual background as detailed hereunder:

1.1.1 Historical Background

The integration of Information and Communication Technology (ICT) into teaching and learning has undergone significant transformation, shaping education into a dynamic and interactive process (Kavinya, 2021). In its early stages, education relied on simple

tools like chalkboards, which were later replaced by more advanced technological innovations such as personal computers. The 1970s marked the beginning of personal computers entering classrooms, marking a pivotal moment in educational technology. Initially, computers were primarily used for administrative tasks and basic instruction. However, as their functionalities grew throughout the 1980s, they became more embedded in the curricula, offering students hands-on experiences to acquire practical skills (Donnelly, 2019). The 1990s heralded the "Information Age," with the advent of the Internet, revolutionizing education by providing access to global resources and enabling interactive learning environments. This shift led the UNESCO ICT Competency Framework for Teachers to recognize the importance of ICT in education and highlights that it ensures that the students are fully capacitated in the 21st century (Sutter & Kihara, 2019). With the advent of new technology globally, most countries have adopted digital literacy project with an aim of enhancing the skills of the students' participation.

As highlighted by Finkelstein et al. (2021), the integration of digital platforms transformed not only the structure of classrooms but also the broader approach to knowledge dissemination in schools. As ICT became a core part of education, many countries recognized its transformative potential. For instance, Malaysia launched its Education Blueprint 2013–2025, which aimed to enhance ICT integration through initiatives like BestariNet, providing schools with internet access and virtual learning environments (Ghavifekr & Rosdy, 2019). Sweden and Singapore are at the top in adoption of ICT in education across the global and as the most digitized and innovative nations (Ghavifekr et al. 2019). However, Africa's ICT integration in

education, particularly in Sub-Saharan Africa, has faced unique challenges, including limited infrastructure, digital divides, and financial constraints. Integrating technology into classroom practices is one of the challenges in the 21st century. Effectively integrating ICT into teaching learning process is much more complicated than providing computers and securing a connection to the Internet (Beri & Sharma, 2019). This will be investigated, especially scrutinizing the frequent factors affecting the integration of ICT and its influence onto teaching and learning.

In Africa, Ghana is one of the developing countries which has drafted comprehensive ICT policies in 2008 and committed huge investment geared to develop and enhance technology up take in across schools (Beri & Sharma, 2019). Similarly, Amuchie (2015) observe that ICT is currently an integral part of the of Ghana education service strategic plan. For instance, Ghana introduced an intervention program dubbed “One Laptop per Child Policy” aimed at enhancing teaching and learning as well as cultivating pupils’ interest towards the use of ICT. The Ghana Education Service (GES) launched the "Computerize Schools Initiative," equipping schools with computers and internet connectivity. Despite these advancements, Ghana faces challenges in ensuring equitable access to technology, particularly in rural and underserved areas (Badu, 2020). These barriers include inconsistent electricity supply, poor internet connectivity, and the lack of effective support for teachers in integrating ICT into the classroom.

Later in South Africa, the introduction of ICT in education began with the Department of Education's e-Education Strategy, launched in 2004. The strategy aimed to improve education through the integration of ICT, particularly by providing schools with the

necessary technology and encouraging digital literacy among educators and students (Makoe & Makoa, 2020). The government's commitment to improving ICT infrastructure led to the development of initiatives such as the "SchoolNet" program, which aimed to train teachers and students in ICT use and promote the benefits of ICT in schools. Despite these initiatives, South Africa faces persistent challenges, including unequal access to technology, particularly in rural and underfunded schools, and the need for ongoing teacher professional development (Makoe et al. 2020). Similarly, in Nigeria, the Federal Ministry of Education launched the National Policy on ICT in Education in 2001, with the goal of introducing ICT to improve the quality of education. The Nigerian government has focused on equipping schools with ICT infrastructure and ensuring the integration of ICT into the curriculum. Programs like the National ICT Development Fund (NIDF) have sought to provide schools with computers and internet access. However, Nigeria still faces several obstacles to full ICT integration, including unreliable electricity, insufficient infrastructure in rural areas, and a lack of well-trained teachers (Alabi & Adebayo, 2022). Regrettably, all these have been conducted outside Uganda creating a gap for this study.

In Uganda, the government has long recognized the importance of ICT in education and took proactive steps to integrate it into the national education system. The Ministry of ICT was established in 2006, and an ICT Policy Framework was introduced in 2003, which emphasized the need to equip schools with computers, multimedia tools, and internet access to support teaching and learning (Uganda Ministry of ICT, 2021). Key programs like SchoolNet Uganda and ConnectEd have been designed to provide secondary schools with ICT resources and improve digital literacy. However,

despite these efforts, Uganda's educational system still faces significant challenges in ICT integration, including limited infrastructure, inadequate teacher training, and insufficient funding for ICT-related programs (Nabunya et al. 2021).

Recent studies (Achieng, 2020; Mbwesa, 2023; Mugisha & Fins, 2023; Murunga et al. 2023) continue to highlight the potential benefits of ICT in education, such as enhancing student engagement and fostering more interactive and collaborative learning environments. However, ICT adoption in Ugandan schools has been hindered by systemic barriers, including unreliable electricity, inconsistent internet access, and a lack of ongoing professional development for teachers (Nabunya et al. 2021). Ostensibly, the success of ICT integration also depends heavily on teachers' willingness to adopt and integrate new technologies into their teaching practices. Teacher confidence and competence in using ICT tools remain crucial for ensuring the effectiveness of technology-enhanced education in Uganda (Kasozi & Kasule, 2020). Interestingly, the integration of ICT in teaching and learning has remained a nightmare in several secondary schools, thus worth being investigated. In the next section, the theoretical background was addressed.

1.1.2 Theoretical Background

This study was grounded in Cognitive Flexibility Theory (CFT), which was advanced and introduced by Spiro and Jehng (1992). The theory emphasizes that learners grasp complex information more effectively when exposed to multiple representations in diverse contexts. It posits that cognitive flexibility allows learners to restructure their knowledge adaptively in response to changing demands. This flexibility is especially relevant for ICT integration in education, where learners interact with information

through various tools and digital platforms. In the context of ICT, learners can transfer their skills across different settings, applying knowledge gained from one task to another, such as from classroom lessons to real-world applications (Allessi & Trollip, 2001).

CFT is particularly pertinent to this study on ICT integration in lower secondary schools because ICT tools offer varied ways of presenting information, which can help develop adaptable, flexible learners. Students who learn to use digital tools for research or collaboration can transfer those skills to other academic disciplines or future careers. However, the theory does face criticism. It tends to overlook external factors like infrastructure, resources, and teacher training, which can impede the application of cognitive flexibility in resource-constrained settings (Ghavifekr & Rosdy, 2019). In regions with limited access to technology or teacher training, the ideal conditions for implementing CFT may not be feasible, limiting its impact. Despite this, CFT remains a valuable framework for understanding how ICT can enhance learning by fostering a dynamic, transferable learning experience; and this study is seeking to address this gap. In the next section, the conceptual background was addressed.

1.1.3 Conceptual Background

In the context of this study, several key concepts are central to understanding the integration of Information and Communication Technology (ICT) in the teaching and learning process in Ibanda District. These concepts, as defined in the literature, guide the research and help frame the challenges faced by educators, administrators, and the curriculum in ICT adoption and use.

Information and Communication Technology (ICT): According to Kumar & Sinha (2019), ICT refers to the use of digital technologies, such as computers, internet

tools, multimedia, and other communication devices, to support and improve the processes of education. It encompasses both hardware (e.g., computers, projectors) and software (e.g., educational apps, online learning platforms) that facilitate learning and teaching. The integration of ICT in education is expected to make the learning process more interactive, engaging, and efficient, fostering critical thinking and problem-solving skills among students (Harris & Hofer, 2019). The term ICT encompasses the range of hardware (desktop and portable computers, projection technology, calculators, data-logging, and digital-recording equipment), software applications (generic software, multimedia resources), and information systems (Intranet, Internet) (Mbwesa, 2023). In this research, I regarded ICT as a shorthand for the software, computers, networks, satellite links and related systems that permit people to create, access, analyze, exchange and use information, data and knowledge in numerous ways.

ICT Integration: ICT integration in education is defined as the effective use of technology to enhance teaching and learning. This involves not only the physical presence of technology in the classroom but also its meaningful and pedagogical use to support educational objectives (Mishra & Koehler, 2016). Effective ICT integration requires a shift from traditional teaching methods to more learner-centered approaches, where students are encouraged to actively engage with technology for deeper learning experiences (Jung, 2020). In this study, ICT Integration refers to the process of incorporating or aligning ICT educational technologies with the pedagogy and their usage to enhance teaching and learning.

Challenges in ICT Integration: Several challenges to ICT integration are recognized in the literature. For teachers, these challenges include a lack of sufficient training, digital literacy, and the technical skills necessary to effectively use ICT tools (Al-Emran et al. 2018). Administrative challenges often involve inadequate infrastructure, insufficient financial resources for technology procurement, and a lack of technical support (Anderson & Dron, 2021). Additionally, curriculum-related challenges arise when ICT tools and resources are not aligned with the prescribed curriculum, making it difficult for teachers to integrate technology into their lesson plans in a meaningful way (Kozma, 2020). The dimensions of challenges to ICT integration in this study included: teacher-related challenges, administrative challenges, and curriculum-related challenges.

Digital Literacy: Digital literacy refers to the ability to use digital tools and technologies effectively and responsibly (Eshet-Alkalai, 2018). In the context of teaching, digital literacy involves not only the ability to operate ICT tools but also the capacity to evaluate digital content, use it in pedagogically sound ways, and navigate the complexities of online platforms. For teachers in Ibanda District, digital literacy is critical for their ability to integrate ICT into the classroom, as it forms the foundation for effective technology use in teaching.

Pedagogical Integration of ICT: Pedagogical integration refers to the way ICT is embedded into the curriculum and teaching strategies to enhance student learning (Harris & Hofer, 2019). Effective pedagogical integration requires that teachers do not simply use technology for the sake of it, but rather leverage it to support active learning, critical thinking, and student engagement. This concept emphasizes the

role of teachers in designing ICT-enabled lessons that align with learning objectives and foster a deeper understanding of the subject matter.

In this study, the integration of ICT into the classroom is understood not only as the adoption of digital tools but as a complex process that involves overcoming barriers related to teachers' skills, administrative support, and curriculum constraints. By understanding these key concepts, the research aims to identify and explore the specific challenges faced in Ibanda District and propose solutions to enhance the ICT integration process in local schools. In the next section, the contextual background was addressed.

1.1.4 Contextual Background

Ibanda District, located in the western region of Uganda, is home to a growing educational landscape, with schools striving to provide quality education despite facing numerous challenges. As of the 2024 National Population and Housing Census, Ibanda had a population of over 200,000 people, with a significant proportion of youth in need of educational opportunities (Uganda Bureau of Statistics, 2022). However, like many rural districts in Uganda, Ibanda faces significant obstacles in integrating ICT into its educational processes. While many schools are aware of the importance of ICT, they still rely heavily on traditional, teacher-centered methods of instruction, which limit the potential for student engagement and hinder the adoption of more interactive and dynamic learning approaches (Kiggundu & Hennessy, 2019). The inadequate availability of ICT infrastructure, including computers, reliable internet access, and other technological tools, poses a major

barrier to the effective use of technology in classrooms (Mugisha & Fins, 2023), as such these selected secondary schools in Ibanda District cannot be ruled out.

The slow uptake of ICT in education is further compounded by a lack of teacher training. According to a report by the Uganda National Commission for UNESCO (2023), less than 30% of teachers in rural schools in Uganda have received formal ICT training. This lack of capacity to use ICT tools effectively in the classroom results in missed opportunities for enhancing teaching and learning processes. Despite these challenges, the district has made efforts to integrate ICT into its educational system, with some schools receiving computers and internet access through initiatives such as the National Information and Communication Technology Initiative for Education (ICT4E) program (Uganda Ministry of Education and Sports, 2023). These efforts, while commendable, are still in the early stages, and many schools in Ibanda face difficulties in utilizing ICT resources effectively due to limited training, lack of ongoing technical support, and inadequate infrastructure (Mugisha & Fins, 2023).

Subsequently, the full potential of ICT as a transformative educational tool has yet to be realized, and if not addressed, the district's educational system may continue to lag behind in comparison to other regions with better access to technology. For Ibanda's educational system to thrive in the digital age, a more concerted effort to enhance ICT infrastructure, teacher training, and support mechanisms will be necessary, but many secondary schools fall short of this noble trait (Murunga et al. 2023). Based on the above discrepancies and schools still grappling ICT infrastructure for effective teaching and learning. To this end, it was imperative to

investigate the factors affecting the integration of information and communication technology in teaching and learning of the lower secondary schools in Ibanda District

1.3 Statement of the Problem

Students' learning remains at the heart of academic success, with ICT offering an invaluable opportunity for educational institutions to enhance teaching and learning. Integrating ICT into classroom practices is one of the challenges in the 21st century (Mugisha & Fins, 2023). Effectively integrating ICT into teaching-learning process is much more complicated than providing computers and securing a connection to the internet. It is through ICT integration in teaching and learning that the government of Uganda hoped to overcome the issue of overcrowded classes, shortage of teaching personnel and textbooks, implementation of inclusion education, and shift from content based to competence-based curricula (Mbwesa, 2023).

Despite the significant investment in ICT infrastructure and resources in Ibanda District, there are ongoing challenges in fully integrating technology into the educational process (Aduwa-Ogiegbaen & Ilyamu, 2019). Although, the district has received considerable support in terms of ICT donations and the provision of equipment, the teaching and learning process continues to face obstacles in harnessing ICT to improve educational outcomes (Murunga et al. 2023). ICT penetration rate in the education system in Uganda remains well below the 50% global threshold (Mugisha & Fins, 2023). In particular, the level of integration of ICT in teaching and learning in most secondary schools remains obscure.

The challenge is that without proper integration and support, the substantial investment in ICT could be rendered ineffective, leading to slow improvements in teaching quality (Mbwesa, 2023). This hampers the district's ability to produce students who are well-equipped with the skills needed to thrive in an increasingly technology-driven world (Jung, 2020). The integration of ICT in teaching and learning still being influenced by: teacher competence, administrative challenges, availability of ICT infrastructure and technical assistance. If these challenges are not addressed, the district risks failing to leverage ICT's potential to transform education and prepare students for the demands of the modern workforce, which is heavily reliant on ICT (UNESCO, 2023). In view of this discrepancy, there was a need to examine the teacher-related challenges, administrative challenges, and curriculum-related issues that hinder the effective integration of ICT in the teaching and learning process in Ibanda District.

1.3 Purpose and Objectives of the Study

1.3.1 Purpose of the Study

This study aimed at investigating the Integration of information communication technology in teaching of the lower secondary curriculum: a case study of Ibanda district.

1.3.2 Objectives of the Study

1. To determine the influence of teacher-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District.

2. To assess the influence of administrative challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District.
3. To investigate the influence of curriculum-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District.

1.4 Research Questions

The study sought to answer the following research questions:

1. What is the teacher-related challenges in the integration of Information and Communication Technology (ICT) in the teaching and learning process in Ibanda District?
2. How do administrative challenges affect the integration of Information and Communication Technology (ICT) in the teaching and learning process in Ibanda District?
3. What is the curriculum-related challenges in the integration of Information and Communication Technology (ICT) in the teaching and learning process in Ibanda District?

1.5 Scope of the Study

Three categories of scope were shown below: contextual, geographical, and time-related.

1.5.1 Content Scope

This study focused on the Integration of information communication technology in teaching of the lower secondary curriculum: a case study of Ibanda district.

Specifically, it determined the influence of teacher-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes, assessed the influence of administrative challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes, and investigated the influence of curriculum-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District.

1.5.2 Geographical Scope

The study was conducted in Ibanda District, located in the western region of Uganda. Ibanda District is selected for this study due to its diverse educational institutions, ranging from primary schools to secondary schools, and its active participation in national ICT programs aimed at improving the quality of education. The district has seen an increasing push towards ICT integration, making it a suitable context for assessing both the opportunities and challenges that come with such an initiative in rural and semi-urban settings. The district also reflects a broad range of educational challenges, making it an ideal location to examine the obstacles and successes of ICT integration (Mugisha & Fins, 2023).

1.5.3 Time Scope

The study covers the period from 2021 to 2024, focusing on the years when significant efforts were made to integrate ICT into the teaching and learning process in Ibanda District. This period marks the time when ICT adoption began to gain momentum in Ugandan schools, following national policy guidelines and technological took a period of twelve months up to the end of May, 2025.

1.6 Justification

This study is justified because it addresses the critical need to understand the challenges and opportunities associated with the integration of Information and Communication Technology (ICT) in the teaching and learning process in Ibanda District. As Uganda continues to strive towards improving its education system, ICT has emerged as a key tool for enhancing the quality of education, improving student learning outcomes, and equipping students with the necessary skills for the modern, technology-driven world. However, despite significant investments in ICT infrastructure and resources, many schools in Ibanda District continue to face difficulties in effectively utilizing these technologies for educational purposes. These challenges, which included inadequate teacher training, limited administrative support, and a curriculum that may not fully incorporate ICT, hinders the potential of ICT to revolutionize the teaching and learning environment.

Furthermore, this research is timely as it examines the specific factors affecting the integration of Information and Communication Technology, providing an in-depth analysis of how these challenges affects teaching and learning in lower secondary today. Existing studies focused broadly on the factors affecting the integration of

ICT in shaping education, but few centered on teaching and learning. By identifying and documenting these specific challenges, this study aims to ensure that factors affecting the integration of ICT' knowledge is precision and accurately represented or understood, bringing a significant research gap while also giving lower schools and individuals a voice in the discourse around teaching and learning.

1.7 Significance of the Study

The study may be of great importance to various entities like; policy makers, future researchers and academicians in the following ways.

The findings of this study may provide valuable insights into the specific barriers that need to be addressed to ensure successful ICT integration in the district's educational system. Furthermore, the results of this study may be beneficial to key stakeholders, including policymakers, educators, and school administrators, by offering a clear picture of the current state of ICT integration in Ibanda District. This may be achieved by using the study's findings, conclusions and pertinent recommendations as a case of reference necessary in identifying the potential study gaps.

Practically, the study shall provide information that may provide insights about the factors affecting the integration of Information and Communication Technology in teaching and learning of the lower secondary curriculum in Ibanda District. The study may also help inform future investments in educational technology and guide efforts to build a more inclusive and effective learning environment for students. Given the growing importance of ICT in education, this research may play a pivotal role in supporting the district's efforts to adapt to the changing educational

landscape. By documentation, the factors affecting the integration of ICT in teaching and learning may now be disseminated from one generation to another and avoid its frustrating erosion.

The same documented educational knowledge may be of great value to the education policy makers and implementers of ICTs in lower secondary, informing them about the factors affecting the integration of ICT in teaching and learning of the lower secondary curriculum. Besides, the documentation may make great academic contribution by providing adequate information that may enrich many academic fields like academic and theoretical studies, sociology, technological and environmental stewardship to provide literature for future scholars.

The study offers critical insights into the practical challenges faced by schools in integrating ICT into teaching and learning to the policy makers and the government of Uganda. By identifying teacher-related, administrative, and curriculum-related obstacles, policymakers could develop targeted strategies to address these issues. For example, the findings may inform Uganda's Ministry of Education and Sports on how to refine ICT policies to ensure effective implementation at the local level. This aligns with UNESCO's emphasis on establishing legal frameworks to support ICT integration in schools as a means of achieving Sustainable Development Goal 4 (SDG4), which aims to provide inclusive and equitable quality education (UNESCO, 2023).

The findings of this study contribute to theoretical and empirical knowledge on the relationship between ICT integration and teaching-learning outcomes. Academicians shall use this research to explore how ICT influences pedagogical practices, student

engagement, and academic performance. For instance, studies have shown that ICT-based learning materials enhance lesson delivery by making classes more interactive and practical. Researchers may build on these findings to conduct comparative studies across different districts or regions in Uganda.

The study shall also in one way or the other enriches the existing body of knowledge, stimulate or improve on further studies. The study may add to already existing literature and information on the study topic. Future investigator may benefit from the field study in making more analysis and find solutions to the study problem at hand.

1.8 Conceptual Framework

A conceptual framework is an analytical tool with several variations and context. It is a research tool that assists a researcher to have and develop awareness, knowledge and understanding (Colander, 2013). The framework illustrates a comparative relationship between “Factors affecting ICT Integration” (Independent Variable) and “Teaching and learning Outcomes” (Dependent).

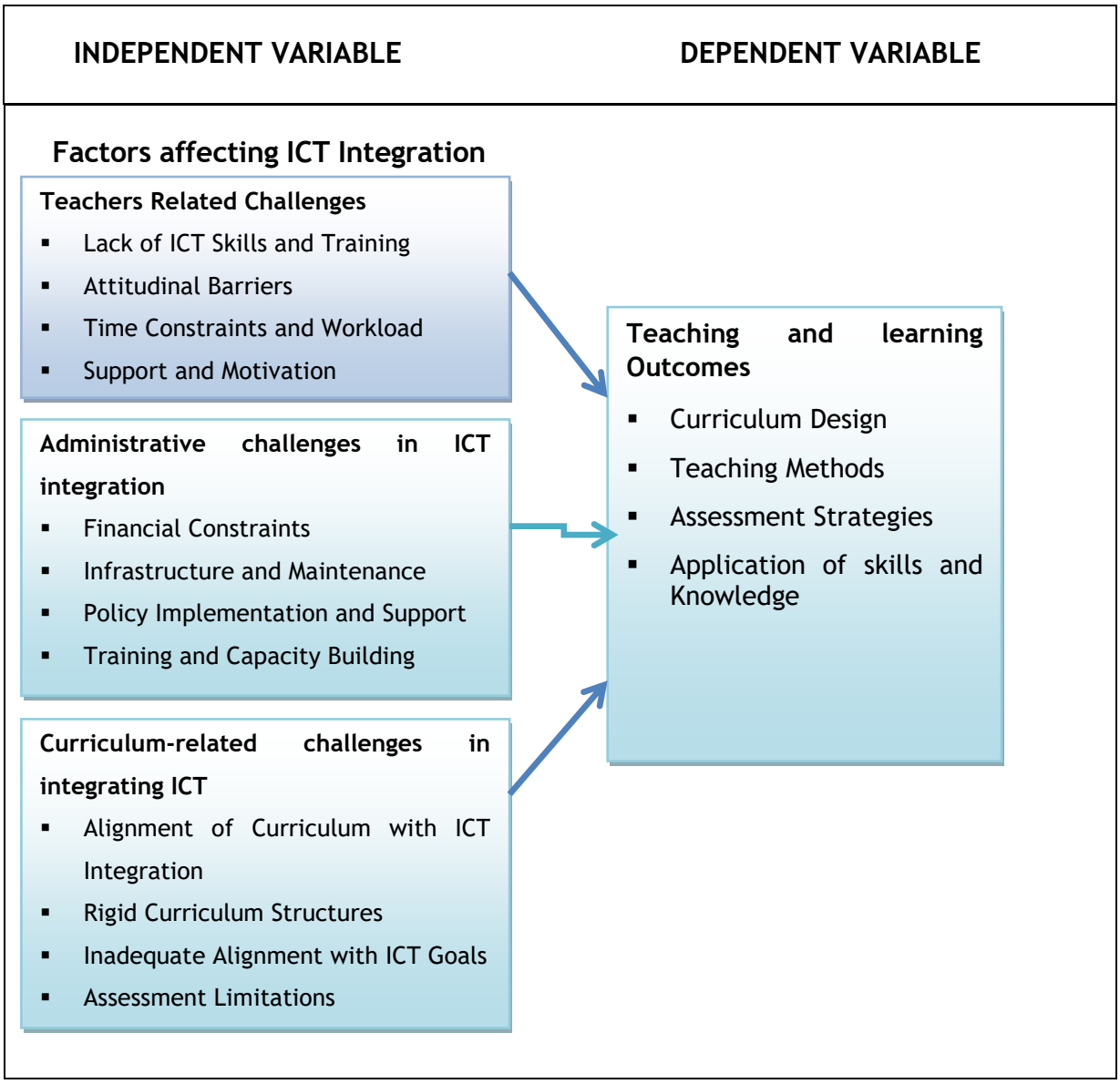

Figure 1.1: Conceptual Framework

***Source**: Self-developed with insights from Spiro et al. (1992)*

1.8.1 Description of the Model

From the conceptual framework 1.1 above, it can be seen that, factors affecting ICT Integration is an independent variable and teaching and learning outcomes is a dependent variable. The study is conceptualized based on the variables used in this study which are represented diagrammatically to show connection between them by

illustrating the influence of the independent variables on the dependent variables in order to give consistency. The conceptual framework for this study demonstrates the relationships between teacher-related challenges, administrative challenges, and curriculum-related challenges, and how these factors collectively influence teaching and learning outcomes in Ibanda District. ICT integration is envisioned as a dynamic process that enhances teaching methodologies and student engagement, but its effectiveness is contingent upon addressing these interconnected challenges.

Subsequently, when these factors affecting ICT Integration is in place, teaching and learning outcomes tends to improve. In this regard, teaching and learning outcomes can be indicated by curriculum design, teaching methods, assessment strategies, application of skills and knowledge. This concurs with Spiro et al. (1992) who posit that appropriate ICT integration into teaching and learning, can improve the quality of education by facilitating engagement and communication in classroom learning, help promote higher-order thinking, active learning, and better understanding of concepts, and in that way increase the student's motivation.

1.9 Chapter Synopsis

Chapter One introduces the study, presenting the background, problem statement, purpose, objectives, research questions, scope, justification, significance, and conceptual framework. It establishes the rationale for investigating ICT integration challenges in Ibanda District, highlighting gaps in teacher competence, administrative support, and curriculum alignment. The chapter sets the stage for Chapter Two, which reviews literature on ICT integration in education.

CHAPTER TWO

LITERATURE REVIEW

2.0 Introduction

This literature review identified what was already known concerning the research topic, identified knowledge gaps identified, contextualized the research in academic discourse to ensure the proposed research does not duplicate any part. It starts with theoretical reviews and themes reviewed in relation to the research objectives. The literature involves opinions and views of other scholars and researchers that are related to the topic in study. It included sources such as textbooks, internet articles, journals, and newspapers concerning key variables identified and aligned with the study's objectives. It conjointly presents an outline of the salient gaps identified within the literature review that this study sought to fill. Finally, the researcher presented a research gap based on the reviewed literature.

2.1 Theoretical Review

The integration of Information and Communication Technology (ICT) into teaching and learning is a multifaceted process that requires more than just the provision of hardware and software. The successful implementation of ICT in educational settings hinges on a variety of factors, including the transfer of knowledge and skills gained through ICT training to real-world environments. This process is central to the Cognitive Flexibility Theory (Spiro et al. 1992) and Kirkpatrick's Four Levels of Evaluation (Kirkpatrick, 1994), both of which provide a comprehensive framework for understanding the complexities of ICT integration in teaching and learning.

The Cognitive Flexibility Theory emphasizes the ability to adapt and restructure knowledge in response to changing environments. This flexibility is particularly

important in the context of ICT integration because technology evolves rapidly, and learners must be able to apply their acquired skills and knowledge in new and diverse situations (Jugo, 2020). Cognitive Flexibility is essential for navigating the dynamic and constantly shifting landscape of technology, particularly in education. The theory posits that successful learning is not merely about acquiring knowledge in a static manner but involves reshaping and applying that knowledge to a variety of contexts. Thus, learners must develop the ability to adjust their learned skills to fit different teaching and learning environments, making the integration of ICT a dynamic and ever-evolving challenge.

Kirkpatrick's Four Levels of Evaluation (Kirkpatrick, 1994) offer a valuable framework for assessing the effectiveness of ICT integration in education. The four levels—Reactions, Learning, Transfer, and Results provide a systematic approach to evaluating the success of ICT training programs and their impact on teaching and learning outcomes.

At Level One: Reactions, the focus is on how learners respond to the training program. This stage evaluates participants' perceptions, asking questions such as: Did they enjoy the training? Was the material relevant to their work or teaching practices? While positive reactions can indicate a good fit between the training and participants' needs, they do not necessarily correlate with effective learning outcomes. Negative reactions, on the other hand, are likely to hinder learning. Thus, understanding and addressing learners' initial reactions is an important first step in ensuring the success of ICT training programs.

Level Two: Learning goes beyond learners' reactions and assesses the extent to which participants acquire new knowledge, skills, and attitudes during the training. This level evaluates whether the ICT training program has been successful in enhancing participants' abilities to use technology in their teaching or learning. For example, this could include whether teachers can effectively integrate digital tools into their classrooms or whether students have developed the skills necessary to use ICT for research, communication, and problem-solving. The effectiveness of ICT integration at this stage is directly related to how well the training addresses the specific technological needs of educators and learners.

At Level Three: Transfer, the focus shifts to how well the learners apply the knowledge and skills they have gained during the training in real-world settings. This is particularly important in the context of ICT integration, as technology is often used outside the training environment in classrooms, laboratories, or other educational settings. The success of transfer can be measured by observing how effectively students and teachers use ICT tools in their everyday activities, such as conducting research, collaborating on projects, or presenting information digitally. Cognitive Flexibility plays a crucial role in this stage, as it enables learners to adapt their knowledge to new environments. The concept of near transfer and far transfer is central to this process. Near transfer refers to the application of learned skills in environments that closely resemble the training context, whereas far transfer involves applying learned skills in different, often unpredictable, situations. ICT training should aim to promote both types of transfer (Jugo, 2020). For instance, teachers might be trained to use specific software in a classroom setting (near

transfer), but they should also be prepared to adapt their skills to new technologies as they emerge (far transfer).

Level Four: Results evaluates the broader impact of the training, looking at the tangible outcomes that result from the integration of ICT into teaching and learning. This level often focuses on measures that are of primary concern to administrators, policymakers, and educational stakeholders, such as improved academic performance, increased student engagement, enhanced collaboration, and better preparation of students for the workforce. At this level, the effectiveness of ICT integration is assessed in terms of its contribution to the overall goals of the educational institution (Jugo, 2020). For example, if the integration of ICT leads to increased student enrollment or improved test scores, it can be considered a successful program. Furthermore, the ability of students to transfer their ICT skills to real-world tasks such as research or professional work indicates that the training has had a meaningful and lasting impact.

One critical aspect of the transfer process is the opportunity for learners to apply their new skills in real-world contexts. According to Holton (1996), one of the reasons for failure in the transfer of knowledge is that training programs may not provide enough opportunities for learners to practice the newly acquired skills in a relevant job or educational environment. Even when cognitive learning occurs during training, the lack of practical application often leads to poor transfer of skills. This highlights the importance of creating ICT training programs that not only teach technical skills but also provide opportunities for learners to apply those skills in real-life scenarios (Jugo, 2020). This approach ensures that the skills gained

during ICT training are relevant and transferable to students' future careers or academic pursuits.

In conclusion, the Cognitive Flexibility Theory and Kirkpatrick's Four Levels of Evaluation offer complementary frameworks for understanding the integration of ICT into teaching and learning. These theories highlight the importance of not only acquiring technical skills but also ensuring that these skills can be adapted and applied in diverse contexts. Effective ICT training should facilitate near and far transfer of knowledge, enabling learners to adapt to the rapid evolution of technology in educational environments, and this study was sought to address this gap.

2.2 Conceptualization of ICT Integration in Lower Secondary

ICT integration in lower secondary education refers to the incorporation of various technological tools and resources to enhance the quality and effectiveness of teaching and learning. This concept is multi-faceted and involves the use of digital tools such as computers, the internet, projectors, online learning platforms, and educational apps, among others, to improve educational outcomes (Finkelstein et al. 2021). ICT integration goes beyond just having access to these tools; it requires their effective incorporation into teaching practices, curriculum, and administrative processes to facilitate deeper learning experiences for students.

At the heart of ICT integration is the potential for transforming traditional teacher-centered instruction into more interactive, student-centered learning environments. According to Kozma (2020), ICT offers the opportunity for schools to shift from static, one-way communication to dynamic, interactive learning experiences that

can engage students more deeply with the content. In lower secondary schools, where foundational knowledge and critical thinking skills are developed, ICT can serve as a catalyst for increased engagement, collaboration, and problem-solving. Furthermore, ICT can provide access to a wealth of educational content that may not otherwise be available in a traditional classroom setting, enabling students to explore subjects in greater depth and from a variety of perspectives.

However, the integration of ICT in lower secondary education is not without its challenges. Teachers' technical skills, administrative support, infrastructure, and the curriculum itself are all critical factors that determine the success or failure of ICT adoption in schools (Tinio, 2023). Teacher readiness and training are particularly significant, as teachers who are not comfortable or familiar with ICT tools may resist adopting them in their classrooms. Moreover, schools in rural or underserved areas, like those in Ibanda District, may face challenges such as inadequate infrastructure, limited access to electricity or reliable internet, and insufficient funding for continuous professional development (Mishra & Koehler, 2016). These barriers make ICT integration a complex, multifaceted process that requires careful planning and ongoing support.

2.3 The Influence of Teacher-Related Challenges in the Integration of ICT on Teaching and Learning Outcomes

According to Mishra & Koehler (2016), teachers play a pivotal role in the integration of Information and Communication Technology (ICT) in the educational process. Their preparedness, attitudes, and skills significantly influence how effectively ICT is incorporated into teaching and learning. However, the integration of ICT in

classrooms is not without challenges. These challenges, particularly those related to teachers, can hinder the full potential of ICT in enhancing educational outcomes. Teacher-related challenges include a lack of ICT training, inadequate resources, resistance to change, and the insufficient integration of ICT into existing pedagogical practices (Tinio, 2023). These barriers can undermine the benefits that ICT promises in improving teaching and learning outcomes. Understanding how these challenges affect the learning process is crucial for developing strategies to enhance ICT integration. The study used a descriptive survey design, where thematic content analysis was used, unlike this research that focused on a cross-sectional research design basing on correlational analysis.

In Nigeria, several studies have investigated the role of teachers in the integration of ICT in education. A study by Amuchie (2015) revealed that Nigerian teachers often face significant challenges in adopting ICT due to inadequate training, lack of technical support, and resistance to change. The study indicated that while there is a growing recognition of the importance of ICT in enhancing teaching and learning, many teachers still lack the necessary skills to effectively use ICT tools in the classroom. The low uptake of technology by teachers has been attributed to the limited knowledge and skills of teachers on technology integration in teaching (Mwila, 2018). According to a more recent study by Mureithi & Mwangi (2019), the lack of continuous professional development and insufficient infrastructure were found to significantly hinder ICT integration. Mureithi et al. further argued that teachers' limited technical knowledge and the absence of a supportive environment were key obstacles that reduced the effectiveness of ICT in improving learning

outcomes. Furthermore, teachers' reluctance to embrace ICT tools, often due to fears of job displacement or lack of confidence, has been noted as a challenge in Nigerian schools, claiming the reason for this study.

Nyaoga & Nyambega (2017) did analysis of ICT literacy competence among vocational high school teachers in Indonesia. Among major findings, teachers were found to lack self-confidence in use of ICT. It was also found that the level of ICT literacy was higher in male than female. Harris & Hofer (2019) investigated the factors influencing teachers' integration of ICT in teaching and learning in public secondary schools in Machakos Sub County. Among other findings, it was established that majority of the head teachers and teachers had basic ICT literacy. However, only a few teachers and head teachers integrated ICT in teaching and learning. Additionally, while many secondary schools were found to have built computer laboratories, there was a critical mismatch between the number of pupils and the number of computers. The study also found that teacher ICT competency had a weak positive relationship with ICT integration ($r = 0.366$, $p < 0.001$). Harris & Hofer (2019) study had, however, a major limitation in that it used descriptive desk top approach. The researchers did literature review and document analysis mainly from secondary sources such as research journals and research report books. The current study made use of mainly the primary data by use of interview schedules and questionnaires.

In Ghana, similar teacher-related challenges have been documented in the integration of ICT in education. A study by Dery and Kwame (2016) found that although the government has invested in ICT infrastructure and training programs,

many teachers continue to struggle with integrating ICT into their teaching practices. The research highlighted that inadequate ICT skills, coupled with limited access to technology and unreliable internet connections, hinder teachers' ability to leverage ICT in the classroom. Moreover, a study by Amedahe and Frempong (2018) found that teachers' lack of knowledge in using ICT tools effectively, coupled with insufficient professional development opportunities, led to a lack of confidence in using ICT, which negatively affected the learning outcomes of students. Teachers in Ghana also expressed concerns about the time constraints and additional workload associated with incorporating ICT into their already demanding teaching schedules. However, the above study was carried from outside Uganda, not fully secondary schools based and carried out almost six years ago. These constitute gaps namely of conducting a similar study in Uganda, thus need for this study.

According to Masinga and Sayed (2019), teachers' ICT Literacy influence ICT Integration in teaching and learning. In many nations, ICT has become an important component of education. Teachers are at the heart of the education enterprise, and as such, they have an obligation to play a cardinal role in leveraging ICT technology in teaching and learning. A teacher's lack of expertise in use of technology will therefore, curtail creativity and confidence on how to incorporate it in teaching. Mkumbo and Salama (2016) aver that when used wisely by well-trained teachers, ICT can do wonders in classroom. ICT enhances teaching and learning process by increasing students' motivation. For instance, explanation of difficulty concepts and word can be made easy by use of ICT in class. Further, Mishra & Koehler, 2016) postulates that the teachers' ability to incorporate technology into classroom

activities as well as appreciating the technologies' versatility as an important tool in teaching and learning depends on the degree of familiarity and the ability to manipulate ICTs. This implies that capacity building of teachers in ICT knowledge accompanied with constant practice is a crucial prerequisite to effective integration of ICT in teaching. However, the above studies were carried from outside Uganda, not fully secondary schools based and carried out almost three years ago. These constitute gaps namely of conducting a similar study in Uganda, thus need for this research.

Rahman and Mohiuddin (2020) embarked on a study to establish the determinants of effective implementation of digital literacy project in public primary schools in Baringo County in Kenya. School leadership was found to have the greatest influence, followed by ICT infrastructure. Teachers' competence in ICT and teachers' workload showed a relatively lower influence on the implementation of digital literacy project. Multiple regression analysis showed that 73.7% variations in implementation of digital literacy project in public primary schools in Baringo County in Kenya are explained by school leadership, teacher's ICT competence, and teachers' workload and ICT infrastructure. However, while Baringo County is vast and has a large remote insecure part where ICT infrastructure is totally none existent and very few teachers, Kitui Central Sub County is largely composed of Kitui town and its environs (Rahman et al. 2020). That implies that schools in Kitui Central Sub County are relatively better in regard to ICT infrastructure and teacher workload. Therefore, there is a contextual lacuna that spurred the need to undertake the study.

In Bangladesh, teacher-related challenges have also been identified as key barriers to effective ICT integration. A study by Hasan and Ahmed (2019) investigated the challenges faced by teachers in using ICT in secondary schools and found that the lack of ICT training was one of the primary obstacles. The study highlighted that teachers were not sufficiently trained to use ICT tools and platforms, which resulted in limited ICT integration in classrooms. Additionally, the study found that a lack of motivation and resistance to adopting ICT were prevalent among teachers, particularly in rural areas. Similarly, research by Rahman and Mohiuddin (2020) emphasized that inadequate professional development programs and the absence of continuous support for teachers were key factors limiting the effective use of ICT in teaching. The study further suggested that the lack of a clear ICT policy and strategic plan in the education sector contributed to the ineffective integration of ICT, as teachers were left without the necessary guidance or resources to use ICT effectively in the classroom. Despite all the literature review relating to teacher-related challenges, there is still a gap in determining the influence of teacher-related challenges in the integration of ICT on teaching and learning outcomes in Ibanda District.

Alabi & Adebayo (2022) observes that while the larger number of teachers believe that ICT has the potential to enhance classroom learning, an almost equal number of them were hesitant to identify any ICTs benefits or attribute it to improved results. Likewise, studies by Eshet-Alkalai (2018) and Dery and Kwame (2016), observes that despite the frequent hype of the benefits of ICT integration in teaching and learning, there is still a section of teachers who do not acknowledge any

considerable benefit of using ICTs in learning. Harris & Hofer (2019) posit that research on teachers' attitudes is vital in developing countries such as India, where ICT is yet to be part of the school culture. Thus, the incongruity that is likely to arise between the teachers' pedagogic culture and techno-centric mindedness would often result in their alienation from the use of technology.

Makoe & Makoa (2020) investigated teachers' attitude towards ICT use among teachers educators in various teacher-training colleges in the State of Haryana, India. Most of the tutors had a positive attitude to towards the ICT usage in teacher education process. Teacher-educators were however, found to lack training and technical support and therefore, most had some anxiety towards use of ICT tools and devices during teaching learning process. It also emerged that though teachers believed use of ICT could have more benefits to the learners, lack self-efficacy led to demotivation as well as low passion regarding the use of ICT devices in teacher-training. While Makoe & Makoa (2020) investigated the attitudes of tutors in teachers' training colleges in India, the current study focus was on primary school teachers' attitudes towards ICT integration in the teaching learning process. With regards to the teacher-related challenges in question under this study, the researcher developed a sense of concern in achieving knowledge on the influence of teacher-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District.

2.4 The Influence of Administrative Challenges in the ICT on Teaching and Learning Outcomes

According to Anderson & Dron (2021), administrative challenges play a significant role in the integration of Information and Communication Technology (ICT) in schools. These challenges, including insufficient planning, lack of infrastructure, and inadequate policies, can significantly impact the effectiveness of ICT in enhancing teaching and learning outcomes. This section reviews empirical studies various countries on how administrative barriers affect ICT integration in educational settings. Similarly, Sutter & Kihara (2019) posit that most of reforms and initiatives in using ICT in teaching in schools fail as a result of top-down approach that hardly consider teachers' attitude and awareness of ICT as a pedagogical tool. The study used a descriptive approach basing on thematic content analysis were applied, unlike this research that will focus on a cross-sectional survey design, where correlations was used.

In South Africa, administrative barriers to ICT integration have been extensively documented. A study by Beri & Sharma (2019) highlighted that administrative challenges such as lack of strategic planning, inadequate leadership, and insufficient budgeting were significant impediments to the integration of ICT in schools. The research revealed that while the government had provided schools with ICT resources, many administrators failed to prioritize ICT integration within their school management plans. This lack of prioritization, combined with limited capacity for teachers' professional development, meant that ICT resources were often underused, leading to limited impact on student learning. Another study by

Masinga and Sayed (2019) identified that the absence of clear policies and implementation guidelines at the administrative level resulted in inconsistent adoption of ICT across schools, further complicating efforts to improve teaching and learning outcomes through technology. This study was conducted in vocational institutions but not in secondary education institutions such as secondary schools. This gives a gap to be filled by this study. The study is similar in methodological approach used in the two studies since it also utilized descriptive survey but a different method of analysis. This study utilized the SPSS version 26.0 program which has more features and is accurate.

In Kenya, administrative challenges have also been cited as major obstacles to the successful integration of ICT in education. A study by Nyaoga and Nyambega (2017) examined the role of school leadership in ICT integration and found that the lack of strong leadership and administrative support was a critical factor limiting ICT adoption. The study noted that many school administrators lacked the knowledge and skills necessary to implement ICT policies effectively, which led to poorly coordinated efforts in integrating technology into teaching and learning. Additionally, Rahman and Mohiuddin (2020) opines that administrative challenges such as limited budget allocations for ICT infrastructure and professional development for teachers were found to hinder the effective use of ICT in classrooms. The research also pointed out that a lack of consistent monitoring and evaluation mechanisms by administrators made it difficult to assess the impact of ICT on teaching and learning outcomes. The study took qualitative survey design, unlike this study that considered a mixed research approach.

Kiggundu & Hennessy (2019) investigated the availability and utilization of ICT resources in the teaching of computer education among secondary school teachers in Anambra State, Nigeria. Using a self-developed 40 – item questionnaire for a sample of 300 computer teachers, the came with several salient findings. The findings revealed that there were inadequate ICT teaching resources. It was also revealed that despite the availability of some ICT resources, teachers were not using them. The materials that were highly available included computers as indicated by 93.0 % of teachers, scanner (83.3 %), printer (87.0 %), flash memories (82.0 %) and audio and video discs (83.3 %). Materials that were scanty included: multimedia projector (5.3%), electronic white board (4.0 %), e-graphics (3.0 %), power bank devices (8.0 %) and programmed instructional materials (6.0 %). However, Mbwesa (2023) study did not determine the extent to which the availability of ICT resources influenced the ICT integration in teaching and learning in the institutions under study, and the researcher wonders whether it was also the same case in Ibanda District.

In Uganda, administrative challenges have been identified as key factors hindering the effective integration of ICT in education. A study by Nabunya et al. (2021) found that poor administrative planning, lack of clear ICT policies, and inadequate support from school management were significant barriers to ICT adoption in Ugandan schools. The study highlighted that while the government had made efforts to provide ICT equipment to schools, the lack of proper coordination and inadequate training for school administrators resulted in underutilization of these resources. Furthermore, the research emphasized that the absence of a clear ICT strategy at

the institutional level led to inconsistencies in the implementation of ICT programs, affecting the overall learning outcomes. Similarly, a study by Okwakol (2018) found that school administrators in Uganda often failed to allocate adequate funds for ICT maintenance and teacher training, which further exacerbated the challenges faced in ICT integration. However, this study was conducted outside Uganda and based on tertiary institutions and carried out almost two years ago. These constitute gaps in conducting a similar study in Uganda, thus a justification for this research.

The studies demonstrate that administrative challenges play a crucial role in the success or failure of ICT integration in education. Poor planning, lack of leadership, inadequate budgeting, and insufficient policy support are key barriers that hinder the effective use of ICT in schools. Addressing these administrative challenges through strategic planning, better resource allocation, and clear policy development is essential for enhancing the potential of ICT to improve teaching and learning outcomes.

2.5 The Influence of Curriculum-Related Challenges in The Integration of ICT on Teaching and Learning Outcomes

According to Kiggundu & Hennessy (2019), curriculum-related challenges play a critical role in the successful integration of Information and Communication Technology (ICT) in education. These challenges include outdated or rigid curricula, lack of alignment between ICT and educational goals, and insufficient teacher training in ICT-based pedagogical approaches. This section reviews empirical studies from different countries on how curriculum-related factors hinder the effective use of ICT in enhancing teaching and learning outcomes.

In Ethiopia, curriculum-related challenges have been identified as significant barriers to the integration of ICT in education. A study by Masinga and Sayed (2019) found that the existing curriculum in many Ethiopian schools was not designed to integrate ICT effectively, which limited teachers' ability to incorporate technology in their lessons. The study highlighted that the national curriculum was largely traditional and focused on rote learning, which did not align well with ICT-based teaching methods that promote interactive and collaborative learning. Furthermore, Kumar & Sinha (2019) noted that teachers were not provided with adequate training on how to integrate ICT into the curriculum, and there was no clear framework for integrating technology into daily teaching practices. This lack of curriculum alignment with modern ICT teaching methods resulted in poor outcomes when technology was introduced into classrooms. However, this study took one method research design (quantitative); the use of questionnaires collected data. Unlike this study, data was analyzed by percentages, mean scores, standard deviation, and tables that used triangulation.

In the USA, curriculum-related challenges in ICT integration have been well-documented, particularly in relation to standardized testing and rigid curricular structures. A study by Makoe & Makoa (2020) found that in many schools, the curriculum was too focused on preparing students for standardized tests, leaving little room for the integration of ICT in innovative ways. The research revealed that while technology could enhance learning and foster critical thinking, the traditional curriculum was often not flexible enough to incorporate ICT effectively. Moreover, Masinga & Sayed (2019) highlighted that many teachers lacked the pedagogical

training to integrate ICT tools into their lessons in a meaningful way, resulting in underutilization of available technology. This disconnect between curriculum goals and ICT integration often led to ineffective teaching practices and limited learning outcomes, especially in subjects that could benefit from technology-enhanced teaching methods, hence justifying the need to carry out this research.

In Tanzania, the integration of ICT into education faces significant curriculum-related challenges, particularly with outdated teaching materials and a lack of ICT-focused content in the national curriculum. A study by Mkumbo and Salama (2016) examined the barriers to ICT integration in Tanzanian schools and found that the curriculum was not designed to leverage ICT for enhancing teaching and learning outcomes. The study emphasized that the traditional curriculum, which was heavily focused on content delivery through textbooks and lectures, did not accommodate the interactive and collaborative potential of ICT tools. Additionally, Anderson & Dron (2021) found that teachers were not adequately trained to modify the curriculum to integrate ICT effectively, and there was a lack of guidelines on how to align ICT with curricular goals. As a result, even when ICT resources were available, they were often underused, and students' learning outcomes were not significantly improved. These empirical studies demonstrate that curriculum-related challenges significantly affect the successful integration of ICT in education, claiming the reason for this study.

Alabi & Adebayo (2022) emphasizes that provision of up to-date ICT infrastructure and teachers’ digital literacy are prerequisite in successful implementation of ICT in schools. In fact, the presence of ICT infrastructure in a school would create curiosity

and then action to even some of the most technophobic teachers. Furthermore, the availability of ICT resources that are vital in the implementation process is key factors in shaping the attitudes and perceptions of teachers towards ICT integration in learning process (Anderson & Dron, 2021; Badu, 2020). In Nigeria, Harris & Hofer (2019) investigated the usage of ICT facilities in teaching of English language in secondary schools in Kaduna State. Among other findings, the study established that there was a shortage of ICT facilities and that most teachers were not competent in use of ICT facilities though they were expected to the main implementers of ICT integration in school curriculum. With regards to the curriculum-related challenges in question under this study, the researcher developed a sense of concern in achieving knowledge on the influence of curriculum-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District.

2.6 Summary and Gap in the Literature

A number of studies have been done on the challenges of integrating Information and Communication Technology (ICT) into the teaching and learning process. However, there are notable content, methodological, and contextual gaps that these studies reveal. For example, most of the studies (Eshet-Alkalai, 2018; Dery & Kwame, 2016; Finkelstein et al. 2021; Hasan et al. 2019) conducted were qualitative in nature, relying on interviews and focus group discussions to gather data. While these methods provide valuable insights, they often lack generalizability and fail to establish clear cause-and-effect relationships. Additionally, most of the studies

employed small sample sizes or focused on a limited range of schools, making it difficult to draw broader conclusions that apply to diverse educational settings.

A critical analysis of the above studies did not provide a clear answer. Furthermore, many studies (Kumar & Sinha, 2019; Makoe & Makoa, 2020) have failed to consider the unique socio-economic and cultural contexts that may influence ICT integration, particularly in rural or resource-constrained regions. This highlights the need for more contextualized research that examines ICT integration challenges in specific districts, such as Ibanda, where the unique challenges of infrastructure, funding, and teacher training may be more pronounced. This study addressed these gaps by employing a mixed-methods approach that combines both qualitative and quantitative data. However, there are still several gaps which the review had identified and which require further research.

Most studies were qualitative and do not guide us on the relationship between the study variables. The scholars did not specifically focus on the variables as laid down in this study. This therefore, created a knowledge gap. This left a very huge gap that necessitates the need to undertake a study that is applicable to Ugandan schools. Considering the above, the current study focused more study variables. This was a critical gap in the world of knowledge that this research attempts to bridge. By including a larger, more diverse sample of schools and incorporating both teachers and student perspectives, this study aims to provide a more comprehensive understanding of the ICT integration challenges in Ibanda District.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter aims to present the methodologies of research being used in this study; that is, how the investigation was done, including population, study design, site, and sample size selections. It also looked into the sampling techniques, variables of study, data collection tools, quality control procedures, data analysis and ethical considerations as well as study methodological constraints.

3.1 Research Design

This study adopted a mixed-methods research design, integrating both quantitative and qualitative approaches. The study was cross-sectional, where data was collected at a single point in time. According to Creswell (2018), this design allows for a quick overview of the effect of ICT integration on the teaching and learning process in Ibanda District. The quantitative aspect involved structured surveys and questionnaires to assess the impact of ICT on academic performance, while qualitative interviews explored the experiences and perceptions of educators and students. The study used two approaches were based on the principle of triangulation, which helped in converging opinions were able to arrive at better conclusions (Amin, 2005). The mixed-methods approach allowed a comprehensive understanding of the subject.

3.2 Study Setting

The study was conducted in Ibanda District, located in southwestern Uganda. Ibanda is chosen due to its varied educational settings and the ongoing implementation of

ICT integration in local schools. The study focused on both urban and rural schools in the district to provide a broad perspective on how ICT affects teaching and learning processes in different environments. Ibanda District is selected for this study due to its diverse educational institutions, ranging from primary schools to secondary schools, and its active participation in national ICT programs aimed at improving the quality of education. The district has seen an increasing push towards ICT integration, making it a suitable context for assessing both the opportunities and challenges that come with such an initiative in rural and semi-urban settings (Mugisha & Fins, 2023).

3.3 Sources of Information

The researcher applied both primary and secondary data.

3.3.1 Primary source

Primary data was collected through questionnaires, and interviews. The surveys gathered quantitative data from students and teachers on their experiences with ICT in the classroom, while the interviews provided in-depth qualitative insights from key informants like administrators, ICT coordinators and teachers involved in the ICT implementation.

3.3.2 Secondary source

Secondary data was gathered from school records, reports on ICT implementation, and academic articles. These documents helped contextualize the findings and support the interpretation of primary data. The sources are selected because they are usually the ones where schools keep their information or publish for other stakeholders to read; therefore, being readily available for the researcher to use.

3.4 Population and Sampling Techniques

3.4.1 Population

The target population for this study included teachers, students, and ICT coordinators from selected secondary schools in Ibanda District. The total population of interest was 1,117 participants. This population was chosen because it was assumed to have adequate knowledge of the subject and the research variables under investigation. The diverse participant pool ensured that the study provides a comprehensive view of the effects of ICT integration across different educational settings.

3.4.2 Sample Size Determination

Creswell (2018) defined sample size as the part or subset of the entire population. The following formula developed by Taro Yamane in 1970 was used to calculate the sample size:

$$n = \frac{N}{1+N(e)^2}.$$

Where, N is the population size and e is the level of precision

Let this formula be used for our population, in which N =1,117 with ±5% precisions.

Therefore, the sample size based on the Yamane formula for a population of 1,117 with a precision level of ±5% is 275 respondents.

The study population, sample size and selection were clearly illustrated in Table 3.1 below.

Table 3.1: Sample size and sampling methods

Categories of respondents	Population	Sample size	Data collection method
Students	1,007	239	Simple Random Sampling
Teachers	98	24	Purposive Sampling
Administrators	9	9	Purposive Sampling
ICT coordinators	3	3	Purposive Sampling
Total	1,117	275	

Source: *Ibanda District Local Government (2024)*

3.4.3 Sampling Selection

The study employed a combination of probability and non-probability sampling techniques to ensure that the sample was both representative of the population and informative about ICT integration in the teaching and learning process. This approach allowed for the collection of diverse perspectives from students while also capturing the insights of key stakeholders responsible for ICT implementation.

For probability sampling, specifically simple random sampling, a total of 239 students were selected from a population of 1,007. This method was chosen because it gives every student an equal chance of selection, thereby minimizing selection bias and enhancing the generalizability of the findings (Amin, 2005; Lewis & Ritchie, 2003). Random selection ensured representation across different classes, age groups, and academic backgrounds, providing a wide range of perspectives on the integration of ICT in education.

In contrast, non-probability sampling, using purposive sampling, was employed to select teachers, administrators, and ICT coordinators. This technique enabled the researcher to deliberately choose participants with relevant knowledge or experience in ICT integration (Creswell, 2018). Specifically, 24 teachers were selected based on their direct involvement in using ICT in classroom teaching, offering insights into practical challenges and successes. All nine administrators, including head teachers, deputy head teachers, and directors of studies, were included because of their roles in overseeing ICT policies, infrastructure, and strategic implementation. Similarly, all three ICT coordinators were selected due to their technical expertise and responsibility in supporting ICT integration in the schools.

By employing this combination of sampling methods, the study captured both the experiential perspectives of students and the expert insights of key stakeholders, providing a comprehensive understanding of the factors affecting ICT integration in Ibanda District.

3.5 Variables and Indicators

The study variables are: Factors affecting ICT Integration (Independent variable) and Teaching and learning Outcomes (Dependent Variable). This was put on Likert scale. The study was meant to establish if the following dimensions of Factors affecting ICT Integration including: Teachers Related Challenges (that is, lack of ICT skills and training, attitudinal barriers, time constraints and workload; support and motivation); administrative challenges in ICT integration (that is, financial constraints, infrastructure and maintenance; policy Implementation and support;

training and capacity building:; and Curriculum-related challenges in integrating ICT (that is, alignment of Curriculum with ICT Integration, rigid Curriculum structures, inadequate alignment with ICT goals, and assessment limitations). Teaching and learning Outcomes on the other hand, comprised indicators of: Curriculum design, teaching methods, assessment strategies, application of skills and knowledge.

3.6 Measurement Levels

The variables were measured by operationally defining concepts. For instance, the questionnaire was designed to ask responses about key effects/comparisons. These were channeled into observable and measurable elements to enable development of an index of the concept. In this study, the measurement of variables was carefully aligned with the research objectives and the nature of the data being collected. The independent variables, including the integration of ICT in the teaching and learning process, teacher-related challenges, administrative-related challenges, and curriculum-related challenges, were evaluated using Likert scale questions. These questions were categorized as ordinal measurements, with responses ranging from "Strongly Agree", Agree, Neutral, Disagree to "Strongly Disagree." This approach allowed for a clear assessment of respondents' perceptions and attitudes toward the impact of ICT integration on the teaching and learning process. The dependent variable teaching and learning effectiveness were also assessed using responses from the ordinal Likert scale. This enabled the study to measure the perceived influence of ICT integration on the quality and effectiveness of teaching and learning in Ibanda District.

3.7 Procedures for Data Collection

After obtaining an introductory letter from the School of Education as well as Uganda Christian University Research Ethics Committee (UCUREC) to ensure that the ethical guidelines were followed throughout the data collection process. The letter introduced the researcher to Chief Administrative Officer and head-teachers/school authorities in the study area and selected key participants. The researcher also approached the management of the selected secondary schools to request permission to use them as case studies. Once consent was granted by the respondents, the researcher identified additional participants to conduct interviews and distributed the questionnaires. After, the school authority acceptance, selected respondents and individuals were contacted with the view of seeking permission to collect data and explained the purpose of the study. Once this was done, the researcher distributed the questionnaires to the students.

Subsequently, data was collected using various instruments; questionnaire for students, interview schedule for head-teachers, deputy head teachers, directors of studies, teachers and ICT coordinators. Each questionnaire contained an opening introductory letter requesting for the respondent's cooperation in providing the required information for the study. Respondents were adequately informed about the procedures of the data collection and the survey remained anonymous (no provision for identifying the respondent on the questionnaire to exist). Both the questionnaire and interviews were only conducted with willing respondents. The respondents were further assured of confidentiality of the information they provided and that the study findings were used for academic purposes only.

3.8 Data Collection Methods and Instruments

3.8.1 Data Collection Methods

The data collection methods included the following:

3.8.1.1 Questionnaire survey

Questionnaires were designed (Appendices A and B) such that each question was directly related to the given research questions and the overall topic of the study. Both closed and open-ended questions were used. The open-ended questions supplemented the information provided by the closed-ended questions, allowing for more comprehensive data collection. The inclusion of open-ended questions provided respondents with the opportunity to elaborate on their responses and offer deeper insights into their experiences with ICT integration (Creswell, 2018). The questionnaires were preferred because they were designed to elicit clear and specific responses. Additionally, they allowed respondents, particularly teachers who had limited time to participate in personal interviews, to express themselves freely and provide detailed feedback. This method was especially advantageous for gathering data from busy participants, as it enabled them to respond at their convenience, ensuring a higher response rate and richer data for analysis.

3.8.1.2 In-depth Interviews

Face-to-face interviews were conducted with teachers, ICT coordinators and administrators (head teachers, deputy head teachers and directors of studies) involved in the integration of ICT in the teaching and learning process in Ibanda District. The detailed information from these key informants was gathered using an unstructured interview guide. The guide was designed to summarize current events

and focused on questions that encourage an open discussion relevant to the study topic. As Amin (2005) suggests, key informant interviews were selected for their ability to provide rich, detailed information that was not fully captured through questionnaires.

3.8.2 Data Collection Instruments

Both interview and questionnaire guides were employed.

3.8.2.1 Self-administered Questionnaires

Information was gathered through a questionnaire, which facilitated the collection of quantitative data from students. Questionnaire guides were employed to save time, given the large number of respondents in this group. Typically, surveys prompt participants to select the answer that best reflects their situation from a list of options. The questionnaire contained a list of possible alternatives from which respondents selected the answer that best suits the situation. For each of the three objectives, the survey included closed-ended questions, with respondents asked to indicate their level of agreement on a Likert scale ranging from 1 (strongly disagree) to 4 (agree), including 3 (not sure) and 2 (strongly agree). On the other hand, open-ended questions were used for complex questions that cannot be answered in a few simple categories but require detailed discussions. The questionnaires were also easy to administer, time saving and data collected was easy to analyze (Amin, 2005).

3.8.2.2 Interview guides

The interview guide for this study was designed to gather in-depth information on subjects that were not easily captured through the questionnaire. These subjects

emerged during the course of the interview, based on the responses provided by the respondents. The guide was unstructured, allowing flexibility in the interview process while ensuring that relevant topics were addressed. The interviews were conducted with teachers, ICT coordinators and administrators (head teachers, deputy head teachers and directors of studies), as they possess valuable insights into the integration of ICT in the teaching and learning process. The guide included open-ended questions that encourage respondents to elaborate on their experiences, perspectives, and challenges related to the integration of ICT in their institutions.

3.9 Quality/Error Control

Validity and reliability of the instruments were also considered.

3.9.1 Validity of Instruments

Validity was ensured by selecting an appropriate scale, allocating sufficient resources, and employing a suitable methodology to address the research questions (Amin, 2005). The researcher conducted a pre-test with five participants to verify whether the questions effectively captured the desired data. The pre-test sample was done using 11 respondents who were not included in the study. Additionally, the researcher actively engaged in both data collection and analysis to minimize potential errors. Pre-testing helped to estimate the time it took towards filling the questionnaires, relevancy of the questions, and accuracy of the questions in measuring the subject under study.

$$CVI = \frac{\text{No. Item}}{\text{Total No. Item}}$$

Where by’ CVI= Content Validity Index

The researcher first enumerated the number of relevant items for the study and divided them by the number of items in the instruments. Eleven questionnaires were pilot-tested in teachers, outside the sampled secondary schools in Ibanda District that did not participate in the study. The instrument was valid when the CVI is above 0.7 being recommended value for validity.

Table 3.2: Validity and Reliability Test Results

Variables	CVIs	Cronbach’s alpha values	No. of items
Gender	0.79	.797	11
Age	0.79	.791	11
Highest level of education	0.78	.788	11
Teacher-related challenges	0.79	.793	11
Administrative challenges	0.81	.817	11
Curriculum-related challenges	0.80	.805	11
Teaching and learning outcomes	0.80	.806	11

Source: *Primary data (2025)*

From the above validity statistics tables above, it can see that the total CVI was above **0.78**, which indicated a high level of validity for our scale. Furthermore, it should also be noted that the CVI is above the recommended .70 that is (0.78) which implies that the questionnaire is valid and suitable for data collection.

3.9.2 Reliability

Reliability, as defined by Amin (2005), refers to the degree to which a research tool produces consistent data or results across multiple trials. An instrument is considered reliable if it yields consistent outcomes, even when administered by different researchers. To ensure this consistency, a pilot study was conducted with a

small group of respondents before distributing the questionnaire to a larger audience. In this study a Cronbach's alpha coefficient was computed to show how reliable the data was using Statistical Package for Social Sciences (SPSS) and taking only variables scoring above 0.70.

In the context of the foregoing opinion the reliability of the tool (comprising issues on factors affecting the integration of ICT, plus issues of teaching and learning) were accordingly aligned. Reliability of the instrument on the other hand was ensured through the use of Cronbach's Alpha co-efficient index generated by SPSS. After pilot testing the instrument, reliability of the instrument, on multi-item variables was tested using the Cronbach's Alpha Method to provide by Statistical Package for the Social Scientists, and this was conducted among 10 respondents.

Table 3.3: Reliability indices for the questionnaire

Variable	No. of items	Cronbach Alpha Coefficient
Teacher-related challenges	11	0.79
Administrative challenges	11	0.81
Curriculum-related challenges	10	0.83
Teaching and learning outcomes	09	0.78

The Cronbach's alpha coefficients as indicated in Table 3.3 are above 0.70, the recommended reliability value (Amin, 2005). The results implied that the questionnaire was suitable for data collection. On the other hand, the researcher ensured reliability of interview guide by ensuring consistent of selection method, that is, the five pilot study candidates were interviewed twice using the same questions to rate the candidate's similarity and get the reliable interview.

Therefore, the researcher pre-tested and retested the instruments on a small number of key respondents in an interval of two days. Before real collection of data, the instruments were tested on five respondents to determine their reliability and these respondents were not among the respondents (interviewers).

3.10 Data Presentation, Analysis and Interpretation

Both qualitative and quantitative data were analyzed.

3.10.1 Analysis of quantitative data

The analysis involved coding responses by grouping participants into defined categories. Data was sorted, modified, and coded before being tabulated and analyzed using the Statistical Package for Social Sciences (SPSS) version 20, which offers a wide range of analytical techniques, from simple tabulation to complex multivariate analysis (Mubazi, 2018). Data processing included editing to identify errors and omissions, coding to classify responses into manageable categories, and tabulating results for effective analysis. Regression analysis was also used for estimation of relationships between a dependent variable and one or more independent variables. That is to say, the relationship between study variables. The researcher ensured that each response was categorized exclusively and exhaustively, facilitating accurate interpretation of the data.

3.10.2 Analysis of qualitative data

Qualitative data was rearranged and modified to extract relevant sentences. A thematic approach was employed to identify themes, categories, and patterns within the data. Thematic content analysis was used where soft wares like Atlas Ti was used. Therefore, qualitative data was reported in a narrative form. Under

qualitative analysis, relationships between categories and patterns were considered and established within themes. The findings were presented alongside direct quotes from participants to illustrate the recurring themes related to each of the guiding interview questions.

3.11 Ethical Considerations

There were several reasons why it was important to adhere to ethical norms in research. First, norms promote the aims of research, such as knowledge, truth, and avoidance of error (Rowley, 2012). The ethics framework was essential as it entails the voluntary informed consent of the participants. The researcher took into consideration a number of ethical issues including:

After defending the proposal, the researcher obtained an introductory letter from Uganda Christian University Research Ethical Committee as well as School of Education, and presented it to the Ibanda district officials to seeking permission to conduct the research. This facilitated gaining access to the respondents and allowed the researcher to explain their rights, encouraging participation.

Confidentiality of respondents was kept. Investigator protected the confidentiality of the information being provided for the success of this research. Respondents were not required to reveal their names nor put their contacts on the questionnaires. The researcher provided a brief overview of the purpose of the questionnaires to the respondents, assuring them that the information given was treated confidentially. Questionnaires were distributed to selected respondents and collected later at an agreed-upon time when completed. In the case of interviews,

the researcher approached purposively selected respondents from sampled departments and arranged a time convenient for them.

The research process ensured utmost confidentiality for all participants and the data collected by ensuring that respondents' answer the research questions confidently and without fear or biases including anonymity in some cases where requested. Data collected from respondents were carefully edited to ensure that information provided by them was accurate and consistent. This ensured that the research process was not breached in any way. Throughout the study, the researcher was guided by ethical considerations related to informed consent, confidentiality, and respect for participants' rights, as these were necessary to establish trust and cooperation for the research.

The identity of research participants was kept as secret by ensuring responses cannot be linked back to specific respondents. Consideration was also made that no personal identification details such as names and residential addresses were collected during the research. All the sources of literature were acknowledged throughout the whole study through proper citations and referencing.

3.12 Methodological Constraints

Testing: The use of research assistants brought about inconsistency in the administration and conducting interviews in terms of time of administration, understanding of the items in the interview schedule and explanations given to the selected participants. To minimize this threat, the research assistants first got

oriented and briefed on the procedures being done or get followed in collecting data.

Limited funds and time constraints: This limited the intensity of the spread or area of coverage of the study. This was solved by the investigator through borrowing funds from friends, colleagues and family members. In addition to the above, the investigator made sure; he followed the scheduled work plan.

Attrition: Not all selected participants were willing to participate in this study and this due to circumstances on the part of the participants such as supervising exams, travels, sickness, hospitalization and refusal/withdrawal to participate. In anticipation to this, the investigator reserved more respondents by exceeding the minimum sample size.

The investigator met un-co-operative respondents who were not unwilling to give detailed information. This was solved by the investigator through showing and giving them a copy of an authorization letter and promising them that the information they were going to give to remain confidential.

CHAPTER FOUR

DATA PRESENTATION AND ANALYSIS OF RESULTS

4.0 Introduction

The study established the factors affecting the integration of information and communication technology in teaching and learning of the lower secondary curriculum in Ibanda District. This chapter highlights the data presentations and analysis, as well as interpretation of research findings. This chapter details with the detailed presentation, analysis and interpretation of primary results highlighting the purpose as well as which was answered by the respective objectives namely:

i) Determining the influence of teacher-related challenges in the integration of ICT on teaching and learning outcomes in Ibanda District.

ii) Assessing the influence of administrative challenges in the integration of ICT on teaching and learning outcomes in Ibanda District.

iii) Investigating the influence of curriculum-related challenges in the integration of ICT on teaching and learning outcomes in Ibanda District.

Participants interviewed were administrators (head teachers, directors of studies, and deputy head teachers), ICT coordinators, students and teachers from different secondary schools. Research results being presented in tables; narratives have been provided for each of the tables. Interview findings were obtained to further explain qualitatively how the ways integration of information and communication technology affects teaching and learning process in selected secondary schools in Ibanda District in form of verbatim and narrative individual statements as per participants' opinions

in line to each research objectives. These personal views supplemented findings obtained with the help of the self-administered questionnaire.

To investigator used correlations analysis to establish the relationship between study variables, clearly clarifying on the magnitude of study relationship that exists between the variables at hand. The study further gives the presentation of the response rates of the respondents, clearly indicating the actual number of participants that properly responded to the research questions. Lastly, the personal details of the participants were also covered.

4.1Participants' Response Rate

The above sub-section covers the response rate summary of the selected participants. Response rate is referred to as return or completion rate, is the number of individuals who answers the distributed tools, and this is divided by the number of the targeted sample (Orodho, 2019). Further response rate details are presented in summary in Table 4.1.

Table 4.1: Number of respondents participated in this research study

Category(s)	Targeted participants.	No. actually involved.	% of response rate.
Students	239	230	96.3%
Teachers	24	24	100%
Administrators (head teachers, deputy H/T & DOS)	9	9	100%
ICT coordinators	3	3	100%
TOTAL.	**275**	**266**	**96.7%**

Source: *Primary data (2025)*

Out of the targeted total participants of 275, only 266 were reached. These 266 participants responded positively by accepting to participate in the research, giving the study a chance to get 96.7% of the response rate. However, the non-achievement of only 3.3% occurred as a result of the targeted participants was being too busy in discussions and remedial lessons and others being absent that day of study despite several attempts made to reach them. This response rate found being higher than 70% as proposed and recommended by the Katamba and Nsubuga (2014) being good for a study to provide satisfactory results.

4.2 Background Details of the Participants

The background details of the participants included; gender, age of the respondents, highest education level, working period, ever filled the performance appraisal form, and it's related other details. Profiles of the participants who fully participated in this research are clearly shown in Table 4.2 below:

Table 4.2: Participants' Background Information

Demographic Information:			
Gender		**Freq. *(f)***	**Percent *(%)***
	Male.	140	52.6
	Female.	126	47.4
	Total.	**266**	**100%**
Respondents' Age	Below 17 years	230	86.5
	18 years and above	36	13.5
	Total.	**266**	**100%**
Respondents' education level	O' level	158	59.4
	A' level	72	27.1
	Bachelors' degree	28	10.5

Masters' degree	6	2.3
PhD holders	2	0.7
Total.	**266**	**100%**

***Source**: Primary data (2025)*

The gender difference was one of the main variables analyzed in the study. It aimed at ascertaining to whether the selected study sample was gender balanced. It is clearly observed in Table 4.2 above, that 266 participants participated in this study. Out of them, 140 respondents (52.6%) were males and 126 respondents (47.4%) were females. This implies that male participants were more during the study. This may imply that many students, school administrators and teachers in Ibanda District are male in secondary schools compared to female. The many female teachers were mostly in the capacity of students and subject teachers.

As shown in Table 4.2 above, 230 respondents (86.5%) were aged below 17 years, and these were mostly students; and only 36 (13.5%) were 18 years and above. This implies that those participants who fall in the age category of below 17 years made the majority during the research carried out in different secondary schools in Ibanda District.

As shown in above Table 4.2, respondents varied in terms of education level. Majority of the respondents 158 (59.4%) were still in O' level, 72 (27.1%) were in A' level, and these were students, 28(10.5%) were Bachelors' degree holders, 6 (2.3%) were masters' degree, while only 2(0.7%) were PhD holders. These results also indicated that the majority of participants were at students, but every participant

had reasonable knowledge on the factors affecting the integration of ICT as their responses were appropriate and corresponded to the questions asked.

The results of the research are presented, and this is done in accordance with the stated research objectives that is to say: determining the influence of teacher-related challenges in the integration of ICT on teaching and learning outcomes, assessing the influence of administrative challenges in the integration of ICT on teaching and learning outcomes, and investigating the influence of curriculum-related challenges in the integration of ICT on teaching and learning outcomes in Ibanda District. The findings are the views of respondents from factors affecting the integration of ICT ("independent variable"); while, the teaching and learning process ("dependent variable"). The descriptive statistics have been presented in form of frequency tables and they answer the research questions and correlations analysis was also presented.

4.3 The Influence of Teacher-Related Challenges in the Integration of Information and Communication Technology (ICT) on Teaching and Learning Outcomes

Objective one sought towards determining the influence of teacher-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The structure was illustrated and measured by use different study variables and 5-point Likert scale whose findings are clearly elaborated in the below Table 4.3.

Table 4.3: The influence of teacher-related challenges in the integration of ICT on teaching and learning outcomes

Statement	Response	Extent of (dis)agreement		Mean	Std. Devt
		(*f*)	(%)		
In my school, teachers lack the ability to handle a wide range of varying computer applications for various academic purposes	Accepted	207	90	3.97	0.983
	Neutral.	4	1.7		
	Disagreed	19	8.3		
	Total	**230**	**100%**		
In my school, ICT integration requires a lot of time limiting its integration into teaching and learning sessions	Accepted	198	86.1	3.86	0.951
	Neutral.	7	3.1		
	Disagreed.	25	10.8		
	Total:	**230**	**100%**		
In our school, slow uptake of ICT among teachers being influenced by inability to operate some of the ICT resources	Accepted	193	83.9	3.77	0.843
	Neutral.	9	3.9		
	Disagreed.	28	12.2		
	Total:	**230**	**100%**		
In my school, lack of ICT skills and training limit the integration of ICT in teaching and learning	Accepted	185	80.4	3.92	0.982
	Neutral	11	4.8		
	Disagreed	34	14.8		
	Total:	**230**	**100%**		
In our school, slow uptake of ICT among teachers being influenced by lack of self-efficacy	Accepted	179	77.8	3.73	0.852
	Neutral.	13	5.7		
	Disagreed.	38	16.5		
	Total	**230**	**100%**		
In my school, teachers are completely kaput in application of ICT	Accepted	167	72.6	3.42	0.853
	Neutral.	14	6.1		
	Disagreed.	49	21.3		
	Total:	**230**	**100%**		

In my school, lack of adequate practice limit teacher's integration of ICT in teaching and learning	Accepted	159	69.2		
	Neutral.	19	8.2		
	Disagreed.	52	22.6	3.76	0.774
	Total:	**230**	**100.0**		
In my school, teachers' attitude influences their ability towards ICT integration in teaching and learning	Accepted	141	61.3		
	Neutral.	23	10		
	Disagreed.	66	28.7	3.40	0.641
	Total:	**230**	**100.0**		

Source*: Primary data (2025)*

Table 4.3 above clear gives a clear representation of the descriptive statistics on the influence of teacher-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The results from the field showed that 207(90%) of the participants accepted to this statements that teachers lack the ability to handle a wide range of varying computer applications for various academic purposes (represented by Mean=3.97); followed by 198(86.1%) of the respondents who accepted that ICT integration requires a lot of time limiting its integration into teaching and learning sessions (represented by Mean=3.86); the, respondents equivalent to 193(83.9%) accepted that slow uptake of ICT among teachers being influenced by inability to operate some of the ICT resources (represented by Mean=3.77); and, lastly, 185(80.4%) of the respondents accepted that lack of ICT skills and training limit the integration of ICT in teaching and learning (represented by Mean=3.92).

4.3.1 Presentation of Qualitative Results on the influence of teacher-related challenges in the integration of ICT on teaching and learning outcomes

Thematic Area	Frequency	Percentage
Lack of ICT skills and training limit the integration of ICT in teaching and learning	33	91.6%
Slow uptake of ICT among teachers being influenced by inability to operate some of the ICT resources	31	86.1%
Lack of ICT infrastructure limit teacher's integration of ICT in teaching and learning	27	75%
Teachers' attitude influences their ability towards ICT integration in teaching and learning	24	66.6%
Teachers are completely kaput in application of ICT	21	58.3%
Teachers lack the ability to handle a wide range of varying computer applications for various academic purposes	19	52.7%
Slow uptake of ICT among teachers being influenced by lack of self-efficacy	17	47.2%
ICT integration requires a lot of time limiting its integration into teaching and learning sessions	14	38.8

Source: *Primary data (2025)* (n=36)

The first objective was also set to examine the influence of teacher-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The interviews managed to solicit adequate information from the administrators (head teachers, deputy head teachers and directors of studies), ICT coordinators and teachers considered. These participants were fully involved and participate in answering the interviews.

In interviews, it was showed that lack of ICT skills and training limit the integration of ICT in teaching and learning; in fact, one of the head teachers asserted that;

> "…. teachers experience limited knowledge and skills on the proper use of ICT. Some of the teachers have no clue on the proper ICT tools to be used and how to effectively apply them, which limit them to integrate them into teaching and learning process. However, though the school has invested in a laptop and several desk top computers, some of my teachers are technophobic. Apart from reading their emails, all the other correspondence and uploading of vital returns to the secretary…." (Head teacher C from School E, 2025)

This might imply that some teachers are disappointing, they tend to be completely kaput in application of ICT. They cannot go beyond opening the computer and worse still, they are not willing to engage in professional development for acquiring skills in ICT application. Considering that through experience and professional development most teachers may be have acquired the appropriate content and pedagogy, but this is not the case of teachers within Ibanda district schools.

The study noted that slow uptake of ICT among teachers being influenced by inability to operate some of the ICT resources. The interviewed head teacher noted that;

> "….one of the most vital challenges in integrating ICT into teaching and learning process is the issue of slow uptake of ICT among teachers, mostly contributed by digital inequality. Most schools of Ibanda district, there is a marked disparity in access to technology and the internet….." (Head teacher C, from School E, 2025).

This implies that urban schools in Ibanda district are often equipped with modern digital infrastructure, whereas rural and underprivileged schools face significant barriers. This gap in access and uptake to technology can lead to a situation where only a small fraction of learners benefits from digital tools, while the majority remains excluded. Thus, some teachers' belief that they can give quality services to

learners without integrating ICT in their teaching. Such beliefs may lead to negative attitudes and slow uptake of ICT among teachers.

The study revealed that lack of adequate practice limit teachers' integration of ICT in teaching and learning. While interviewing the director of studies from School E noted that:

> "…. teachers may not have access to computers smartphones or reliable internet connections. With limited ICT equipment, teachers eventually lack adequate practices to effectively use available technology while teaching. Even when technology is available, may teachers may lack the necessary vital skills to use it effectively. This creates an uneven playing field, hindering the goal of universal access to quality education.…" (DOS from School A, 2025)

It is evident from the opinions that inadequate teachers' practices and involvement in use of technology limit their ability to effectively use them while teaching. Further, schools may not be able to provide teaching staff with the required training needed to integrate ICT tools into their teaching practices, further exacerbating the issue.

It's clear from the views that lack of ICT infrastructure limit teachers' integration of ICT in teaching and learning. When the head teachers were interviewed, XYD noted that:

> "…. ICT infrastructure is a cornerstone of any ICT integration effort. Without the right hardware, software and internet connectivity, it becomes nearly impossible for teachers to implement ICT tools in the classroom….." (Head teacher YAD, School A, 2025)

This clearly indicates that many schools in Ibanda district especially in rural and underdeveloped parts, still lack basic infrastructure, such as projectors, computers

and reliable internet access. Even within town or urban areas, some schools may not have enough resources to create an ICT-rich learning environment.

It's clear from the views that teachers' attitude influences their ability towards ICT integration in teaching and learning. When the head teachers were interviewed, XWD noted that:

> "…. resistance to change because of teachers' attitude undermines their ability towards ICT integration in teaching and learning process. Teachers' attitude is another serious hurdle in the integration of ICT in education. Teachers always tend to be resistant to change. Many teachers, especially those who have been teaching for years without the aid of technology, may be hesitant to adopt new teaching methods that rely on ICT …." (Head teacher XWD, School C, 2025)

This clearly indicates that resistance to change can stem from a variety of factors, including fear of inadequacy with new tools, lack of training, or general preference for traditional methods. Similarly, teachers may not always embrace ICT-driven learning, especially when they are used to teaching using conventional modes.

The study noted that teachers are completely kaput in application of ICT in schools with limited ICT infrastructure. One of the interviewed deputy head teachers noted;

> "…. the physical infrastructure of many schools may not be conducive to the integration of technology. For example, overcrowded classrooms and poor ventilation can limit the effective use of digital tools. ….." (Deputy head teacher C, from School E, 2025)

This clearly implies that inadequate power supply, poor network connectivity, and insufficient technical support can further hinder the effective use of ICT in teaching and learning.

Similarly, the study noted that teachers lack the ability to handle a wide range of varying computer applications for various academic purposes. Another director of studies had this to say;

> "…. lack of capacity among teachers to make effective use of ICT in teaching is another critical challenge in integrating ICT into education. ICT is not merely about having the right tools but about using them effectively to enhance learning and teaching outcomes. This requires ongoing professional development and a commitment to improving digital literacy across all levels of secondary education…." (Director of Studies A from School D, 2024)

This implies that the ability of teachers towards integration of ICT in teaching in Ibanda district being limited by teachers lack the ability in handling a wide range of varying ICT applications for various academic purposes. It has remained a challenge for teachers to integrate ICT tools in teaching and assessment practices.

Lastly, the study revealed that ICT integration requires a lot of time limiting its integration into teaching and learning sessions. One of the interviewed chairperson BOGs had these to say:

> "…my school is one of the schools considered to be well equipped in ICT infrastructure… but the truth of the matter is that nothing much is happening regarding ICT integration in teaching and learning…the computer laboratory is rarely open and computers and other items are only gathering dust and cobwebs while others are in disrepair. The students' tablets are also rotting in another strong room. The mode of teaching and learning has remained the same over the years. Our internet is another problem since it is very erratic and weak…you can download a large file forever….." (BOGs member A from School C)

It was evident from the sentiments as expressed by teachers and head teachers that despite the adequate availability of ICT resources in some schools the level of ICT

integration in teaching and learning was not commensurate. This was due to myriad of reasons that were mainly teacher and the school management related. However, it was also notable that there were many schools where vital ICT resources were none existent and thus leaving teachers and students with no option of ICT integration in their teaching and learning.

The qualitative findings complement the quantitative data by providing deeper analysis and insights into the influence of teacher-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District.

4.3.2 The Correlation Coefficient Results on teacher-related challenges in the integration of ICT and teaching and learning outcomes in Ibanda District

Table 4.4: The correlation coefficient results

		Teacher-related challenges in the integration of ICT	Teaching and learning outcomes
Teacher-related challenges in the integration of ICT	Pearson Correlation	1	.610**
	Sig. (2-tailed)		.000
	N	230	230
Teaching and learning outcomes	Pearson Correlation	.610**	1
	Sig. (2-tailed)	.000	
	N	230	230
**. Correlation is significant at the 0.01 level (2-tailed).			

Results in Table 4.4 above show the results from the correlations computed. The findings show that there was a strong positive correlation (r= .610, n=70, p< .01)

between teacher-related challenges in the integration of Information and Communication Technology (ICT) and teaching and learning outcomes in Ibanda District. This implies that any attempt where teachers experience lack of ICT skills and training, it limits the integration of ICT in teaching and learning. There is also lack of ICT infrastructure limit teachers' integration of ICT in teaching and learning. Teachers lack the ability to handle a wide range of varying computer applications for various academic purposes and teachers' attitude influence their ability towards ICT integration in teaching and learning.

4.4 The Influence of Administrative Challenges in the Integration of ICT on Teaching and Learning Outcomes in Ibanda District

Objective two sought to assess the influence of administrative challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The structure was also measured by use of different study variables, while, 5-point Likert scale whose findings are clearly indicated in the below Table 4.5.

Table 4.5: The influence of administrative challenges in the integration of ICT on teaching and learning outcomes

Statement	Extent of dis(agreement)			Mean	Std. Devt
	Responses	(*f*)	(%)		
In our school, financial constraints limit the integration of ICT in teaching and learning	Accepted	211	91.7		
	Neutral.	0	00		
	Disagreed.	19	8.3	3.98	0.642
	Total:	**230**	**100%**		
In my school, lack of ICT resources limit ICT integration in teaching and learning	Accepted	203	88.3		
	Neutral	3	1.3		
	Disagreed.	24	10.4	9.85	0.873
	Total:	**230**	**100%**		
In our school, lack of adequate ICT infrastructure greatly hampers integration of ICT in teaching and learning	Accepted	193	83.9		
	Neutral.	5	2.2		
	Disagreed	32	13.9	3.87	0.841
	Total:	**230**	**100%.**		
In my school, lack of equipped ICT infrastructure limits the integration of ICT in teaching and learning	Accepted	179	77.8		
	Neutral.	7	3.1	3.75	0.781
	Disagreed.	44	19.1		
	Total:	**230**	**100%**		
In our school, there is lack of computer laboratories for teaching and learning	Accepted	167	72.6		
	Neutral.	9	3.9		
	Disagreed.	54	24.5	3.73	0.571
	Total:	**230**	**100%.**		
In my school, some facilities are old and poorly maintained hampering integration of ICT in teaching and learning	Accepted	161	70		
	Neutral.	14	6.1	3.64	0.722
	Disagreed.	55	23.9		
	Total:	**230**	**100.0**		

In our school, slow uptake of ICT among teachers is due to poor maintenance	Accepted Neutral. Disagreed. **Total:**	159 17 54 **230**	69.2 7.4 23.4 **100.0.**	3.53	0.694
In my school, school lack policy on ICT integration in teaching and learning	Accepted Neutral. Disagreed. **Total**	147 15 68 **230**	63.9 6.5 29.6 **100%**	3.41	0.433
In our school, slow uptake of ICT among teachers is due lack of well-equipped in ICT infrastructure	Accepted. Neutral. Disagreed. **Total**	145 20 65 **230**	63.1 8.7 28.2 **100%**	3.42	0.374
In my school, limited support and financing influence ICT integration in teaching and learning	Accepted. Neutral. Disagreed. **Total**	143 21 66 **230**	62.2 9.2 28.6 **100%**	3.41	0.363

Source*: Primary data (2025)*

The Table 4.5 represents the results on the influence of administrative challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The findings indicated that 211(91.7%) of the participants accepted to the statements that financial constraints limits the integration of ICT in teaching and learning (represented by Mean=3.98); lack of ICT resources limit ICT integration in teaching and learning, and this was accepted by 203(88.3%) of the respondents (represented by Mean=9.85); lack of adequate ICT infrastructure greatly hampers integration of ICT in teaching and learning, and this was accepted by 193(83.9%) of the respondents (represented by Mean=3.87); and lastly, lack of equipped ICT infrastructure limits the integration of ICT in teaching and

learning, and this was also accepted by the participants equivalent to 179(77.8%) (represented by Mean=3.77).

4.4.1 Presentation of Qualitative Results on the influence of administrative challenges in the integration of ICT on teaching and learning outcomes

Thematic Area	Frequency	Percentage
Financial constraints limit the integration of ICT in teaching and learning	33	91.6%
Lack of adequate ICT infrastructure greatly hampers integration of ICT in teaching and learning	27	75%
Lack of ICT resources limit ICT integration in teaching and learning	23	63.8%
Slow uptake of ICT among teachers is due lack of well-equipped in ICT infrastructure	21	58.3%
Limited support and financing influence ICT integration in teaching and learning	20	55.5%
Lack of equipped ICT infrastructure limits the integration of ICT in teaching and learning	19	52.7%
Some facilities are old and poorly maintained hampering integration of ICT in teaching and learning	17	47.2%
School lack policy on ICT integration in teaching and learning	15	41.6%
There is lack of computer laboratories for teaching and learning	13	36.1%

Source: *Primary data (2025)* (n=36)

The second objective was also set to assess the influence of administrative challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The interviews managed to solicit adequate information from the administrators (head teachers, deputy head teachers and directors of studies), ICT coordinators and teachers considered. These participants were fully involved and participate in answering the interviews.

In interviews, it was showed that financial constraints limit the integration of ICT in teaching and learning; in fact, one of the directors of studies explained that;

> "…. schools lack enough financial resources to cater for the increasing demand of ICT equipment. The required equipment and tools to enhance teachers' integration of ICT into daily teaching and learning require enough resources to install purchase the computers, internet networks and train teachers on the appropriate use of ICT tools…." (DOS B, from School D, 2025)

This implies that with limited financial constraints undermine the ability of teachers to adopt and integrate ICT into teaching and learning. With limited financial constraints, schools have failed to purchase the vital ICT tools especially installing internet, purchasing computers and regularly maintaining these ICT gadgets. Teachers as well have not been trained and equipped with ICT skills due to limited resources allocated to staff development program, all limiting the integration of ICT into teaching and learning.

The study also noted that lack of adequate ICT infrastructure greatly hampers integration of ICT in teaching and learning. Another interviewed head teacher had these to say;

> "……infrastructure is a cornerstone of any ICT integration effort. Without the right software, hardware and internet connectivity, it becomes nearly impossible to implement ICT tools in the classroom. Many schools in Ibanda district lack basic ICT infrastructures especially projects, internet and computers which eventually hampers the integration of ICT into learning……" (Head teacher E, from School C, 2025)

This implies that the physical infrastructure of many schools may not be conducive to the integration of technology. Several schools are characterized of overcrowded

classrooms which limit the use of digital tools. Schools also experience power surge, insufficient technical support and poor network connectivity which also hinder the integration of ICT in teaching and learning process. The developing of ICT infrastructure in a country is depending on availability of resources. Resources like- computer, printer, projectors, scanner etc. which are not available in every institution.

The study also noted that lack of ICT resources limit ICT integration in teaching and learning. Another interviewed participant had these to say;

> "…. schools experience lack of genuine software, inadequate computers in the classroom, lack of motivation from administrators and teachers' side to use ICT, low speed internet, lack of latest ICT equipment which limit ICT integration in teaching and learning……" (DOS C from School E, 2025)

This implies that limited presence of ICT infrastructures significantly influences integration of ICT. Most schools experience scarcity of software, lack of appropriate and adequate technology and limited computers for all learners in each classroom, and this eventually limit the teachers to adopt and integrate ICT in teaching sessions.

Similarly, the study noted that there is lack of computer laboratories for teaching and learning. Another interviewed director of studies had these to say;

> "…. most schools in Ibanda district lack computer laboratories with well-equipped ICT tools. The few available school facilities are old and poorly maintained hampering integration of ICT in teaching and learning.…" (Director of Studies E from School D)

This implies that schools have poorly maintained computer laboratories. The few available computer labs tend to have limited ICT tools to cater for the increasing

number of enrolled students. Some of the available tools are too old and out-dated for effective use. Due to limited ICT equipment and infrastructure, it limits the integration of ICT in teaching and learning. The overall interpretation of the above results is that administrative challenges in the integration of Information and Communication Technology (ICT) have a significant effect on teaching and learning outcomes in Ibanda District.

4.4.2 The Correlation Coefficient Results on the influence of administrative challenges in the integration of ICT on teaching and learning outcomes

Table 4.6: The correlation coefficient results

		Administrative challenges in the integration of ICT	**Teaching and learning outcomes**
Administrative challenges in the integration of ICT	Pearson Correlation	1	**.816****
	Sig. (2-tailed)		**.000**
	N	320	**320**
Teaching and learning outcomes	Pearson Correlation	.816**	**1**
	Sig. (2-tailed)	.000	
	N	320	**320**

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

The correlation coefficient results presented in the table indicate a strong positive relationship between administrative challenges in the integration of Information and Communication Technology (ICT) and teaching and learning outcomes in Ibanda District. The Pearson correlation coefficient for the relationship between administrative challenges in the integration of ICT and teaching and learning outcomes is 0.816, which is statistically significant at the 0.01 level (2-tailed), as shown by the p-value of 0.000. This implies that any attempt where teachers

experience lack of adequate ICT infrastructure, it greatly hampers integration of ICT in teaching and learning. It is clearly indicated that lack of ICT resources, financial constraints limits the integration of ICT in teaching and learning, and some facilities are old and poorly maintained hampering integration of ICT in teaching and learning.

The qualitative findings complement the quantitative data by providing deeper insights and views into the influence of administrative challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District.

4.5 The Influence of Curriculum-Related Challenges in the Integration of Information and Communication Technology (ICT) on Teaching and Learning Outcomes in Ibanda District

Objective three sought to investigate the influence of curriculum-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. Different study variables were therefore applied and used. This was guided by the 5-point Likert scale whose findings are clearly indicated in Table 4.7.

Table 4.7: The influence of curriculum-related challenges in the integration of ICT on teaching and learning outcomes

Statement	Extent of dis(agreement)			Mean	Std. Devt
	Responses	(*f*)	(%)		
In my school, rigid curriculum structures influence ICT integration into teaching and learning	Accepted.	217	94.5		
	Neutral.	3	1.3		
	Disagreed.	10	4.4	3.73	0.632
	Total:	**230**	**100%**		
In my school, inadequate alignment with ICT goals influence ICT integration into teaching and learning	Accepted.	203	88.2		
	Neutral.	7	3.1		
	Disagreed.	20	8.7	3.11	0.841
	Total:	**230**	**100%**		
In my school, assessment limitations limits ICT integration into teaching and learning	Accepted.	190	82.6		
	Neutral.	11	4.7		
	Disagreed.	29	12.7	3.82	0.763
	Total:	**230**	**100%**		
In my school, lack of technical support influence ICT integration into teaching and learning	Accepted.	177	76.9		
	Neutral.	15	6.5		
	Disagreed	38	16.6	3.71	0.842
	Total:	**230**	**100%**		
In my school, lack of training and capacity building limits ICT integration into teaching and learning	Accepted.	165	71.7		
	Neutral.	17	7.5		
	Disagreed	48	20.8	3.61	0.974
	Total:	**230**	**100%**		
In my school, failure to align curriculum with ICT integration limits ICT integration into teaching and learning	Accepted	152	66.1		
	Neutral.	19	8.3		
	Disagreed.	59	25.6	3.73	0.752
	Total:	**230**	**100%**		

In my school, lack of ICT infrastructure and maintenance limits its integration into teaching and learning	Accepted	139	60.4		
	Neutral.	18	7.8		
	Disagreed.	73	31.8	3.63	0.574
	Total	**230**	**100%**		

Source*: Primary data (2025)*

Table 4.7 represents the descriptive results on the influence of curriculum-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The findings indicated that 217(94.5%) of the participants accepted to the study statements that rigid curriculum structures influence ICT integration into teaching and learning (represented by Mean= 3.73); inadequate alignment with ICT goals influence ICT integration into teaching and learning, and this was accepted by 203(88.2%) of the respondents (represented by Mean=3.11); assessment limitations limits ICT integration into teaching and learning, and this was accepted by 190(82.6%) of the respondents (represented by Mean=3.82); and lastly, lack of technical support influence ICT integration into teaching and learning, and this was finally accepted by 177(76.9%) of the participants (represented by Mean=3.71).

4.5.1 Presentation of Qualitative Results on the influence of curriculum-related challenges in the integration of ICT on teaching and learning outcomes

Thematic Area	Frequency	Percentage
Lack of technical support influence ICT integration into teaching and learning	31	86.1%
Inadequate alignment with ICT goals influence ICT integration into teaching and learning	27	75%
Lack of training and capacity building limits ICT integration into teaching and learning	23	63.8%
Rigid curriculum structures influence ICT integration into teaching and learning	21	58.3%
Failure to align curriculum with ICT integration limits ICT integration into teaching and learning	19	52.7%
Lack of ICT infrastructure and maintenance limits its integration into teaching and learning	17	47.2%
Assessment limitations limits ICT integration into teaching and learning	11	30.5%

Source: *Primary data (2025)* (n=36)

The third objective was also set to investigate the influence of curriculum-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The interviews managed to solicit adequate information from the administrators (head teachers, deputy head teachers and directors of studies), ICT coordinators and teachers considered. These participants were fully involved and participate in answering the interviews.

In the study, it was accepted that lack of technical support influence ICT integration into teaching and learning; as one head teacher explained that;

> "…. schools lack technical support to help teachers in the implementation and integration of ICT into teaching and learning. Technical staff has remained lacking, and few schools have recruited qualified technical workers to manage

> the computer labs and help teachers during the use of ICT tools. Technological and pedagogical factors have remained factors limiting the teachers to effectively integrate ICT into teaching....” (Tom pseudo name personal communication, April, 2025)

This implies that lack of technical personal to provide technical support to teachers also influence ICT integration into teaching and learning. Schools does not have technicians and other skilled individuals to guide and help teaching staff in using ICT tools while teaching and learning process.

The study revealed that lack of training and capacity building limits ICT integration into teaching and learning, and one of the interviewed deputy head teachers had these to say;

> “…. schools lack programs of staff development, which limit teachers’ technical skills and competence to effectively integrate ICT into teaching and learning processes. With limited training, it has remains difficult for teachers to teacher online, mark students’ assignments online and gives feedback…..” (Kafeero pseudo name personal communication, April 2025)

Similarly, another interviewed head teacher had these to say;

> “….in the 21st century most relevant or biggest challenge is lack of knowledge to handle ICT equipment. Teacher's lack of knowledge and skills is one of the main hindrances in the use of ICT in education. They simply do not have the knowledge, expertise or organizational capacity needed….” (Head teacher A from School B)

More so, head teacher from school A noted that;

> “…. a major challenge in the use ICT in 21ST century is the lack of knowledge and skills. The teachers do not want to have transition to new methodologies and way of teaching-learning. They will want to stick over the broadcast

> model of teaching instead of interactive model designed through the use of ICT…" (Head teacher A from School C)

This implies that teachers' lacking training, skilling and capacity building limits their ability and competence to effectively integrate ICT in teaching and learning. The ability and competence of teachers to effectively integrate ICT into teaching and learning cycle been limited their weaknesses, due to lack of skills and ability to handle. Some of the teachers only stop at opening computer windows, and such teachers cannot manage to use ICT for teaching purposes.

The study noted that lack of ICT infrastructure and maintenance limits its integration into teaching and learning, and one of the interviewed Directors of Studies noted that:

> "…. effective and efficient use of technology depends on availability of hardware, software and having access to resources by teacher and students and administrative staff. In developing countries, technology implementation into education system is a difficult task as it requires a magnum of funds…." (Director of Studies A from School E)

This clearly implies that the teaching aids for ICT demands a lot of funds and setting up the infrastructure, maintenance and support of ICT facilities are some of the problems that the Educational Institution are facing.

Lastly, the study noted that failure to align curriculum with ICT integration limits ICT integration into teaching and learning, and interviewed DOS had these to say:

> "….the current education curriculum is not aligned with the ICT, therefore the integration of ICT system in teaching and learning have become a

challenge. Such rigid curriculum structures limit teachers' ability to integrate ICT into teaching and learning…." (Director of Studies D from School C)

This implies that teachers' lack of knowledge and skills is one of the man hindrances in the use of ICT in education. They simply do not have the knowledge, expertise or organizational capacity needed. The ICT facilities are not available in the school. Most of the schools are not in a position to afford the purchase, maintenance and other expenditure involve in its use.

Both quantitative and qualitative data highlight key issues related to the influence of curriculum-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District.

4.5.2 Correlation coefficient results on the influence of curriculum-related challenges in the integration of ICT on teaching and learning outcomes

Table 4.8: Correlation coefficient results

		Curriculum-related challenges in the integration of ICT	Teaching and learning outcomes
Curriculum-related challenges in the integration of ICT	Pearson Correlation	1	**.812****
	Sig. (2-tailed)		**.000**
	N	230	**230**
Teaching and learning outcomes	Pearson Correlation	.812**	**1**
	Sig. (2-tailed)	.000	
	N	230	**230**
****. Correlation is significant at the 0.01 level (2-tailed).**			

Source: *Primary data (2025)*

Table 4.8 shows a very strong positive correlation ($r = 0.812$, $p < 0.01$) between curriculum-related challenges in the integration of Information and Communication Technology (ICT) and teaching and learning outcomes in Ibanda District. The results suggest that the ICT integration into teaching and learning is highly associated and influenced by lack of technical support, lack of training and capacity building, lack of ICT infrastructure and maintenance, and failure to align curriculum with ICT integration.

4.6 The Teaching and Learning Outcomes in Secondary Schools in Ibanda District

The last aspect of the study aimed at ascertaining the teaching and learning outcomes in secondary schools in Ibanda District. Different study variables were therefore applied and used. This was guided by the 5-point Likert scale whose findings are clearly indicated in Table 4.9.

Table 4.9: The Teaching and Learning Outcomes in Secondary Schools

Statement	Extent of dis(agreement)			Mean	Std. Devt
	Responses	(*f*)	(%)		
I am familiar and competent with the teaching methods	Accepted.	27	11.7		
	Neutral.	3	1.4		
	Disagreed.	200	86.9	3.86	0.632
	Total:	**230**	**100%**		
We appropriate apply several assessment strategies	Accepted.	32	13.9		
	Neutral.	8	3.5		
	Disagreed.	190	82.6	3.97	0.831
	Total:	**230**	**100%**		

The curriculum design is appropriately handled	Accepted. Neutral. Disagreed. **Total:**	42 11 177 **230**	18.3 4.8 76.9 **100%**	3.72	0.832
Several skills and knowledge used while teaching and learning process	Accepted. Neutral. Disagreed **Total:**	52 13 165 **230**	22.6 5.6 71.8 **100%**	3.32	0.841
Teachers participate fully in co-curricular activities.	Accepted. Neutral. Disagreed **Total:**	50 18 162 **230**	21.7 7.8 70.5 **100%**	3.91	0.722
Teachers usually hit deadlines on all their school assignments.	Accepted Neutral. Disagreed. **Total:**	46 25 159 **230**	20 10.8 69.2 **100%**	3.93	0.753
I am familiar and competent with the teacher-centered method of instruction.	Accepted Neutral. Disagreed. **Total**	52 31 147 **230**	22.6 13.5 63.9 **100%**	3.32	0.574

Source: *Primary data (2025)*

Table 4.9 represents the descriptive results on the teaching and learning outcomes in secondary schools in Ibanda District. The findings indicated that 200(86.9%) of the participants disagreed to the study statements that teachers are familiar and competent with the teaching methods (Mean= 3.86); teachers appropriate apply several assessment strategies, and this was disagreed by 190(82.6%) of the respondents (Mean=3.97); the curriculum design is appropriately handled, and this

was disagreed by 177(76.9%) of the respondents (Mean=3.72); and lastly, several skills and knowledge used while teaching and learning process, and this was finally disagreed by 165(71.8%) of the participants (Mean=3.32).

Lastly study findings in Table 4.9 also show that that majority of the respondents 162 (70.5%) did not accepted that teachers participate fully in co-curricular activities, with Mean=3.91, teachers usually hit deadlines on all their school assignments, and this was disagreed by 159(69.2%) of the respondents (Mean=3.93); and teachers are familiar and competent with the teacher-centered method of instruction, and this was disagreed by 147(63.9%) of the respondents (Mean=3.32). This implies that the teaching and learning outcome has remained weak, and the noble causes for teaching have not been achieved in most secondary schools in Ibanda District.

CHAPTER FIVE
DISCUSSIONS OF RESULTS

5.0 Introduction

This chapter presents the discussions of results towards exploring the Integration of information communication technology in teaching of the lower secondary curriculum: a case study of Ibanda district on the study findings, following the sequence developed from the stated research objectives. This chapter also contains the conclusion of findings and study suggested recommendations. The areas of further researcher were equally presented.

5.1 Discussion of Results

The discussion of results is done basing on the results presented in chapter four in thematic manner as follows:

5.1.1 The Influence of Teacher-Related Challenges in the Integration of ICT on Teaching and Learning Outcomes

The above study theme of determining the influence of teacher-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District was discussed as follows:

The findings revealed that there was a strong positive correlation ($r = .610$, $n=70$, $p < .01$) between teacher-related challenges in the integration of Information and Communication Technology (ICT) and teaching and learning outcomes in Ibanda District. This implies that any attempt where teachers experience lack of ICT skills and training, it limits the integration of ICT in teaching and learning. There is also lack of ICT infrastructure limit teachers' integration of ICT in teaching and

learning. Teachers lack the ability to handle a wide range of varying computer applications for various academic purposes and teachers' attitude influence their ability towards ICT integration in teaching and learning. This concurs with Mishra & Koehler (2016) arguing that teachers play a pivotal role in the integration of ICT in the educational process. Their preparedness, attitudes, and skills significantly influence how effectively ICT is incorporated into teaching and learning. However, the integration of ICT in classrooms is not without challenges. These challenges, particularly those related to teachers, can hinder the full potential of ICT in enhancing educational outcomes. Similarly, Tinio (2023) argues that teacher-related challenges include a lack of ICT training, inadequate resources, resistance to change, and the insufficient integration of ICT into existing pedagogical practices. These barriers can undermine the benefits that ICT promises in improving teaching and learning outcomes.

The study was grounded in Cognitive Flexibility Theory (CFT), which was advanced and introduced by Spiro and Jehng (1992). The theory emphasizes that learners grasp complex information more effectively when exposed to multiple representations in diverse contexts. It posits that cognitive flexibility allows learners to restructure their knowledge adaptively in response to changing demands. This flexibility is especially relevant for ICT integration in education, where learners interact with information through various tools and digital platforms. In the context of ICT, learners can transfer their skills across different settings, applying knowledge gained from one task to another, such as from classroom lessons to real-world applications (Allessi & Trollip, 2001). CFT is particularly pertinent to this study on ICT integration in lower secondary

schools because ICT tools offer varied ways of presenting information, which can help develop adaptable, flexible learners. Students who learn to use digital tools for research or collaboration can transfer those skills to other academic disciplines or future careers. However, the theory does face criticism.

The study noted that lack of ICT skills and training limit the integration of ICT in teaching and learning. This concurs with Alabi & Adebayo (2022) who argued that some teachers are disappointing; they tend to be completely kaput in application of ICT. They cannot go beyond opening the computer and worse still, they are not willing to engage in professional development for acquiring skills in ICT application. Similarly, Achieng (2020) noted that considering that through experience and professional development most teachers may be have acquired the appropriate content and pedagogy, but this is not the case of teachers within Ibanda district schools. This implies that teachers experience limited knowledge and skills on the proper use of ICT. Some of the teachers have no clue on the proper ICT tools to be used and how to effectively apply them, which limit them to integrate them into teaching and learning process.

The study noted that slow uptake of ICT among teachers being influenced by inability to operate some of the ICT resources. This concurs with Almasi et al. (2017) arguing that urban schools in Ibanda district are often equipped with modern digital infrastructure, whereas rural and underprivileged schools face significant barriers. This gap in access and uptake to technology can lead to a situation where only a small fraction of learners benefits from digital tools, while the majority remains excluded. Thus, some teachers' belief that they can give quality services

to learners without integrating ICT in their teaching. Such beliefs may lead to negative attitudes and slow uptake of ICT among teachers as ascertained by Badu (2020). This implies that one of the most vital challenges in integrating ICT into teaching and learning process is the issue of slow uptake of ICT among teachers, mostly contributed by digital inequality. Most schools of Ibanda district, there is a marked disparity in access to technology and the internet.

The study noted that lack of adequate practice limit teachers' integration of ICT in teaching and learning. This agrees with Dery & Kwame (2016) who noted that inadequate teachers' practices and involvement in use of technology limit their ability to effectively uses them while teaching. Further, Harris & Hofer (2019) argued that schools may not be able to provide teaching staff with the required training needed to integrate ICT tools into their teaching practices, further exacerbating the issues. This implies that teachers may not have access to computers smartphones or reliable internet connections. With limited ICT equipment, teachers eventually lack adequate practices to effectively use available technology while teaching. Even when technology is available, may teachers may lack the necessary vital skills to use it effectively. This creates an uneven playing field, hindering the goal of universal access to quality education.

The study also noted that lack of ICT infrastructure limit teachers' integration of ICT in teaching and learning. This concurs with Kasozi & Kasule (2020) argued that many schools especially in rural and underdeveloped parts, still lack basic infrastructure, such as projectors, computers and reliable internet access. Even within town or urban areas, some schools may not have enough resources to create

an ICT-rich learning environment. This clearly indicates that ICT infrastructure is a cornerstone of any ICT integration effort. Without the right hardware, software and internet connectivity, it becomes nearly impossible for teachers to implement ICT tools in the classroom.

The study further noted that teachers' attitude influences their ability towards ICT integration in teaching and learning. This agrees with Kiggundu & Hennessy (2019) arguing that resistance to change can stem from a variety of factors, including fear of inadequacy with new tools, lack of training, or general preference for traditional methods. Similarly, Kumar & Sinha (2019) noted that teachers may not always embrace ICT-driven learning, especially when they are used to teaching using conventional modes. Thus, resistance to change because of teachers' attitude undermines their ability towards ICT integration in teaching and learning process. This implies that teachers' attitude is another serious hurdle in the integration of ICT in education. Teachers always tend to be resistant to change. Many teachers, especially those who have been teaching for years without the aid of technology, may be hesitant to adopt new teaching methods that rely on ICT.

The study noted that teachers are completely kaput in application of ICT in schools with limited ICT infrastructure. This concurs with Mbwesa (2023) argument that inadequate power supply, poor network connectivity, and insufficient technical support can further hinder the effective use of ICT in teaching and learning. This clearly implies that the physical infrastructure of many schools may not be condusive to the integration of technology. For example, overcrowded classrooms and poor ventilation can limit the effective use of digital tools.

Similarly, the study noted that teachers lack the ability to handle a wide range of varying computer applications for various academic purposes. This concurs with Mugisha & Fins (2023) arguing that the ability of teachers towards integration of ICT in teaching in Ibanda district being limited by teachers lack the ability in handling a wide range of varying ICT applications for various academic purposes. It has remained a challenge for teachers to integrate ICT tools in teaching and assessment practices as ascertained by Murunga & Higenyi (2023). This clearly implies that lack of capacity among teachers to make effective use of ICT in teaching is another critical challenge in integrating ICT into education. ICT is not merely about having the right tools but about using them effectively to enhance learning and teaching outcomes. This requires ongoing professional development and a commitment to improving digital literacy across all levels of secondary education.

Lastly, the study noted that ICT integration requires a lot of time limiting its integration into teaching and learning sessions. This concurs with Nyaoga & Nyambega (2017) arguing that a teacher and head teacher that despite the adequate availability of ICT resources in some schools the level of ICT integration in teaching and learning was not commensurate. This was due to myriad of reasons that were mainly teacher and the school management related. This implies that the computer laboratory is rarely open and computers and other items are only gathering dust and cobwebs while others are in disrepair. The students' tablets are also rotting in another strong room.

5.1.2 The Influence of Administrative Challenges in the Integration of ICT on Teaching and Learning Outcomes in Ibanda District

The above study theme of assessed the influence of administrative challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District ranges from:

The study noted that there is a strong positive relationship between administrative challenges in the integration of Information and Communication Technology (ICT) and teaching and learning outcomes in Ibanda District. (0.816), which is statistically significant at the 0.01 level (2-tailed), as shown by the p-value of 0.000. This implies that any attempt where teachers experience lack of adequate ICT infrastructure, it greatly hampers integration of ICT in teaching and learning. It is clearly indicated that lack of ICT resources, financial constraints limit the integration of ICT in teaching and learning, and some facilities are old and poorly maintained hampering integration of ICT in teaching and learning. This concurs with Anderson & Dron (2021) arguing that administrative challenges play a significant role in the integration of ICT in schools. These challenges, including insufficient planning, lack of infrastructure, and inadequate policies, can significantly impact the effectiveness of ICT in enhancing teaching and learning outcomes. This section reviews empirical studies various countries on how administrative barriers affect ICT integration in educational settings. Similarly, Sutter & Kihara (2019) posit that most of reforms and initiatives in using ICT in teaching in schools fail as a result of top-down approach that hardly consider teachers' attitude and awareness of ICT as a pedagogical tool.

The study further noted that financial constraints limit the integration of ICT in teaching and learning; and this concurs with Okwakol (2018) who noted that limited financial constraints undermine the ability of teachers to adopt and integrate ICT into teaching and learning. More so, Rahman & Mohiuddin (2020) argued that with limited financial constraints, schools have failed to purchase the vital ICT tools especially installing internet, purchasing computers and regularly maintaining these ICT gadgets. Teachers as well have not been trained and equipped with ICT skills due to limited resources allocated to staff development program, all limiting the integration of ICT into teaching and learning. This clearly implies that lacks enough financial resources to cater for the increasing demand of ICT equipment. The required equipment and tools to enhance teachers' integration of ICT into daily teaching and learning require enough resources to install purchase the computers, internet networks and train teachers on the appropriate use of ICT tools.

The study also noted that lack of adequate ICT infrastructure greatly hampers integration of ICT in teaching and learning. This agrees with Sutter & Kihara (2019) argued that the physical infrastructure of many schools may not be conducive to the integration of technology. Several schools are characterized of overcrowded classrooms which limit the use of digital tools. Similarly, Rahman & Mohiuddin (2020) arguing that schools also experience power surge, insufficient technical support and poor network connectivity which also hinder the integration of ICT in teaching and learning process. The developing of ICT infrastructure in a country is depending on availability of resources. This implies that infrastructure is a cornerstone of any ICT integration effort. Without the right software, hardware and

internet connectivity, it becomes nearly impossible to implement ICT tools in the classroom. Many schools in Ibanda district lack basic ICT infrastructures especially projects, internet and computers which eventually hampers the integration of ICT into learning.

The study also noted that lack of ICT resources limit ICT integration in teaching and learning. This concurs with Nyaoga & Nyambega (2017) noted that limited presence of ICT infrastructures significantly influences integration of ICT. Most schools experience scarcity of software, lack of appropriate and adequate technology and limited computers for all learners in each classroom, and this eventually limit the teachers to adopt and integrate ICT in teaching sessions as ascertained by Nabunya et al. (2021). This implies that schools experience lack of genuine software, inadequate computers in the classroom, lack of motivation from administrators and teachers' side to use ICT, low speed internet, lack of latest ICT equipment which limit ICT integration in teaching and learning.

Similarly, the study noted that there is lack of computer laboratories for teaching and learning. This agrees with Murunga & Higenyi (2023) who argued that schools have poorly maintained computer laboratories. The few available computer labs tend to have limited ICT tools to cater for the increasing number of enrolled students. More so, Mwila (2018) added that some of the available tools are too old and out-dated for effective use. Due to limited ICT equipment and infrastructure, it limits the integration of ICT in teaching and learning. This clearly implies that most schools in Ibanda district lack computer laboratories with well-equipped ICT tools.

The few available school facilities are old and poorly maintained hampering integration of ICT in teaching and learning.

5.1.3 The Influence of Curriculum-Related Challenges in the Integration of Information and Communication Technology (ICT) on Teaching and Learning Outcomes in Ibanda District

The above study theme of investigating the influence of curriculum-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District; and these ranges from:

The study noted that there is a very strong positive correlation ($r = 0.812$, $p < 0.01$) between curriculum-related challenges in the integration of Information and Communication Technology (ICT) and teaching and learning outcomes in Ibanda District. The results suggest that the ICT integration into teaching and learning is highly associated and influenced by lack of technical support, lack of training and capacity building, lack of ICT infrastructure and maintenance, and failure to align curriculum with ICT integration. This concurs with Kiggundu & Hennessy (2019) arguing that curriculum-related challenges play a critical role in the successful integration of ICT in education. These challenges include outdated or rigid curricula, lack of alignment between ICT and educational goals, and insufficient teacher training in ICT-based pedagogical approaches. Furthermore, Kumar & Sinha (2019) noted that teachers were not provided with adequate training on how to integrate ICT into the curriculum, and there was no clear framework for integrating technology into daily teaching practices. This lack of curriculum alignment with

modern ICT teaching methods resulted in poor outcomes when technology was introduced into classrooms.

The study noted that lack of technical support influence ICT integration into teaching and learning; and this concurs with Mugisha & Fins (2023) argued that lack of technical personal to provide technical support to teachers also influence ICT integration into teaching and learning. Besides, Murunga & Higenyi (2023) argued that schools do not have technicians and other skilled individuals to guide and help teaching staff in using ICT tools while teaching and learning process. This implies that schools lack technical support to help teachers in the implementation and integration of ICT into teaching and learning. Technical staff has remained lacking, and few schools have recruited qualified technical workers to manage the computer labs and help teachers during the use of ICT tools. Technological and pedagogical factors have remained factors limiting the teachers to effectively integrate ICT into teaching.

The study noted that lack of training and capacity building limits ICT integration into teaching and learning, and this concurs with Rahman & Mohiuddin (2020) arguing that in the 21st century most relevant or biggest challenge is lack of knowledge to handle ICT equipment. Teacher's lack of knowledge and skills is one of the main hindrances in the use of ICT in education. They simply do not have the knowledge, expertise or organizational capacity needed. This implies that schools lack programs of staff development, which limit teachers' technical skills and competence to effectively integrate ICT into teaching and learning processes. With

limited training, it has remains difficult for teachers to teacher online, mark students' assignments online and gives feedback.

The study also noted that teachers' lacking training, skilling and capacity building limits their ability and competence to effectively integrate ICT in teaching and learning. This concurs with Nyaoga & Nyambega (2017) who argued that the ability and competence of teachers to effectively integrate ICT into teaching and learning cycle been limited their weaknesses, due to lack of skills and ability to handle. Some of the teachers only stop at opening computer windows, and such teachers cannot manage to use ICT for teaching purposes. This clearly implies that a major challenge in the use ICT in 21st century is the lack of knowledge and skills. The teachers do not want to have transition to new methodologies and way of teaching-learning. They will want to stick over the broadcast model of teaching instead of interactive model designed through the use of ICT.

The study noted that lack of ICT infrastructure and maintenance limits its integration into teaching and learning, and this concurs with Makoe & Makoa (2020) who noted that the teaching aids for ICT demands a lot of funds and setting up the infrastructure, maintenance and support of ICT facilities are some of the problems that the Educational Institution are facing. This clearly implies that effective and efficient use of technology depends on availability of hardware, software and having access to resources by teacher and students and administrative staff. In developing countries, technology implementation into education system is a difficult task as it requires a magnum of funds.

Lastly, the study noted that failure to align curriculum with ICT integration limits ICT integration into teaching and learning, and this concurs with Finkelstein et al. (2021) who argued that teachers' lack of knowledge and skills is one of the man hindrances in the use of ICT in education. They simply do not have the knowledge, expertise or organizational capacity needed. Additionally, Anderson & Dron (2021) argued that the ICT facilities are not available in the school. Most of the schools are not in a position to afford the purchase, maintenance and other expenditure involve in its use. This finally implies that the current education curriculum is not aligned with the ICT, therefore the integration of ICT system in teaching and learning has become a challenge. Such rigid curriculum structures limit teachers' ability to integrate ICT into teaching and learning.

CHAPTER SIX

CONCLUSION AND RECOMMEDATIONS

6.0 Introduction

The study established the factors affecting the integration of information and communication technology in teaching and learning of the lower secondary curriculum in Ibanda District. The chapter covers the conclusions and pertinent recommendations basing on the research objectives and results presented in chapter four of this report. The areas of further research were also covered and equally presented.

6.1 Conclusions

The rise of Information and Communication Technology (ICT) has increased the complexity of its adoption and integration into classroom teaching. Successful ICT integration involves more than simply connecting computers to a network; it requires addressing the factors that influence teachers' ability to use technology effectively.

This study investigated the factors influencing the integration of ICT in teaching and learning in Ibanda District, focusing on teacher-related challenges, administrative challenges, and curriculum-related challenges (independent variables) and their effect on teaching and learning outcomes (dependent variable). The conclusions are presented according to the study's research objectives.

Objective One: To determine the influence of teacher-related challenges on teaching and learning outcomes, the study concluded that these challenges significantly impact learning outcomes. There is a strong positive correlation ($r = 0.610$, $n = 70$, $p < 0.01$) between teacher-related challenges (IV) and teaching and learning outcomes (DV). Specifically, teachers' lack of ICT skills and training, attitudinal barriers, time

constraints, and heavy workloads limit their ability to effectively integrate ICT into classroom teaching. These challenges directly affect the quality of instruction and students' learning effectiveness, highlighting that improving teacher competence, motivation, and ICT readiness is critical for enhancing learning outcomes.

Objective Two: To examine the effect of administrative challenges on teaching and learning outcomes, the study concluded that these challenges have a strong positive relationship ($r = 0.816$, $p < 0.01$) with teaching and learning outcomes. Limited ICT infrastructure, financial constraints, poorly maintained facilities, and inadequate institutional support (IVs) significantly hinder teachers' ability to integrate ICT effectively, thereby impacting the dependent variable (DV). The findings emphasize that adequate administrative support and provision of resources are essential for successful ICT integration.

Objective Three: To assess the influence of curriculum-related challenges on teaching and learning outcomes, the study found a very strong positive correlation ($r = 0.812$, $p < 0.01$) between curriculum-related challenges (IV) and teaching and learning outcomes (DV). Misalignment of the curriculum with ICT objectives, insufficient technical support, limited training, and inadequate infrastructure maintenance impede effective ICT integration. These challenges restrict teachers' capacity to utilize ICT in teaching, which in turn negatively affects students' learning outcomes.

In summary, the study demonstrates that teacher-related, administrative, and curriculum-related challenges (IVs) collectively influence teaching and learning

outcomes (DV) in Ibanda District. Addressing these factors is essential to improve the quality of teaching and ensure successful integration of ICT in schools.

6.3 Recommendations

On the basis of the findings obtained from the study, the following recommendations are made:

The study recommends that secondary schools should develop strategies to identify strengths and weakness of various technological resources with a view to adopting ICT in the process of teaching and learning.

Secondary schools should source for partners, well-wishers, stakeholders and sponsors to finance the acquisition of more ICT infrastructure. This will ensure the adequacy of computers in the schools so as to improve their use in the process of teaching and learning.

In order to cultivate teachers' positive attitude towards ICT integration, the government in collaboration with other stakeholders should embark on equipping all public school with ICT infrastructure and capacity building of teachers. In order to encourage teachers to venture more in ICT integration the individual effort could be captured in their periodical appraisal and become a key item in subsequent promotions.

The study recommends that school management can play a very important role in integrating ICT into the system of education. It is worth mentioning that not only ministries should tale how the process of integration should be organized, but also

schools could give feedback on difficulties they are facing integrating ICT into curriculum and suggesting what could be done differently.

Schools should lessen the workload of teachers so as to enable them find time to learn and integrate ICT in the process of teaching and learning. Adoption of ICT in the process of teaching and learning would also go a long way in ensuring that the workload of teachers is lessened.

Secondary schools should adopt policies that guide structured integration of ICT in the process of teaching and learning. One of the policies that can be adopted is adoption of appraisal practices that reward teachers who endeavor to use ICT in the teaching and learning process in addition to outlining ICT competency standards for the teacher trainers.

Lastly, the study recommends that if the school intends to achieve good results in the area of ICT integration, then at least one week a year should be devoted to teacher activities outside the class. During these events teachers should be acquainted with innovations in information and communication technology area, and should be explained in detail how to use these innovations and integrate them into the process of teaching/learning.

6.4 Recommendations for Further Studies

Further comparative research is needed to evaluate the cost-effectiveness of integration of ICT in teaching and learning. Further research can be conducted in other sub counties countrywide. In addition, further in-depth research could be conducted in a specific area in ICT for instance use of the internet. A study should be

carried out to establish how the current curriculum can be reviewed to incorporate an online component and which each teach should accomplish. A similar study should be made national wide by MoES in order to offer appropriate guidance to the government in regard to the level of ICT integration and the various challenges encountered.

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APPENDICES

APPENDIX 1: CONSENT FORM

TOPIC: FACTORS AFFECTING THE INTEGRATION OF INFORMATION AND COMMUNICATION TECHNOLOGY IN TEACHING AND LEARNING OF THE LOWER SECONDARY CURRICULUM: A CASE STUDY OF IBANDA DISTRICT

No.	Name of Investigator	Designation	Address/Telephone/E-mail	Institution of Affiliation
1	Charles Kuwereka	Principal Investigator	kuwereka9gmail.com 0763703930/0767800039	Uganda Christian University

Introduction

My study is aimed at fulfilling the requirements for the award of a Masters in Educational Administration and Planning. This informed consent document basically explains the nature of the study to you the respondent. In case you have any questions, they will be answered after the study has been explained to you. If you decide to participate in the study, you will be asked to sign a consent document, a copy of which you will be given a copy to keep.

The study is sponsored by the researcher (Charles Kuwereka)

Purpose of Study: The study intends to investigate the challenges and opportunities associated with the integration of ICT in the teaching and learning process in Ibanda District.

Study Procedures: Your participation in this study will involve a semi-structured individual interview which will involve experience sharing and your opinions regarding

study problem under investigation. The individual interview will last about 15-20 minutes and will involve audio recording. These transcripts and audio records will be transcribed later for verification purposes and coding. Interviews will be scheduled based on your availability.

Who will Participate in the Study? The study will comprise teachers, ICT coordinators and administrators (head teachers, deputy head teachers and directors of studies) will be interviewed from the ten sampled schools; and only students will be asked to fill a questionnaire.

Voluntary Participation: Your decision to participate in this study is completely voluntary. If you decide to not participate in this study, it will not affect your work in any way.

Confidentiality: For the purposes of this research study, your comments will not be anonymous. Every effort will be made by the researcher to preserve your confidentiality including the following: assigning code names/numbers for participants that will be used on all research notes and documents, and keeping notes, interview transcriptions, and any other identifying participant information in a locked file cabinet in the personal possession of the researcher. Participant data will be kept confidential except in cases where the researcher is legally obligated to report specific incidents. These incidents may include, but not limited to, incidents of abuse and suicide risk.

Risks: This study poses no risks to you personally or your institution except the risk of inconveniencing you for your time during the interview or answering the questionnaire.

Benefits: There will be no direct benefit to you for participating in this study. However, we hope that the information obtained from this study may help schools to devise means of encouraging school stakeholders to adopt better integration of ICT in schools. The school administrators may request a copy of the final report for reference and in agreement with the principal investigator may request for a presentation to aid knowledge sharing sessions with the school management, teachers and other support staff.

Contact Information: If you have questions at any time about this study, or you experience adverse effects as the result of participating in this study, you may contact the researcher whose contact information is provided on the first page. If you have questions regarding your rights as a research participant, or if problems arise which you do not feel you can discuss with the Primary Investigator, please contact the Chairperson Uganda Christian University Research Board on Tel:+256(0)772 405357, Email: pwaiswa@musph.ac.ug and the REC administrator on Tel:+256(0)775737627, Email: oahimbisibwe@ucu.ac.ug

Withdrawal from the Study: Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you decide to take part in this study, you will be asked to sign a consent form. After you sign the consent form, you are still free to withdraw at any time and without giving a reason. Withdrawing from this study will not affect the relationship you have, if any, with the researcher. If you withdraw from the study before data collection is completed, your data will be returned to you or destroyed.

Statement of Consent: I …… grant consent that as a teacher, ICT coordinators and administrators (head teachers, deputy head teachers and directors of studies) selected on account of my knowledge, skills, experience and willingness to communicate my opinions do accept that the information I share during my interaction may be used by Charles Kuwereka for research purposes.

Do you accept to be recorded?

Yes **No**

I voluntarily agree to participate in this research program; to tick appropriately

Yes **No.**

I understand that I will be given a copy of this signed Consent Form. I am aware that my discussions maybe audio recorded and grant consent for these audio recordings, provided that my privacy will be protected. I understand that by signing this form, I do not waive off my legal rights but merely indicate that I have been informed about the research study in which I am voluntarily agreeing to participate.

A copy of this will be provided to me.

Participant's Name: ---------- Signature: ----------

Researcher's Name: Charles Kuwereka Signature: ----------

Date: ----------

Appendix II: Questionnaire for Students

I am Charles Kuwereka, a student of Uganda Christian University pursuing a course leading to the award of Master's Degree in Education Administration and management. I am undertaking a research study in partial fulfilment for the course; therefore, you have been identified as a key person in providing required information regarding the above topic under study. I kindly request you to respond to the questions. I further confirm that your responses will be treated with confidentiality and as such do not write you name in this questionnaire.

SECTION A: BIO DATA

Instructions: Tick the most alternative answer and fill in spaces where necessary

Section A: Demographic Characteristics

1. Gender
   i. Male ☐
   ii. Female ☐
2. Age
   i. Below 17 years ☐
   ii. 18 years and above ☐
3. Highest level of education
   i. 0' level ☐
   ii. A' level ☐
   iii. Others specify ……

SECTION B: The influence of teacher-related challenges in the integration of ICT on teaching and learning outcomes in Ibanda District.

Please read the following statements carefully and select the option that best reflects your opinion on the influence of teacher-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The key for the scale is: SA = Strongly Agree, A = Agree, N = Not Sure, D = Disagree, SD = Strongly Disagree.

Statements measuring teacher-related challenges	**SA**	**A**	**N**	**D**	**SD**
In my school, teachers lack the ability to handle a wide range of varying computer applications for various academic purposes					
In my school, ICT integration requires a lot of time limiting its integration into teaching and learning sessions					
In our school, slow uptake of ICT among teachers being influenced by inability to operate some of the ICT resources					
In my school, lack of ICT skills and training limit the integration of ICT in teaching and learning					
In our school, slow uptake of ICT among teachers being influenced by lack of self-efficacy					
In my school, teachers are completely kaput in application of ICT					
In my school, lack of adequate practice limit teachers integration of ICT in teaching and learning					
In my school, teachers' attitude influence their ability towards ICT integration in teaching and learning					

SECTION C: Influence of administrative challenges in the integration of ICT on teaching and learning outcomes in Ibanda District.

Please read the following statements carefully and select the option that best reflects your opinion on the influence of administrative challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The key for the scale is: SA = Strongly Agree, A = Agree, N = Not Sure, D = Disagree, SD = Strongly Disagree

Statements measuring administrative challenges	**SA**	**A**	**N**	**D**	**SD**
In our school, financial constraints limit the integration of ICT in teaching and learning					
In my school, lack of ICT resources limit ICT integration in teaching and learning					
In our school, lack of adequate ICT infrastructure greatly hampers integration of ICT in teaching and learning					
In my school, lack of equipped ICT infrastructure limits the integration of ICT in teaching and learning					
In our school, there is lack of computer laboratories for teaching and learning					
In my school, some facilities are old and poorly maintained hampering integration of ICT in teaching and learning					
In our school, slow uptake of ICT among teachers is due to poor maintenance					
In my school, school lack policy on ICT integration in teaching and learning					
In our school, slow uptake of ICT among teachers is due lack of well-equipped in ICT infrastructure					
In my school, limited support and financing influence ICT integration in teaching and learning					

Section D: Influence of curriculum-related challenges in the integration of ICT on teaching and learning outcomes in Ibanda District.

Please read the following statements carefully and select the option that best reflects your opinion on the influence of curriculum-related challenges in the integration of Information and Communication Technology (ICT) on teaching and learning outcomes in Ibanda District. The key for the scale is: SA = Strongly Agree, A = Agree, N = Not Sure, D = Disagree, SD = Strongly Disagree.

Statements measuring curriculum-related challenges	**SA**	**A**	**N**	**D**	**SD**
In my school, rigid curriculum structures influence ICT integration into teaching and learning					
In my school, inadequate alignment with ICT goals influence ICT integration into teaching and learning					
In my school, assessment limitations limits ICT integration into teaching and learning					
In my school, lack of technical support influence ICT integration into teaching and learning					
In my school, lack of training and capacity building limits ICT integration into teaching and learning					
In my school, failure to align curriculum with ICT integration limits ICT integration into teaching and learning					
In my school, lack of ICT infrastructure and maintenance limits its integration into teaching and learning					

SECTION E: Teaching and Learning Outcomes

Statements measuring teaching and Learning Outcomes	SA	A	N	D	SD
I am familiar and competent with the teaching methods					
We appropriate apply several assessment strategies					
The curriculum design is appropriately handled					
Several skills and knowledge used while teaching and learning process					
Teachers participate fully in co-curricular activities.					
Teachers usually hit deadlines on all their school assignments.					
I am familiar and competent with the teacher-centered method of instruction.					

1. What are your thoughts on the ways to improve teaching and learning in lower secondary?

2. In your opinion, how best do you want ICT integration to be attained?

3. Write any other information on how you integrate ICT in your teaching?

Thanks for cooperation

APPENDIX III: INDIVIDUAL INTERVIEW GUIDE

(Teachers, ICT coordinators and administrators (head teachers, deputy head teachers and directors of studies),

Guiding Questions

1. In your view, what are the teacher-related challenges in the integration of ICT in the teaching and learning process in your school?

2. In your opinion, how do administrative challenges affect the integration of ICT in the teaching and learning process in your school?

3. In your view, what are the curriculum-related challenges in the integration of ICT in the teaching and learning process in this school?

4. What are your thoughts on the ways to improve teaching and learning in lower secondary?

5. In your opinion, how best do you want ICT integration to be attained?

6. Write any other information on how you integrate ICT in your teaching?

Thanks for cooperation

APPENDIX IV: INTRODUCTORY LETTER

UGANDA CHRISTIAN UNIVERSITY
A Centre of Excellence in the Heart of Africa

Office of the Vice Chancellor
Research Ethics Committee UG-026

15th April, 2025

CHARLES KUWEREKA
Uganda Christian University
+256 767 800039
Email: kuwereka9@gmail.com

UG-REC-026 APPROVAL NOTICE

To: Charles Kuwereka, Principal Investigator

Re: UCU-REC Application titled: *Factors Affecting the Integration Of Information And Communication Technology In Teaching And Learning Of The Lower Secondary Curriculum: A Case Study Of Ibanda District.*

Application Number: **UCUREC-2025-1664-1**

Version: 4.1

UGANDA CHRISTIAN UNIVERSITY APPROVED UNTIL 15 APR 2026 RESEARCH ETHICS COMMITTEE

Type: [ ] **INITIAL REVIEW**
[ ] Protocol Amendment
[ ] Letter of Amendment (LOA)
[ ] Continuing Review
[ ] Material Transfer Agreement
[ ] Other, Specify:

I am pleased to inform you that the UG-REC-026; UCUREC approved the above referenced application.

Approval of the research is for the period from 15th April, 2025, to 15th April, 2026
This research is considered minimal risk category.
As Principal Investigator of the research, you are responsible for fulfilling the following requirements of approval:

1. All co-investigators must be kept informed of the status of the research.
2. Changes, amendments, and additions to the protocol or the consent form must be submitted to the REC for re-review and approval prior to the activation of the changes. The REC application number assigned to the research should be cited in any correspondence.
3. Reports of unanticipated problems involving risks to participants or other must be submitted to the REC. New information that becomes available which could change the risk: benefit ratio must be submitted promptly for REC review.

Research and Ethics
P.O. Box 4, Mukono, Uganda, Plot 67-173, Bishop Tucker Road, Mukono Hill
tel: +256 (0) 312 350 885 Fax: +256 (0) 4142 90 800 Email: research@ucu.ac.ug Web: www.ucu.ac.ug
UCUREC is accredited by Uganda National Council for Science & Technology, FDA, and National Institutes for Health of the United States of America

4. Only approved consent forms are to be used in the enrollment of participants. All consent forms signed by subjects and/or witnesses should be retained on file. The REC may conduct audits of all study records, and consent documentation may be part of such audits.
5. Regulations require review of an approved study not less than once per 12-month period. **Therefore, a continuing review application must be submitted to the REC eight weeks prior to the above expiration date of 15th April, 2026 in order to continue the study beyond the approved period.** Failure to submit a continuing review application in a timely fashion may result in suspension or termination of the study, at which point new participants may not be enrolled and currently enrolled participants must be taken off the study.
6. The REC application number assigned to the research should be cited in any correspondence with the REC of record.
7. Your research details have been shared with the Executive secretary of Uganda National Council for Science and Technology (UNCST) and you are **not** required to get clearance since you are a Master's Degree research. Refer to UNCST Research registration and clearance Policy and guidelines (July 2016) in Uganda section 6(e).

The following is the list of all documents approved in this application by **UG-REC _026:**

	Document Title	Language	Version	Version Date
1.	Protocol	English	1.0	2025-04-12
2.	Data Collection tools	English	1.0	2025-04-12

Signed and Stamped

Prof. Peter Waiswa.
UCUREC Chairperson,
pwaiswa@musph.ac.ug

UGANDA CHRISTIAN UNIVERSITY APPROVED 15 APR 2026 RESEARCH ETHICS COMMITTEE

P.O. Box 4, Mukono, Uganda, Plot 67-173, Bishop Tucker Road, Mukono Hill
Tel: +256 (0) 312 350 885 Fax: +256 (0) 4142 90 800 Email: rec@ucu.ac.ug Web: www.ucu.ac.ug

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SCHOOL OF RESEARCH & POSTGRADUATE STUDIES

DISSERTATION CORRECTION COMPLIANCE REPORT BY THE CANDIDATE (POST VIVA FORM)

Date: 20/08/2025

Name of Candidate: KUWEREKA CHARLES. Reg. No: RM2106/015

Title of Dissertation … INTEGRATION OF INFORMATION COMMUNICATION TECHNOLOGY IN TEACHING OF THE LOWER SECONDARY CURRICULUM: A CASE STUDY OF IBANDA DISTRICT

SN	COMMENTS BY EXTERNAL EXAMINER	ACTION TAKEN	INDICATOR
1	**Overall structure and presentation** Key Questions • Do fonts and font sizes match? • Is line spacing and margins consistent? • Are headings consistent in capitalization and lower case?	The font sizes were revised for the entire document to match. The line spacing was also revised just like the heading. The abstract was revised to include purpose, objectives and findings not exceed 300 words and the grammar were addressed.	Cover page, page xiii and entire page for fonts and grammar

	• Does the cover page and introductory matter conform to style? • Does the abstract contain a purpose, objectives, method and findings that are aligned with the rest of the paper (not exceeding 300 words)? • Is grammar, punctuation and word choice accurate?		
2	**Chapter One: Introduction** Key Questions • Does the background section go sufficiently from broad to narrow on the topic? • Does the background section make a case for the problem statement? • Are concepts defined? • Does the problem statement clearly state the problem and the awareness of the gap in scholarly knowledge that the research is intended to fill? • Is the purpose clearly stated with objectives that support the purpose and that go beyond "study" to higher-level research (analysis, etc.)?	All comments and concerns raised by the external supervisor on Chapter One were addressed through a comprehensive revision of the chapter. The background was reorganized to flow from broad to narrow, clearly linking global, regional, and local ICT contexts to the study problem. Key concepts were defined, the problem statement was clarified with explicit research gaps, and the purpose, objectives, and research questions were aligned. The distinction between justification and significance was made clear, and the scope of the study was specified. The theoretical and conceptual frameworks were developed and illustrated. Language, grammar, and academic style were polished, and all content was verified for relevance and originality. A chapter synopsis was added to enhance readability and coherence.	Pages 1-20

	• Is the purpose aligned to the research problem, question and/or hypothesis? • Is there a primary research question with aligned questions supporting it? • Is there clarity of difference between justification and significance? • Does content reflect quality organization and flow? • Is grammar, punctuation and word choice accurate? • Is all content related to the topic? • Is this section devoid of plagiarism? • Is the scope clearly defined? • Is conceptual or theoretical framework given? • Is there a chapter synopsis?		
3	**Chapter Two: Literature Review** **Key Questions** • Is there a minimum of 30 quality references?	All reviewer comments on Chapter Two were addressed by thoroughly revising the literature review. The chapter now incorporates over 30 high-quality references, with original sources cited directly rather than through secondary sources. A balanced mix of empirical studies, theoretical works, and data-driven sources was included, aligned to the study objectives,	Pages 21-40

	• Is there evidence of quoting original sources vs. sources within prior research? • Is there a balance of source types (i.e. data and prior research)? • Is there a balance of sources (i.e. evidence that more than one source drives this section)? • Is the student engaging with the literature and analyzing it, rather than showing what he/she has read? • Do the sources align with the topic, purpose, research questions and objectives? • Are there references missing that should be included to better support the objectives and purpose? • Are there transitions within paragraphs and from paragraph to paragraph to facilitate readability and coherence? • Is all content related to the topic? • Is there appropriate grammar, punctuation and word choice? • Is attribution style followed for style and plagiarism avoidance?	purpose, and research questions. Transitions between paragraphs were improved to ensure readability and logical flow, and all content was scrutinized for relevance, grammar, punctuation, and appropriate academic style. Key authorities in ICT integration and education were cited, up-to-date sources were included, and the literature gaps were clearly articulated, highlighting the need for the current study in the context of Ibanda District.	

	• Is the literature up to date? (Depends on different faculties and the research being done) • Are the key authorities included in the references? • Is the research gap clear and articulate? • Is the flow of information logical? • Does the review of literature indicate the gap(s) to show the contribution of study?		
4	**Chapter Three: Methodology** **Key Questions** • Does the paper reflect methodology aligned with the research? • Is the methodology appropriate? • Was the chosen methodology adequate for the research task? • Has the student used appropriate methods (i.e. aligned with the methodology chosen)? • Is study design and rationale appropriate?	In response to the reviewer's comments, the methodology chapter was revised to clarify the research design, rationale, and alignment with the study objectives. The target population, sample size, and sampling procedures were detailed to ensure representativeness. Data collection methods and instruments, including questionnaires and interviews, were fully described, with pre-testing confirming validity (CVI > 0.78) and reliability (Cronbach's alpha > 0.70). The data analysis process for both quantitative and qualitative data was clearly outlined. Ethical considerations, including informed consent and confidentiality, were emphasized. Grammar, punctuation, and overall consistency were also reviewed and corrected.	Pages 41-56

	• Is the cohort chosen adequately representative of a sample? • Is the target population appropriate? • Is sample size determination described? • Is the sampling procedures described? • Is the inclusion and exclusion criteria clearly stated? • Are the ethical considerations during data collection considered? • Is the reliability and validity of the research tools guaranteed? • Is the data analysis process clearly described? • Is there consistency in the methodology described? • Are grammar and punctuation accurate?		
5	**Chapter Four: Presentation and Analysis of Data** **Key Questions** • Has the data been presented in a systematic and orderly fashion that enhances the analysis?	In response to the reviewer's comments, Chapter Four was revised to present data systematically and coherently, ensuring clarity and alignment with the study methods. Data from all categories of respondents, including students, teachers, administrators, and ICT coordinators, were organized to reflect the	Pages 57-86

	• Is the text coherent and devoid of grammar, spelling and punctuation errors? • Does the chapter reflect the methods used? • Are results consistent with the study objectives? • Results from different categories of participants/respondents presented?	research objectives. Both quantitative and qualitative findings were analyzed in line with the methodology, and results were illustrated with appropriate tables, charts, and participant quotes. Grammar, spelling, and punctuation were carefully reviewed and corrected to improve readability and consistency.	
	Chapter Five: Discussion of Results **Key Questions** • Have the results been discussed in relation to body of knowledge, controversies, and discoveries? • Has the research done what it was designed to do? • Does the discussion acknowledge limitations? • Has the researcher referred back or linked to other findings? • Are they properly interpreted and integrated into the final research statement? • Are variables appropriately presented?	In response to the reviewer's comments, Chapter Five was revised to ensure that the discussion of results is coherent, systematic, and closely aligned with the study objectives. Each theme, including teacher-related, administrative, and curriculum-related challenges in ICT integration, was discussed in relation to both empirical literature and theoretical frameworks, demonstrating how the findings align with or diverge from existing knowledge. The discussion explicitly highlighted correlations, patterns, and causal relationships observed in Chapter Four, while acknowledging the limitations of the study. Key variables were clearly presented, and participant perspectives were integrated to provide depth and context. Relevant references were used to support interpretations, and links were made across different findings to enhance coherence. The chapter also identified obstacles and gaps in ICT	Pages 87-99

	• Does the research point out obstacles and gaps? • Is the text coherent and devoid of grammar, spelling and punctuation errors?	integration, ensuring the results contribute meaningfully to the final research conclusions. Grammar, punctuation, and spelling were carefully reviewed to improve readability and professional presentation.	
	Chapter Six: Conclusions (and Recommendations) Key Questions • Does the conclusion fit with what the researcher set out to do? • Has the research question been sufficiently addressed? • Have objectives been achieved? • If used, is the hypothesis/es confirmed? • Are the recommendations relevant? • Do the recommendations have potential of impact? • Is the conclusion delivered from the work done? • Are there any limitations? • Are there recommendations for future the recommendations emerging from the findings?	In Chapter Six, the conclusions and recommendations have been aligned with the study objectives and research questions. The conclusions synthesize findings from teacher-related, administrative, and curriculum-related challenges in ICT integration, demonstrating that the study objectives have been achieved and hypotheses addressed. Recommendations are practical, actionable, and directly emerge from the findings, including strategies for teacher capacity building, ICT infrastructure improvement, policy adoption, workload management, and curriculum alignment. Further studies are proposed to explore cost-effectiveness, nationwide comparisons, and curriculum review for ICT integration. The text has been carefully edited to ensure coherence, clarity, and correctness in grammar, spelling, and punctuation. Limitations have also been acknowledged, ensuring the conclusions and recommendations are evidence-based and relevant for policy and practice.	Pages 102-104

	• ▫ Is the text coherent and devoid of grammar, spelling and punctuation errors?		
	References and Appendices Key Questions Do references reflect adequate reading on the subject of research? Are references in alphabetical order? Is the proper style (APA, MLA, Harvard, Chicago, etc.) followed? Do the appendices contain proper attribution and support the dissertation content? Is there appendix content missing that would make this stronger? Is the majority of literature 10 years and below? Are the sources, categorized under journals, books, websites, etc. Are all references cited in the text? Are the research tools included in details as appendices?	The references section demonstrates extensive engagement with the subject of ICT integration in education, drawing from journals, books, theses, conference papers, and official reports. They are generally listed in alphabetical order, reflecting a mix of both older foundational works (e.g., Spiro & Jehng, 1992; Alessi & Trollip, 2001) and recent studies within the last ten years, ensuring relevance and currency. Most references are properly formatted in APA style, although a few minor inconsistencies (e.g., repeated entries or volume/issue discrepancies) have been corrected. The literature is diverse, covering teacher-related, administrative, and curriculum-related challenges in ICT integration across multiple contexts and countries, showing adequate reading. Appendices are included with proper attribution, and research tools are detailed to support the dissertation content. Cross-references in the text to cited sources have been verified to ensure all references are used.	Pages 105-111

SN	COMMENTS BY VIVA VOCE PANNEL	ACTION TAKEN	INDICATOR
6	Advised to adjust the title "Factors affecting the Integration of information communication technology in teaching of the lower secondary curriculum: a case study of Ibanda district"	The topic was changed to 'Integration of information communication technology in teaching of the lower secondary curriculum' : a case study of Ibanda district	Cover page
7	There was a missing link between objective one and the conclusion	The missing link between the objective one and conclusion was addressed by stating objective one, key findings in the conclusion section	Page 100
8	Need to adjust methodology- purposive sampling was not clear	The methodology section was revised particularly, purposive sampling technique was re written to address this comment	Page 45
9	Advised to include both the IV &DV in the conclusions	The student included both the IV and DV in the conclusion as advised	Page 100-102
10	Advised to include population and have a table that indicates the breakdown of the category of respondents	The table was revised and study population indicated as advised	Page 44
11			
12			

KUWEREKA CHARLES **MR. LUGEMWA PATRICK**

Candidate's Name Signature Supervisor's Name Signature