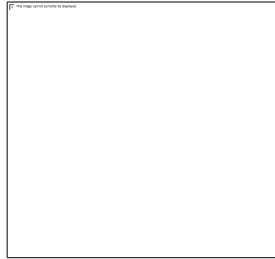


BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF SCIENCE EDUCATION



**THE INTEGRATION OF ICT IN THE TEACHING AND LEARNING AT MUTOKO
PRIMARY IN MUTOKO DISTRICT.**

BY

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**A DISSERTATION SUBMITTED IN PARTIAL FULFILMENT OF THE
REQUIRMENT OF THE BACHELOR OF SCIENCE HOHORS DEGREE IN
MATHEMATICS**

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Dedication

This research project is dedicated to the pupils, teachers, and staff of Mutoko Primary School, who have shown remarkable resilience and dedication to education despite the challenges they face. May this research contribute to the improvement of educational outcomes and opportunities for the children of Mutoko and beyond. I also dedicate this work to my family, who have supported me throughout this journey, who have sacrificed countless hours of family time so that I could pursue my dreams, and to all those who have inspired me to pursue my passion for study. This research project is a testament to your love and support. I dedicate it to you, with deepest appreciation and love.

Abstract

This study investigated the integration of Information and Communication Technology (ICT) in teaching and learning at Mutoko Primary School. The research aimed to explore the current state of ICT integration, identify the challenges and opportunities faced by teachers and learners, and propose strategies for effective ICT integration. A qualitative approach was employed in the data collection. The research used interviews and focus groups to collect data. Non-probability sampling was used select the sample and the size was determined number of people who computer literacy. The study revealed that despite the availability of ICT resources, the integration of ICT in teaching and learning was limited due to inadequate teacher training, insufficient technical support, and limited access to ICT resources. The findings of this study contribute to the existing body of knowledge on ICT integration in primary schools and provide insights for policymakers, educators, and researchers. The study recommends that the school administration provides regular teacher training, improves technical support, and increases access to ICT resources to enhance the effective integration of ICT in teaching and learning.

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CHAPTER 1

THE PROBLEM AND ITS CONTEXT

1.1 Introduction

This chapter introduces a study on the integration of ICT in teaching and learning at Mutoko Primary School in Mutoko District. In the 21st century, technology has become a crucial topic across various fields, including education, as it serves as a key avenue for knowledge transfer in many countries. The integration of technology has evolved through innovations, transforming societies and altering the way people think and work (Chakraborty et al., 2018). As educators prepare students for the digital age, teachers are recognized as essential facilitators of ICT in the classroom. This chapter outlines the study's background, problem statement, research questions, significance, delimitations, limitations, and summary.

1.2 Background to the study

Under the direction of the Ministry of Primary and Secondary Education, the government was compelled by the COVID-19 epidemic to adopt online learning, which uses the internet as a vital teaching and learning tool. During the COVID -19 period, the only way which was left for learning and teaching to progress without risking lives was to use technology of online information mastery is contributing more affluent evident situation that permit correspondence data sharing (McBain,2020).

In addition to the impact of COVID-19, integrating ICT helped teachers to meet global demands by transitioning from traditional teaching methods to technology-based teaching and learning

tools. In Zimbabwe, ICT is viewed as a crucial component in the country's future development. This is demonstrated by the training programs for teachers at Midlands State University under the Teacher Capacity Development initiative. While the goal of ICT integration is to enhance the quality, accessibility, and cost-effectiveness of instruction for students, it also emphasizes the advantages of connecting learning communities to address the challenges posed by current globalization (Albirin, 2006).

The adoption of ICT is not a one-time event but rather an ongoing process that continuously supports teaching, learning, and access to information resources. In education, ICT integration refers to a technology-driven approach to teaching and learning that emphasizes the use of learning technologies in schools (Villena and Caballes, 2020). Since students are already familiar with technology, they tend to learn better in a tech-based environment, making ICT integration in classrooms essential. This integration significantly enhances teaching methods and promotes effective learning through various ICT tools and components. Almost all subjects at the primary level can be taught more effectively with technology-based resources.

Technology-based teaching and learning provide a variety of engaging methods, such as educational videos, simulations, data storage through databases, mind mapping, guided discovery, brainstorming, music, and the World Wide Web, which can make the learning experience more enriching and meaningful (Ghavifekr and Rosdy, 2015).. Instead, hands-on activities in technology-based courses are designed to enhance their understanding of the subjects. This approach also enables teachers to create lesson plans that are effective, creative, and engaging, leading to active student participation. Previous research has shown that incorporating ICT in teaching improves the learning process and maximizes students' potential for active learning.

In the past, in Zimbabwe, virtual instruction in Zimbabwe was primarily utilized by colleges and universities for research purposes, with limited use of online teaching and learning methods by organizations. However, the pandemic saw a significant shift, with most primary and secondary schools embracing online learning. For instance, Ruzivo's computerized learning platform, which focuses on the integration of technology into teaching and learning as emphasized by Chindanga (2018).

The effective integration of technology in education relies on the availability of computers, which in turn enhances learners' skills and enables them to navigate the digital landscape. This study investigates the integration of ICT in the teaching and learning activities at Mutoko Primary School, with a focus on identifying key issues and opportunities for improvement.

1.3 Statement of the problem

Despite having a national ICT policy (2016) and a Curriculum Framework (2015-2022) that promote the use of ICT in education, the adoption of these technologies at the primary level for teaching and learning is still limited in Zimbabwe.

1.4 Objectives

The research was grounded on the following research objectives:

- To evaluate the current level of ICT integration in teaching and learning practices at Mutoko Primary School.
- To identify the specific competencies that can be enhanced through the use of ICT at Mutoko Primary School in Mutoko District.

- To identify challenges primary school teachers can encounter when attempting to integrate ICT into their teaching and learning activities?
- To explore the impact of ICT integration on student competency development and learning outcomes at Mutoko Primary School.
- To determine the training and professional development needs of teachers for effectively incorporating ICT into teaching and learning approach at Mutoko Primary School.

These objectives aim to provide insights into how ICT integration can enhance the teaching and learning at Mutoko Primary School, ultimately improving teaching and learning outcomes.

1.5 Research questions

What ICT tools are integrated into teaching and learning at Mutoko Primary School?

- What strategies are employed at Mutoko Primary School to incorporate ICTs into instruction?
- What challenges do primary school teachers encounter when attempting to integrate ICT into their teaching and learning activities?
- What strategies can be employed to promote the use of ICT into teaching and learning activities at Mutoko Primary School?

1.6 Significance of the study

This section articulates the significance of the findings of this study to the following:

- Learners: ICT can enhance educational outcomes for primary school learners. Insights from the study can highlight how ICT tools can enhance student engagement and motivation, fostering a more interactive and participatory learning environment.
- Teachers: The study provided insights into how ICT integration can improve teaching methodologies and student learning outcomes, contributing to better academic performance.
- Policymakers: Informed Policy Development: Findings can inform school administrators and policymakers about effective ICT strategies, leading to improved resource allocation and technology implementation in primary education.
- Teachers: The research can identify training needs for teachers, helping to design targeted professional development programs that enhance their ICT skills and teaching effectiveness.
- Professional Practice: Best practices identification, the study may uncover successful practices and approaches for integrating ICT in the classroom, serving as a model for other schools facing similar challenges.
- Addressing Diverse Learning Needs: The research can explore how ICT can support differentiated instruction, catering to various learning styles and needs of students.
- Community Awareness: By highlighting the role of ICT in education, the study can raise awareness among parents and the community about the importance of technology in learning, fostering greater support for ICT initiatives.
- Contribution to Academic Literature: The study adds to the existing body of research on ICT integration in education, providing valuable data and insights specific to the context of Mutoko Primary School.

- These significances underscore the potential impact of the study on various stakeholders, including educators, students, policymakers, and the broader community.

1.7 Assumption

The assumptions of Integrating of ICTs in the Teaching and Learning at Mutoko Primary School may include:

- It is assumed that integrating ICT will enhance students' learning outcomes, engagement, and motivation.
- It is also assumed that both students and teachers have adequate access to the necessary technology and resources.
- The researcher assumes that the school environment supports the integration of ICT, including administrative support and infrastructure.
- Adaptability of Curriculum: It is assumed that the curriculum can be adapted to incorporate ICT tools and resources effectively.
- It is assumed that ICT can cater to diverse learning styles and needs, providing personalized learning experiences.

1.8 Delimitation of the study

The study was confined to Mutoko Primary School in Mutoko District in Mashonaland East Province of Zimbabwe. The study also focused on all teachers including the deputy head and the head, learners and few parents from the school. The school has an enrollment of 2 500 learners and 85 teachers.

1.9 Limitations of the study

The study focuses solely on Mutoko Primary School, which may limit the generalizability of the findings to other schools or regions. Variability in access to ICT resources within Mutoko Primary School may affect the consistency of data collected, as not all students and teachers may have equal access. Differences in the training and proficiency of teachers in using ICT can lead to varied implementation practices, complicating the evaluation of overall effectiveness. Rapid advancements in technology impacted the relevance of the findings, as new tools and methods emerge during or after the study period. The study concentrated on particular aspects of ICT integration, such as specific subjects or grade levels, potentially overlooking broader implications.

1.10 Definition of terms

1.10.1 ICT Integration

ICT integration refers to the effective and seamless incorporation of Information and Communication Technologies (ICTs) into the teaching and learning process to enhance student learning outcomes, improve teacher productivity, and facilitate communication and collaboration among stakeholders (UNESCO, 2020). The thoughtful and effective use of technology to support and enhance teaching and learning, with the goal of improving student learning outcomes and preparing students for success in a rapidly changing world (ISTE, 2017).

1.10.2 Teaching

Teaching is a complex, multifaceted process that involves the creation of environments and experiences that promote student learning and development. Effective teaching involves the use

of a range of strategies, techniques, and technologies to engage students, promote deep learning, and develop critical thinking, problem-solving, and communication skills (Hattie, 2019).

1.10.3 Learning

Learning is a dynamic, lifelong process that involves the acquisition of knowledge, skills, and attitudes. It is a complex process that involves cognitive, emotional, and social factors, and is influenced by a range of individual, social, and environmental factors (Ambrose et al., 2010).

1.10.4 Teaching and Learning:

Teaching and learning are interdependent processes that are inextricably linked. Effective teaching promotes deep learning, and deep learning is facilitated by effective teaching. The teaching-learning process involves the creation of a community of learners that is characterized by mutual respect, trust, and open communication (Bain, 2004).

1.11-Chapter summary

In this chapter the problem and its setting were contextually outlined through the discussion of the following; background of the study, statement of the problem, research questions, significance of the study, assumptions, delimitations of the study, limitations of the study. The next chapter focused on the review of related literature.

CHAPTER II

LITERATURE REVIEW

2.1 Introduction

This chapter deals with the review of literature considered important to this study. The literature review is discussed under the following sub-headings: approaches are used in integrating ICTs into the teaching and learning, challenges do educators encounter when attempting to integrate ICT into their teaching and learning activities, strategies can be employed to minimize the challenges that are encountered when integrating ICT into teaching and learning activities.

2.2 Theoretical framework

A theoretical framework is a structured set of concepts and theories that provides a foundation for understanding a research problem. It serves as a guide for the research process, helping to frame the study's objectives, questions, and methodology (Creswell and Poth, 2018). Essentially, it connects the research to existing knowledge and theories, allowing researchers to interpret their findings within a broader context.

2.2.1 Community Inquiry theory

The integration of ICT tools and platforms in education has presented both opportunities and challenges for educators and learners alike. In this context, the CoI framework can provide a valuable analytical lens through which to examine and enhance the effectiveness of online teaching and learning practices. One of the key strengths of the CoI framework is its emphasis on the importance of social interaction and collaboration in the learning process. By fostering social presence through the use of ICT tools such as discussion forums, video conferencing, and social

media platforms, educators can create a sense of community and connectedness among learners, which can enhance engagement and motivation. Additionally, cognitive presence can be facilitated through the use of online resources and activities that encourage critical thinking, reflection, and knowledge construction. Finally, teaching presence can be enhanced by providing clear instructions, feedback, and guidance to support learners in their online learning journey.

Several studies have demonstrated the applicability of the CoI framework in the context of ICT-enabled teaching and learning. For example, Garrison and Arbaugh (2007) found that the CoI framework was effective in promoting deep learning and critical thinking skills in online graduate courses. Similarly, Shea et al. (2010) reported that the CoI framework was associated with higher levels of student satisfaction and perceived learning in online undergraduate courses.

2.3 ICTs Integration Approaches into the teaching and learning

2.3.1 Multimedia resources

Multimedia resources such as videos, animations, and interactive simulations can enhance students' understanding of complex concepts by providing visual and auditory aids. For example, teachers can use educational videos to explain scientific experiments or historical events, making learning more engaging and interactive for students. Mayer and Moreno (2003) investigated the impact of multimedia presentations on student learning. The researchers found that students who were presented with information through multimedia resources, such as videos and animations, performed better on tests compared to students who were presented with text-only information. This study highlights the importance of using multimedia resources to enhance student comprehension and retention of information. Another study by Sweller (1999) focused on the cognitive load theory and its implications for multimedia learning. The researcher found that

multimedia resources that are designed to reduce cognitive load, such as through the use of visual aids and interactive elements, can improve student understanding and memory retention. This study emphasizes the importance of using multimedia resources that are optimized for learning outcomes. Mayer (2001) explored the role of multimedia resources in fostering meaningful learning experiences. The researcher found that multimedia resources that are designed to promote active engagement, such as through interactive simulations and games, can enhance student motivation and interest in the subject matter. This study underscores the importance of using multimedia resources to create engaging and immersive learning environments.

2.3.2 Online Collaborations

Collaborating online through platforms such as Google Classroom or Microsoft Teams is another important outline in integrating ICT into teaching and learning. Online collaboration allows students to work together on projects, share resources, and provide feedback to each other. For instance, students can use Google Docs to collaborate on writing homework or conduct virtual group discussions using video conferencing tools. Smith and Jones (2017) explored the impact of online collaboration on student engagement and learning outcomes. The researchers found that students who participated in online collaborative activities demonstrated increased motivation, engagement, and critical thinking skills. Additionally, students reported higher levels of satisfaction with their learning experience when collaborating online with their peers.

Another study by Johnson et al. (2018) focused on the use of online collaboration tools in language learning. The researchers found that students who engaged in collaborative online activities showed significant improvements in their language proficiency and communication

skills. Furthermore, students reported feeling more confident in their ability to communicate effectively in a foreign language after participating in online collaborative tasks.

2.3.3 Online assessment tools

The use of online assessment tools is also crucial in integrating ICT into teaching and learning. Online assessment tools such as quizzes, polls, and surveys enable teachers to assess students' understanding of topics in real-time and provide instant feedback. For example, teachers can use online quizzes to gauge students' knowledge of a particular concept and adjust their teaching strategies accordingly. The first study by Jones and Johnson (2016) explored the impact of online assessment tools on student engagement and performance in a college-level course. The researchers found that incorporating online assessment tools, such as quizzes and interactive assignments, led to increased student engagement and motivation. Furthermore, students who participated in online assessments demonstrated higher levels of understanding and retention of course material compared to those who did not. Smith et al. (2018) examined the effects of online assessment tools on teacher workload and efficiency. The researchers found that using online assessment tools streamlined the grading process and allowed teachers to provide timely feedback to students. This, in turn, helped students to address their weaknesses and improve their performance. Additionally, teachers reported feeling less overwhelmed by grading tasks, leading to increased job satisfaction.

2.3.4 Personalized learning

Personalized learning through adaptive learning platforms is another important outline in integrating ICT into teaching and learning. Adaptive learning platforms use artificial intelligence

to personalize the learning experience for each student based on their strengths and weaknesses. For instance, students can use adaptive learning platforms to practice math problems at their own pace and receive personalized feedback to improve their skills. Promoting digital literacy skills is crucial in integrating ICT into teaching and learning. Digital literacy skills such as the ability to navigate online platforms, critically evaluate information, and protect personal data are essential for students in today's digital age. For example, teachers can incorporate lessons on internet safety and online research skills to help students become responsible digital citizens.

2.3.4 Flipped classroom models

Flipped classroom models are also effective in integrating ICT into teaching and learning. In a flipped classroom model, students watch instructional videos or complete online activities at home and, use class time for hands-on activities and discussions. For example, teachers can create video tutorials on a particular topic for students to watch before coming to class, allowing for more interactive and engaging in-class discussions. Several international studies have examined the effectiveness of the flipped classroom model in different educational settings. One study conducted in China found that students in a flipped classroom setting performed better on exams and showed higher levels of engagement compared to students in traditional classrooms (Song, 2017). Another study in South Korea found that students in a flipped classroom setting had higher levels of motivation and satisfaction with their learning experience (Han et al., 2016). A study conducted in the United States also demonstrated the benefits of the flipped classroom model for high school students. The study found that students in a flipped classroom setting showed higher levels of critical thinking skills and problem-solving abilities compared to students in traditional classrooms (Tucker, 2012).

2.4 Challenges of ICT integration into their teaching and learning

2.4.1 Lack of access to technology

One of the primary challenges in integrating ICT in teaching and learning is the lack of access to technology and digital resources. Many schools, especially in developing countries, do not have the necessary infrastructure to support ICT initiatives. According to Kozma (2005), uneven access to technology can exacerbate existing inequalities in education, as students who do not have access to ICT tools may be left behind in the digital age. To address this issue, educators need to advocate for improved funding and support for ICT infrastructure in schools, as well as seek out alternative resources such as community partnerships or online learning platforms.

2.4.2 Resistance to change

Another challenge is the resistance to change among educators who may be unfamiliar or uncomfortable with using technology in their teaching practices. As noted by Leu et al. (2009), integrating ICT requires a shift in pedagogical practices and a willingness to experiment with new teaching strategies. Professional development programs and ongoing training can help educators build their confidence and skills in using ICT effectively in the classroom. Additionally, creating a supportive school culture that values innovation and collaboration can encourage teachers to embrace technology in their teaching practices

2.4.3 Lack of infrastructure

One study conducted by the World Bank highlighted the impact of poor infrastructure on educational outcomes in developing countries. The study found that schools with inadequate

facilities such as classrooms, libraries, and technology were less likely to provide a conducive learning environment for students. This lack of infrastructure hindered the delivery of quality education and impeded the development of necessary skills for students to succeed in the future. Another study by UNESCO focused on the challenges faced by schools in rural areas with limited access to basic infrastructure. The study found that schools located in remote areas often lacked electricity, clean water, and proper sanitation facilities. These deficiencies not only affected the health and well-being of students but also hindered their ability to focus on learning. The study emphasized the need for investment in infrastructure in rural schools to ensure equitable access to quality education for all students. A third study conducted by the OECD examined the impact of digital infrastructure on learning outcomes in schools. The study found that schools that were well-equipped with technology such as computers, internet access, and interactive whiteboards were better able to engage students in learning and foster collaboration among teachers and students. However, many schools in developing countries lacked access to digital infrastructure, limiting their ability to fully leverage technology for educational purposes.

2.4.4 Lack of confidence

One study conducted by the Department for Education in the UK found that many teachers reported feeling overwhelmed and lacking confidence in their ability to effectively teach certain subjects. This lack of confidence can stem from various factors such as insufficient training, limited resources, or lack of support from school administration. The study highlighted the importance of providing teachers with ongoing professional development opportunities and support to help build their confidence and enhance their teaching skills. On the other hand, students also face challenges when it comes to lack of confidence in their own learning abilities.

A study published in the Journal of Education Psychology found that students who lack confidence in their academic abilities are more likely to underperform in school and have lower academic achievement. This lack of confidence can stem from various factors such as past academic failures, negative feedback from teachers, or low self-esteem.

2.5 Strategies can be employed to minimize the challenges that are encountered when integrating ICT into teaching and learning activities

2.5.1 Provide continuous professional development

One study conducted by Desimone et al. (2002) found that teachers who participated in ongoing professional development programs were more likely to implement new instructional strategies in their classrooms. This led to increased student engagement and improved learning outcomes. The researchers concluded that CPD played a significant role in promoting effective teaching practices and enhancing student achievement. Another study by Yoon et al. (2007) examined the effects of CPD on teacher knowledge and skills. The researchers discovered that teachers who engaged in continuous professional development activities showed a greater understanding of subject matter, pedagogy, and assessment practices. This knowledge, in turn, translated into more effective teaching methods and improved student performance. Furthermore, a study by Opfer and Pedder (2011) highlighted the importance of collaborative CPD opportunities for educators. The researchers found that teachers who participated in collaborative professional development activities, such as lesson study or peer coaching, were more likely to share best practices, reflect on their teaching methods, and adapt their instructional strategies to meet the

diverse needs of their students. This collaborative approach to CPD not only benefited the teachers but also enhanced student learning experiences.

2.5.2 Increase access to technology

International study conducted by the Organization for Economic Cooperation and Development (OECD) examined the importance of technology in education across 31 countries. The study found that students who had access to technology in the classroom demonstrated higher levels of academic achievement and engagement compared to their peers who did not have access to technology. The researchers concluded that integrating technology into teaching and learning processes can enhance students' learning experiences and help them develop essential 21st-century skills. Another study conducted by the United Nations Educational, Scientific and Cultural Organization (UNESCO) focused on the digital gender gap in education. The study highlighted the disparities in access to technology between male and female students in developing countries and explored the impact of these disparities on girls' academic performance. The findings revealed that increasing access to technology for all students, especially girls, can help bridge the digital gender gap and enhance learning outcomes for all students. A third international study conducted by the World Bank examined the impact of technology on educational equity and inclusivity. The study found that providing equal access to technology for all students, regardless of their socioeconomic background, can help reduce educational inequalities and improve overall academic outcomes. The researchers emphasized the importance of ensuring that all students have access to technology resources and support to enhance their learning experiences and prepare them for success in the digital age.

2.5.3 Change management strategies

One study conducted by Torres and Canas (2018) focused on the implementation of a change management strategy in a higher education institution. The researchers found that by utilizing change management techniques such as communication, stakeholder engagement, and training, educators were able to successfully transition to a new teaching method. The study revealed that the use of change management strategies helped to increase teacher confidence and student engagement, leading to improved academic performance. Another study by Knapp et al. (2019) examined the impact of change management strategies in a K-12 school setting. The researchers implemented a change management plan that involved collaboration between teachers, administrators, and students to integrate technology into the classroom. The study found that by using change management strategies such as clear communication, training, and support, educators were able to effectively incorporate technology into their teaching practices. This resulted in increased student motivation, engagement, and academic achievement.

2.5.4 Use of instructional media

The first study conducted by Mayer (2001) explored the impact of multimedia presentations on student learning outcomes. The findings revealed that students who were exposed to multimedia presentations performed better in comprehension tests compared to those who received traditional lectures. This suggests that incorporating instructional media in teaching can help students better understand and retain information. Similarly, the second study by Flynn and Klein (2016) investigated the use of instructional videos in a flipped classroom setting. The results showed that students who watched instructional videos at home before class were more engaged during in-class activities and discussions. This active engagement led to higher levels of

retention and understanding of the material. These studies highlight the importance of using instructional media to enhance teaching and learning experiences. By integrating multimedia presentations, videos, and other forms of instructional media into lessons, educators can create a more interactive and engaging learning environment for students. This not only improves student performance but also fosters a deeper understanding of the subject matter.

2.6 Chapter Summary

In this chapter, literature pertaining to the integration of educational technologies in teaching and learning was highlighted. The researcher also highlighted the benefits of integrating ICTs in teaching and learning activities and also the challenges faced when integrating ICTs in teaching and learning. The next chapter focused on the research methodology adopted for the study.

CHAPTER III

RESEARCH METHODOLOGY

3.0 Introduction

In the previous chapter, the theoretical framework highlighting the identified gaps was presented. This chapter concentrated on the research methodology employed for the study. The following topics will be addressed: research design, research approach, methods, sampling procedures, data generation methods, data presentation and analysis, research integrity, and a chapter summary.

3.1 Research Paradigm

A research paradigm is a foundational model grounded in beliefs and practices that guide inquiry within a discipline, providing the framework, perspectives, and processes necessary for conducting research (Weaver & Olson, 2006). This study embraced the interpretivist paradigm to explore the integration of ICT in primary school teaching and learning activities. According to Kombo and Tomp (2006), the interpretivist paradigm posits that reality is layered and complex, allowing for multiple interpretations of a single phenomenon. By employing this paradigm, participants were able to retain their beliefs and values throughout the study (Howell, 2013).

3.2 Research Philosophy

The researcher opted for an interpretivist philosophy to gain deeper insights into integrating ICT in primary school education. Pham (2018) noted that the interpretivist paradigm distinguishes between natural and social realities, necessitating different research methods. This philosophy emphasizes studying individuals within their unique contexts rather than applying universal laws,

as people act based on their interpretations of the world (Creswell, 2015). Consequently, the researcher gained a profound understanding of the thoughts, feelings, values, perspectives, and biases of learners at Mutoko Primary School in Mutoko District, as well as the experiences and challenges faced by both teachers and students regarding ICT integration, emphasizing qualitative insights.

3.3 Research Design

Research design refers to the comprehensive plan connecting conceptual research questions with relevant empirical studies. It outlines the procedures for data collection, analysis methods, and how these efforts will address the research question (Grey, 2014). Fouche and Devos (2015) characterize research design as a strategic blueprint detailing prior decisions that collectively create a study model. In essence, research design acts as a framework for generating, processing, and transforming data into information (Creswell, 2014).

3.4 Target Population

The target population consists of individuals from whom the researcher seeks information (Partson 2024). According to Saunders, Lewis, and Thornhill (2009), individuals share characteristics based on the researcher's sampling criteria, and Creswell (2003) asserts that the target population contains the information needed by the researcher. For the study on "Integration of ICT in Teaching and Learning at Mutoko Primary School," the target groups include

- Learners: Primary school learners at Mutoko Primary School engaged in ICT-related learning activities.

- Teachers: Primary school teachers at Mutoko Primary School responsible for implementing ICT in their teaching practices, offering insights into their experiences and challenges.
- School Administrators: School leaders and administrators who make decisions regarding ICT integration in the curriculum and resource allocation.
- Parents: Parents of students at Mutoko Primary School who can provide perspectives on their involvement and support for ICT initiatives in education.

3.5 Data collection

Data collection is the process of gathering and measuring information from various sources to answer research questions, test hypotheses, or evaluate programs (Creswell, 2014; Kumar, 2019). It involves the systematic gathering of data to support decision-making, research, or evaluation. The following was discussed on the data collection by the researcher.

3.5.1 Sampling Techniques

Sampling techniques are methods used to select a subset of individuals or items from a larger population for the purpose of statistical analysis or research. The goal of sampling is to obtain a representative sample that accurately reflects the characteristics of the entire population. Here are some common sampling techniques (Patton, 2002). The study used a non-probability sampling techniques to select participants.

Non-Probability Sampling

This research utilized non-probability sampling, where the likelihood of each case being chosen from the overall population is unknown. This approach offers various techniques for sample selection based on the researcher's subjective judgment (Saunders et al., 2009). In non-probability sampling, the chance of any specific individual being selected is also unknown (Haralambos & Holborn, 2016). This study employed purposive or judgmental sampling, which involves selecting respondents with similar characteristics, along with haphazard or convenience sampling, where respondents are chosen based on their availability. This sampling method was chosen because it allows the researcher to ensure that participants are well-informed, as the sample is based on their knowledge. Additionally, this method guarantees that all participants are convenient for the researcher, resulting in high participation rates.

3.5.2 Sample size

Cohen (2015) describes a sample as a subset of the entire population within a specific area. For this study, the sample comprised five learners from Mutoko Primary School in Mutoko District. Only learners who are able to operate a computer were selected by the researcher, since the researcher used purposive sampling method. All ICT teachers were selected (4) and an additional 4 were selected.

3.5.3 Research instruments

The researcher employed qualitative methodology, utilizing instruments such as an interview guide with both open and closed-ended questions.

Face to face interviews

An interview guide is a set of questions prepared by the researcher for use during interviews, addressing the objectives of the study (Bird, 2016). There are various types of interviews, including unstructured, structured, and semi-structured interviews (Saunders et al., 2016). The researcher opted for a semi-structured interview guide, which strikes a balance between the flexibility of open-ended interviews and the focus of structured surveys (Mc Cammon, 2015). This approach is suitable for both early and late stages of the research. As Adhabi and Anozie (2017) suggest, the semi-structured interview guide outlines key topics and questions, allowing the researcher to prepare in advance and appear competent during interviews. Additionally, this format provides interviewees the freedom to express their thoughts in their own words, yielding rich descriptive data about their personal experiences. It also allows the researcher to pursue relevant topics that may arise during the conversation. The semi-structured guide's clear instructions contribute to the reliability of the qualitative data collected.

Focus Group Discussions

Chavula (2016) defines focus group discussions as a data collection method that involves interviewing a group of individuals with specific knowledge. Nyasulu (2014) describes it as a structured group discussion with clearly defined criteria for participant selection to enhance discussion quality. Shumbayaonda (2006) noted that the researcher facilitates focus group discussions with a manageable number of participants. In this study, two sessions were conducted with ten learners each, allowing participants to express their feelings, attitudes, motivations, and experiences in a supportive environment (Wilson, 2005). The researcher

ensured confidentiality, assuring participants that their contributions would remain private and emphasizing the ethical responsibility not to disclose discussion content.

3.5.4 Data Analysis

Qualitative data from the interviews were analyzed to identify recurring themes from the transcripts (O'Leary, 2012). These themes served as discussion points in the data analysis, highlighting similarities in responses and general opinions expressed by participants. The themes were summarized to ensure validity and accuracy in reflecting the findings. A template was developed to organize learners' responses for quantitative analysis. The researcher analyzed the data according to the emerging themes (Sevens, 2021).

3.6 Ethical Issues

Ethical considerations are crucial in research, ensuring that participants are treated with respect, as improper handling can have serious consequences (Tuckman, 2010). Informed consent is ethically valid when potential participants receive full disclosure about all aspects of the research, including confidentiality (Dube, 2020). In this study, participants were encouraged to ask questions, and participation was voluntary. Permission to record interviews was obtained before they began, and participant identities were kept confidential (Chikuvadze et al., 2021). Consequently, participants were assured of their privacy and confidentiality.

3.7 Chapter Summary

This chapter detailed the research methodology employed in the study, covering the research paradigm, philosophical assumptions, research methods, research design, sampling techniques,

data collection, data analysis, and ethical considerations. The subsequent chapter focused on data analysis.

CHAPTER 4

DATA ANALYSIS AND DISCUSSION

4.1 Introduction

The previous chapter outlined the strategy used to generate, present, analyze, and interpret relevant information. This chapter centered on themes derived from the sub-research questions that serve as the foundation for the analysis and interpretation. These themes include the demographic characteristics of the participants, the ICT tools familiar to the learners, the significance of ICTs in teaching and learning, strategies for integrating ICTs into education, and the challenges encountered when incorporating ICTs in teaching and learning, along with a summary of the chapter.

4.2 Characteristics of the participants

Table 4.1 Demographic characteristics of selected learners (n=5)

Attributes		(n)	(%)
Sex	Females	3	60
	Males	2	40
Age Range (Years)	08- 10	1	20
	11- 13	2	40
	14	2	40

Total		5	100
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First, it was noted that the participants were carefully chosen, and that the students were enrolled in compliance with the Education Act (Ministry of Primary and Secondary Education, 1987). This is important because it guarantees that the students will experience similar advantages and difficulties in the same setting. Of the total number of learners 3 female learners (60%) and 2 male learners (40) 750 students, 375 were female (50%) and 375 were male (50%), 1 learner between the ages of 8 and 14 (20), 2 were between the ages of 11 and 13 (40%), and 2 (40%) were older than 14

Table 4.2 Demographic characteristics of the selected teachers (n = 8)

Attributes		(n)	(%)
Sex	Females	5	62.5
	Males	3	37.5
Professional Qualification(s)	Diploma in Education	3	37.5
	Degree in Education	4	50
	MScEd	1	12.5

Teaching Experience (Years)	0 – 5	1	12.5
	6 – 14	4	50
	15 – 20	3	37.5
Training in ICT	Trained	4	50
	Non-Trained	4	50

To triangulate the data from this research, eight teachers were intentionally selected for the study, as they are responsible for teaching through ICTs. They have a first-hand experience with strategies to improve teaching and learning, and face various challenges in the process. This supports Orlando's (2013) recommendation that instructional leadership for ICTs should focus on setting a direction for pedagogical practices and assessments related to ICT usage. Among the eight teachers, fifteen were female (62.5%) and ten were male (37.5%). Furthermore, 37.5% held Diplomas in Education, 50%% had degrees in education while 12.5% had master's degree in education. 50% are ICTs trained teachers and 50% untrained ICTs teachers. This diversity enriches the study with valuable insights.

4.3 Approaches used in integrating ICT into teaching and learning activities at primary school.

In this section, the researcher focuses on analyzing and discussing the methods being employed for integrating educational technologies into teaching and learning activities. According to the topic that emerged from the inquiry, one primary school teacher disclosed that:

The new curriculum encourages learner-centered approaches, yet we continue to depend on teacher-centered methods. Due to time constraints, I often opt for lectures. When resources allow, I prefer using demonstrations, discussions, and problem-solving activities, as these methods engage students' minds and present them with real-world challenges through open-ended questions. The Covid-19 pandemic has necessitated the use of WhatsApp for some lessons, along with computers, cell phones, and the internet. (Grade 6D Teacher)

In addition, a participant had this to say:

In education, technology is widely used, as our teachers encourage us to bring calculators to school. This approach is beneficial because it promotes shared responsibility in the learning process; rather than relying solely on the teacher, technology makes learning more engaging and helps students become self-motivated. (Learner 19)

The responses from the teacher resonate well with Eggen and Kauchak (2001) in the sense that teacher centred approach is still dominant because of the relatively few resources required during preparation as well as conducting the lessons. The sustained dominance of teacher centred

approach and the observed limited use of educational technologies justifies the position held by some scholars who argue that increased use of educational technologies favours learner centred compared to teacher centred approach and vice-versa (Fischer & Reuber, 2011). In support, one of the selected teachers noted that:

While we recognize the ministry's requirements to utilize educational technologies, resource limitations restrict the teaching methods that teachers can employ in the classroom. (Grade 3A Teacher)

In the same vein, one of the selected learners highlighted that:

In our learning, the teacher uses demonstrations to help us understand concepts, and we are encouraged to ask questions if anything is unclear. (Learner 5)

The participants are conscious of the benefits of educational technologies stipulated in the Zimbabwe Curriculum Framework for Primary and Secondary Education (2015–2022) that learners must be engaged actively to address real world problems (Ministry of Primary and Secondary Education, 2015). Furthermore, the responses above which show basic use of educational technologies substantiates Mishra and Koehler (2006) who maintain that most teachers have basic knowledge of educational technologies yet to use educational technologies effectively and efficiently teachers now need to have knowledge about the educational technologies specific to their discipline content area (Cassim & Obono, 2011). In line with this notion one of the selected teachers acknowledged that:

Many of us possess fundamental information and communications technology skills that we acquired in college, but these basic skills are inadequate for

effectively and efficiently utilizing educational technologies in the classroom.

(Grade 7E Teacher)

In addition, a learner revealed that:

I would say we make use of educational technologies when receiving our CALA components through WhatsApp groups (learner 9)

Educational technologies encompass a variety of tools, including digital books, specialized software, websites, and screen readers that offer features like text-to-speech, adjustable color contrast, customizable text size, options for different reading levels, and materials in the learner's primary language (Grimes & Warschauer, 2008). Hightower (2011) notes that teachers are expected to develop diverse strategies to engage students and foster a positive attitude towards science and related subjects to improve knowledge transfer. This aligns with Nhendere's (2020) observation that the integration of educational technologies in Zimbabwe's education system is still largely unaddressed. In this context, one participant pointed out that:

If resources allowed, the teaching process would be more enjoyable with Wi-Fi facilities at the school. This would enable educators to conduct research before lessons and download important videos to present to students using a projector.

(Grade 7C Teacher).

The researcher noted that many participants identified resource constraints as the primary barrier preventing them from adopting a learner-centered approach, which would subsequently promote the use of both existing and emerging educational technologies. Furthermore, Nhendere (2020)

offers a positive perspective, suggesting that progress can begin by leveraging the technology we utilized effectively (Sunzuma & Zezekwa, 2016).

Another learner pointed out that:

Our teacher encourages us to have discussions in class and puts us in pairs to solve different problems. Our currently possess, understand how to use, and can afford. This applies equally to the resource teachers are concerned about; there is a need for monitoring and evaluation to ensure that what is available is being discussions are also done on our WhatsApp group (Learner 7).

The learner's response indicates that learner-centered methods are indeed being utilized at the school. The desire to succeed motivates the teacher to adopt these approaches, encouraging students to construct their own knowledge with the teacher's guidance (Lathan, 2022). Additionally, utilizing WhatsApp and Facebook groups for discussions and problem-solving aligns with Nguyen's (2012) assertion that social interaction among learners and between teachers is vital for effective learning. Social interaction is a natural process that fulfills both learners' and teachers' need for connection, leading individuals to unconsciously develop, maintain, and restore close personal relationships (Lussier & Achua, 2007).

4.4 Challenges encountered when integrating ICT into teaching learning activities at primary school

This section analyzed and discussed the challenges faced when incorporating ICTs into teaching and learning activities. In this context, one of the participants remarked that:

I believe that one of the main challenges of using ICTs in education is the lack of alternative power sources at our school, as we often experience power outages. Additionally, some students do not own smartphones, which creates difficulties when I assign work to be completed on their phones; many end up not completing the tasks and claim they didn't see the assignments (Grade 7B Teacher).

The third objective aimed to identify the challenges learners face when using technology. The findings indicated that a significant number of students lack smartphones, which hinders the effective implementation of technology in learning (Chiromo, 2021). Teachers are unable to send notes, assignments, and homework to students without smartphones. Rano (2011) pinpoint that the limited availability of technology, such as smartphones, adversely affects mathematics learning.

Another participant expressed:

"We come from diverse backgrounds; some parents cannot afford to buy smartphones for their children. Even those who have made sacrifices to purchase smartphones face challenges in maintaining sufficient airtime for educational access" (Learner 6).

In simple terms, another respondent mentioned that some challenges are beyond their control, and there is little that can be done to address these obstacles.

One participant remarked that:

Living in remote areas presents its own set of challenges. Accessing a network can be difficult; some of us have to climb trees and mountains just to get a signal for our smartphones to reach our teacher's materials and other online resources. Additionally, the lack of electricity in our region compounds the issue, forcing us to rely on solar batteries owned by only a few families (Focus Group Discussion Parent B, Parent from rural).

The learners' feedback reveals that limited access to resources is intertwined with several other significant issues, which can hinder teachers' use of ICTs (Kumbata, 2019). Although some schools may have resources, teachers often lack the time to utilize them effectively (Chireshe, 2012). Even when technical equipment is available, teachers might not have the opportunity to use or become familiar with these tools, often due to a heavy lesson load or insufficient class time (Boss & Krauss, 2014). Perraton and Creed (2012) argue that ICTs in education should mirror societal usage rather than dictate it; educational programs incorporating innovative technologies rarely achieve sustainable success. Furthermore, a basic necessity is the availability of electricity and telecommunications. In many developing countries, large areas still lack a reliable power supply (Dube, 2020). Experiences from certain African countries suggest that wireless technologies could be effective for progress (Hawkins, 2010). Reflecting on these issues, another teacher noted:

"When we were training to be teachers, computers were not as prevalent as they are now. We submitted handwritten assignments and did not take any computer courses. This lack of exposure to technology makes me hesitant to incorporate it into my lessons due to a fear of failure" (Grade 5A Teacher).

Using smartphones incurs costs in both time and money for teachers and learners to ensure the effective delivery of content. This may lead teachers to avoid using technology in their teaching" (Focus group discussion, all parents agreed that).

This statement highlights another challenge: resistance to change and negative attitudes from both teachers and learners. Empirica (2016) states that teachers who do not incorporate new technologies like computers into their classrooms often believe that using ICTs offers no clear benefits. Resistance to change may not be a barrier in itself but rather an indication that something is amiss (Finger & Trinidad, 2002).

75% of the participants commented:

"During lessons, the teacher might ask students to open a document on their smartphones, but a student could choose to ignore that and chat with friends on social media. It's challenging for the teacher to monitor each student on their phones while also trying to manage the lesson to facilitate learning with these ICTs" (Focus Group Discussion).

This is backed by Sipila (2014), who states that the use of technology contributes to learners' lack of numeracy skills and their ability to estimate task results. Furthermore, Jacinto and

Carreira (2017) argue that early exposure to technology, particularly in mathematics, hinders learners from acquiring fundamental mathematical knowledge. Nhendere (2020) also pointed out lack of skills and knowledge on the use of educational technologies as forces contributing to limited use of educational technologies. Teachers require relevant skills to implement educational technologies and have confidence in a classroom setting as well as insight into the pedagogical role of educational technologies (Hennessy, Ruthven & Brindley, 2005).

The Impact of Access to ICT Resources on Student Engagement and Learning Outcomes in teaching and learning.

The following are responses from invited parents during face-to-face interview:

Increased Engagement- That is access to ICT resources (like computers and the internet) makes learning more interactive and engaging. Students might express enthusiasm for using technology in lessons, leading to increased participation.

(Parent A)

Improved Learning Outcomes- ICT resources enhance understanding of complex subjects through multimedia content. Teachers could note improvements in student performance and grades since the integration of ICT tools.

Access Challenge- limited access to devices or unreliable internet connectivity, which can hinder engagement and disparities in access among students, leading to unequal learning opportunities. (Parent B)

. Skill Development- Using ICT helps students to develop essential digital skills, preparing them for future academic and career opportunities. (Parent D)

. Collaboration and Communication- ICT resources facilitate collaboration among students, allowing them to work on projects together more effectively. Therefore, communication with teachers and peers improves through digital platforms. (Parent C)

Motivation and Self-Directed Learning- Access to ICT motivates students to take initiative in their learning, exploring topics independently. (Parent A)

4.5 Strategies used when integrating ICT into teaching and learning activities

In this section, we present findings focused on evaluating the effectiveness of previously implemented strategies for integrating ICTs into learning activities. One participant in a face-to-face interview highlighted that:

For successful ICT integration, school authorities must either install solar power, due to the frequent unreliability of electricity, or invest in a generator. If financial constraints exist, schools should actively seek donations. Energy is vital for both learners and teachers to use their smartphones and computers for educational purposes. Even if the school hasn't acquired devices like computers and projectors, teachers are so committed that they often use their own resources to support their students (Grade 3D Teacher).

88% of the participant noted:

Teachers should receive training on effectively using these technologies to alleviate any concerns. This training would allow them to introduce a variety of

concepts, making learning more engaging and accessible for students at any time

(Focus Group Discussion).

According to Almanthari et al. (2020), supportive environments, including both soft and hard factors, are essential for facilitating technology integration and enhancing its use among teachers. ONeal et al. (2017) also emphasize that teachers need more support than is currently available when integrating technology and developing their self-identified competencies. In this context, one participant stated:

To bridge the gap between our existing knowledge and available resources, those of us skilled in various educational tools can assist in teaching others when given the chance, benefiting both learners and teachers in enhancing their skills and utilizing educational technologies **(Learner 8).**

Teachers have expressed concerns about their lack of confidence and skills in using technology for teaching and learning (Mailizar et al., 2020). Research findings indicate that participants believe school administration should improve the learning process by providing computers for both students and teachers to facilitate technology integration during lessons (Dube, 2020). Additionally, participants pointed out that internet connectivity issues significantly hinder the effectiveness of online classes and urged the school to enhance internet access. They also stressed that parents should support technology use by purchasing smartphones for their children. This study reveals contrasting results regarding teachers' confidence levels in employing technology for education.

The findings of this study indicated that the integration of ICT in teaching and learning is more effective than traditional classroom methods. This is largely due to the use of ICT tools and resources, which create a more engaging and dynamic learning environment for both teachers and students. Most teachers involved in the study agree that ICT enhances classroom management, leading to better student behavior and increased focus. Furthermore, the research demonstrates that students learn more effectively when ICT is incorporated, as lesson designs become more engaging and stimulating. Participants also concurred that integrating ICT can enhance student learning. Additionally, teachers' understanding of ICT and network technology is quite limited. These findings align with this research, where most teachers believe that ICT integration is beneficial for student learning. It allows students to build confidence in communication and express their thoughts and ideas, fostering creativity and imagination as their knowledge expands. ICT also supports the development of all four language skills by enabling students to access essential information and knowledge.

This study revealed that while many teachers believe ICT integration is effective, the resources provided in schools are insufficient and often in poor condition. Additionally, training and professional development for teachers are lacking, and although some technical support is available, it could be improved. Furthermore, the condition of computer labs in schools, including the functionality of tools and facilities, is not ideal. In conclusion, the initial phase of ICT implementation must be effective to ensure that both teachers and students can maximize its benefits. Therefore, preparing for technology-based teaching and learning requires proper implementation and support from school leadership. If the process of integrating technology in

schools is executed correctly from the outset and ongoing maintenance is adequately provided, ICT integration can lead to significant success and advantages for both teachers and students.

The application of ICT in teaching and learning focuses more on practical use than on theory. Therefore, it's essential for teachers to have time to learn and explore these tools, going through a "trial-and-error" phase until they feel fully comfortable using them in their instruction. Moreover, integrating ICT into the classroom requires careful consideration to enhance the effectiveness of the country's education system, which in turn can improve its global ranking and develop a stronger future workforce. To facilitate this integration, the government must work on changing teachers' perceptions about using ICT in their classrooms, as teachers play a crucial role in successfully implementing new policies. The ongoing changes are fueled by advancements in technology and communication tools that should be accessible to students both in school and at home. Additionally, it is vital for teachers to be proficient in ICT skills and knowledge to enhance their teaching methods and meet the demands of 21st-century education.

4.6 Chapter summary

The results of the thematic analysis were summarized and analyzed in this chapter. The research questions served as the basis for the thematic analysis of the data. These topics covered were the technology used, the difficulties encountered when incorporating them into instruction, and the methods used to do so. Other academics' points of view were also covered. The conclusion and suggestions are presented in the next chapter.

CHAPTER V

SUMMARY, CONCLUSION, AND RECOMMENDATIONS

5.1 Introduction

The previous chapter presented, analyzed, and interpreted the data. This chapter provides a summary, conclusion, and recommendations based on the research findings. The study aimed to explore the integration of ICTs into teaching and learning activities at Mutoko Primary School.

5.2 Summary

The investigation was contextualized through several components: background of the study, problem statement, research questions, and significance of the study, delimitations, limitations, and chapter organization. Chapter two focused on a literature review, identifying knowledge gaps and establishing the theoretical framework for the study. Chapter three detailed the research methodology, outlining the approach for data collection, presentation, analysis, and interpretation. Chapter four highlighted the following key findings:

- The ICT tools integrated into teaching and learning activities include smartphones, laptops, projectors, televisions, radios, and online videos.
- Various methods used to incorporate ICTs into these learning activities include the discovery method and project-based learning, among others.
- Challenges faced in teaching and learning with educational technologies included inadequate infrastructure, teacher competency, and time constraints.

- To mitigate these challenges, strategies such as encouraging parents to purchase mobile devices for their children and increasing the school's budget for solar systems were suggested, allowing teachers and students to charge their ICT tools and utilize projectors for lessons.

5.3 Approaches are used in integrating ICTs into the teaching and learning at Mutoko

Primary School

Educators have used various approaches to integrate ICT into teaching and learning to enhance student engagement and improve learning outcomes. One approach that has been commonly used is the use of interactive whiteboards in the classroom. Interactive whiteboards allow teachers to display multimedia content, such as videos and interactive learning games, to make lessons more engaging and interactive for students. For example, teachers can use interactive whiteboards to conduct virtual field trips or simulations that allow students to explore complex concepts in a more visual and hands-on way.

Another approach that has been used was the implementation of learning management systems (LMS) in schools. Learning management systems provide a platform for teachers to create and deliver online lessons, assessments, and resources to students. This allows for more personalized learning experiences and allows students to access educational content from anywhere, at any time. For example, teachers can use learning management systems to create online quizzes and assignments that students can complete at their own pace, allowing for differentiation and individualized instruction.

In addition to interactive whiteboards and learning management systems, educators have also used educational apps and software to integrate ICT into teaching and learning. Educational apps and software can provide students with additional practice and review opportunities outside of the classroom, as well as access to educational resources and tools that can enhance their learning. For example, teachers can use educational apps to assign virtual labs and simulations for students to complete at home, allowing for hands-on learning experiences that supplement traditional classroom instruction.

Furthermore, the use of social media in education has been a popular approach in integrating ICT into teaching and learning. Social media platforms, such as Twitter and Instagram, can be used to facilitate communication and collaboration between students and teachers, as well as to share resources and information. For example, teachers can create class-specific hashtags on Twitter to facilitate discussions and sharing of resources related to course content, allowing students to engage with each other and with the material in a more interactive way.

Other approach that has been used in the implementation of online collaborative tools is Google Docs and Microsoft Teams, to promote collaboration and teamwork among students. These tools allow students to work together on projects and assignments in real-time, regardless of their physical location. For example, teachers can use Google Docs to create collaborative writing assignments that require students to work together to research and write a report, promoting critical thinking and communication skills.

In addition to the above approaches, educators have also used online resources, such as virtual reality (VR) and augmented reality (AR) simulations, to enhance teaching and learning. Virtual reality and augmented reality simulations can provide students with immersive and interactive learning experiences that allow them to explore and interact with complex concepts in a more tangible way. For example, teachers can use VR simulations to take students on virtual tours of historical landmarks or to explore outer space, providing them with a more engaging and memorable learning experience.

5.4 Challenges do educators encounter when attempting to integrate ICT into their teaching and learning activities

One of the primary challenges faced by educators when integrating ICT in teaching and learning is the lack of adequate training and professional development opportunities. Many teachers feel ill-equipped to effectively use technology in their classrooms due to limited training. Without proper guidance and support, educators may struggle to incorporate ICT into their teaching practices, leading to ineffective use of technology and hindering student learning outcomes. For example, a study conducted by Moon et al. (2018) found that teachers who received training on how to integrate ICT into their lessons were more confident and successful in using technology to enhance student learning.

Another common challenge experienced by teachers is the lack of access to technology. Many schools, especially in low-income areas, do not have the necessary resources to provide students and teachers with adequate access to ICT tools. This lack of access can hinder the adoption of technology in the classroom and create disparities in learning opportunities among students. For

instance, a survey conducted by the National Center for Education Statistics (2019) revealed that only 61% of students in high-poverty schools have access to the internet at home, compared to 93% of students in low-poverty schools.

Resistance from teachers and students is also a significant obstacle when integrating ICT in teaching and learning. Some educators may feel reluctant to embrace technology in their classrooms due to fear of change, lack of confidence in their technological skills, or concerns about the potential negative impact of technology on student engagement and learning. Similarly, students may resist using technology in the classroom if they prefer traditional teaching methods or feel uncomfortable with new technologies. This resistance can impede the successful integration of ICT into the curriculum and limit the opportunities for students to develop essential digital literacy skills.

Difficulty in integrating ICT into the curriculum is another challenge faced by primary school teachers. Many teachers struggle to align technology use with learning objectives and instructional goals, leading to ineffective integration of ICT in teaching practices. Without a clear understanding of how to incorporate technology into their lessons, educators may find it challenging to create meaningful learning experiences for students using ICT tools. For example, a study by Ertmer et al. (2019) found that teachers who had difficulty integrating technology into their curriculum were less likely to use technology to enhance student engagement and motivation.

Issues with connectivity and infrastructure can also pose challenges when integrating ICT in teaching and learning. Inadequate internet access, outdated technology equipment, and unreliable connectivity can hinder the effective use of technology in the classroom. Without reliable infrastructure, teachers may struggle to incorporate online resources, interactive tools, and multimedia content into their lessons, limiting the potential benefits of ICT for student learning. For instance, a report by the Consortium for School Networking (2017) highlighted that 63% of schools in the United States do not have sufficient bandwidth to support digital learning initiatives, thereby impeding the successful integration of ICT in education.

The digital divide is another significant challenge that educators face when integrating ICT in teaching and learning. The digital divide refers to the gap between individuals and communities who have access to technology and those who do not, resulting in disparities in terms of digital literacy, skills, and opportunities. Students from low-income households, rural areas, and marginalized communities are more likely to experience the digital divide, which can limit their access to educational resources and hinder their academic success. For example, a report by the Pew Research Center (2020) found that 15% of households with school-aged children do not have access to high-speed internet, creating barriers to online learning and digital collaboration.

5.5 Recommendations

✓ **Proper training**

Firstly, one key recommendation is to ensure that all teachers at Mutoko Primary School receive adequate training on how to effectively integrate ICT into their teaching practices. This training should encompass not only the technical skills required to use ICT tools but also pedagogical

strategies for incorporating technology into lesson plans. By providing teachers with the necessary support and resources, they will be better equipped to use ICT to enhance student learning. For example, teachers can learn how to use educational software and online resources to personalize instruction and cater to individual student needs.

✓ **Investing in infrastructure**

Secondly, Mutoko Primary School should consider investing in the infrastructure necessary for ICT integration, such as reliable internet access and technological devices like computers and tablets. Without access to these resources, teachers and students will be limited in their ability to leverage technology for educational purposes. For instance, students can use the internet to conduct research for projects and access online educational materials to supplement their learning.

✓ **Creation of conducive environment**

Another important recommendation is to create a conducive environment for ICT integration by promoting a culture of innovation and experimentation. Mutoko Primary School should encourage teachers to explore new ways of using technology in the classroom and provide opportunities for collaboration and sharing best practices. By fostering a culture of continuous learning and improvement, the school can create a dynamic and forward-thinking educational community. For example, teachers can participate in professional development workshops and conferences to stay abreast of the latest trends in educational technology.

✓ **Establishment of clear guidelines**

Furthermore, Mutoko Primary School should establish clear guidelines and policies for the responsible use of technology in the classroom. Teachers and students should be educated on the ethical and safe use of ICT tools, including issues related to cyberbullying, plagiarism, and online privacy. By promoting digital citizenship, the school can ensure that technology is used in a way that is beneficial and respectful to all members of the school community. For instance, students can learn how to critically evaluate online information and engage in respectful online discourse.

✓ **Development of digital literacy**

Additionally, Mutoko Primary School should prioritize the development of digital literacy skills among students to prepare them for the demands of the 21st-century workforce. By integrating ICT into the curriculum across all subject areas, students can develop essential skills such as critical thinking, problem-solving, and communication. For example, students can use multimedia tools to create presentations and projects that demonstrate their understanding of academic concepts.

✓ **Involve parents in discussions**

Another important recommendation is to collaborate with parents and the broader community to support the integration of ICT in teaching and learning. Mutoko Primary School should involve parents in discussions about the benefits of technology in education and provide them with resources to support their children's learning at home. By creating a network of support, the school can ensure that students have access to technology both inside and outside the classroom.

For instance, parents can receive training on how to monitor their children's online activities and assist them with homework assignments that require the use of technology.

✓ **M&E**

Furthermore, Mutoko Primary School should consider implementing a system for monitoring and evaluating the impact of ICT integration on student learning outcomes. By collecting data on student performance and engagement, the school can identify areas for improvement and make informed decisions about how to enhance the use of technology in education. For example, teachers can use student assessment data to track progress over time and adjust their instructional practices accordingly.

5.7 Conclusion

This study highlights how ICT can help teachers meet the global demand for transitioning from traditional teaching methods to technology-based teaching and learning tools. The study scrutinizes teachers' perceptions of the effectiveness of ICT integration in supporting classroom instruction. The results show that ICT integration is highly effective for both teachers and students. Key findings suggest that teachers' preparedness with ICT tools and resources is crucial for the success of technology-based education. Additionally, professional development training for teachers significantly enhances the quality of student learning. Future research should explore other aspects of ICT integration, particularly from a management perspective in terms of strategic planning and policymaking.

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APPENDIX I

Interview Guide for Teachers

Introduction:

Hello, my name is Tamangana Edwin, and I am conducting research on the integration of ICT in teaching and learning at Mutoko Primary School. This interview aims to gather your opinions and experiences on the use of ICT in your teaching practices. Your participation is voluntary, and your responses will be kept confidential.

Section 1: Background Information

1. What is your name, and what subject(s) do you teach?
2. How long have you been teaching at Mutoko Primary School?
3. What is your level of education, and do you have any specialized training in ICT?

Section 2: ICT Infrastructure and Access

1. What types of ICT devices are available for teaching and learning at Mutoko Primary School (e.g., computers, laptops, tablets, and smartphones)?
2. How often do you use ICT devices in your teaching practices?
3. Are there any challenges you face in accessing ICT devices or internet connectivity in the school?

Section 3: ICT Integration in Teaching and Learning

1. How do you currently use ICT in your teaching practices (e.g., lesson planning, instructional delivery, assessment)?
2. What types of digital resources do you use to support your teaching (e.g., educational software, online educational resources, multimedia resources)?
3. How do you think ICT has impacted student learning outcomes in your subject area?

Section 4: Challenges and Support

1. What challenges do you face when integrating ICT into your teaching practices?
2. What type of support or training do you think would be helpful in enhancing your ICT skills for teaching?
3. Are there any policies or initiatives in place at the school or district level to support ICT integration in teaching and learning?

Section 5: Conclusion

1. Is there anything else you would like to share about your experiences with ICT integration in teaching and learning?
2. Do you have any suggestions for how the school or district could better support ICT integration in teaching and learning?

Thank you for participating in this interview! Your insights are valuable to this research study.

APPENDIX II

Interview Guide for Learners

Introduction:

Hello, my name is Tamangana Edwin, and I am conducting research on the integration of ICT in teaching and learning at Mutoko Primary School. This interview aims to gather your opinions and experiences on the use of ICT in your learning. Your participation is voluntary, and your responses will be kept confidential.

Section 1: Background Information

1. What is your name, and what grade are you in?
2. How long have you been attending Mutoko Primary School?
3. Do you have any experience using computers or other digital devices outside of school?

Section 2: ICT Use in the Classroom

1. How often do you use computers or other digital devices in the classroom?
2. What types of activities do you do on the computers or digital devices in class (e.g., playing games, watching videos, doing research)?
3. Do you think using ICT in the classroom helps you learn better? Why or why not?

Section 3: Benefits and Challenges of ICT Use

1. What do you like most about using ICT in the classroom?
2. What do you find most challenging about using ICT in the classroom?
3. Do you think ICT helps you develop new skills or knowledge? If so, what skills or knowledge?

Section 4: Access and Equity

1. Do you have access to a computer or digital device at home?
2. Do you think all students in your school have equal access to ICT resources? Why or why not?
3. Do you think ICT use in the classroom helps bridge the gap between students who have access to technology outside of school and those who do not?

Section 5: Conclusion

1. Is there anything else you would like to share about your experiences with ICT in the classroom?
2. Do you have any suggestions for how the school could improve ICT use in teaching and learning?

Thank you for participating in this interview! Your thoughts and opinions are valuable to this research study.

APPENDIX III

Focus Group Discussion Guide

Introduction:

Hello everyone, my name is Tamangana Edwin, and I am conducting research on the integration of ICT in teaching and learning at Mutoko Primary School. This focus group discussion aims to gather your thoughts and opinions on the use of ICT in teaching and learning. Your participation is voluntary, and your responses will be kept confidential.

Section 1: Icebreaker and Context Setting

1. Can you please introduce yourself and share your role/position at Mutoko Primary School?
2. How long have you been working/studying at Mutoko Primary School?

Section 2: ICT Integration in Teaching and Learning

1. What are your thoughts on the current state of ICT integration in teaching and learning at Mutoko Primary School?
2. How do you think ICT can enhance teaching and learning at Mutoko Primary School?
3. What are some of the challenges you face when trying to integrate ICT into your teaching practices?

Section 3: Benefits and Challenges of ICT Use

1. Can you share some examples of how ICT has benefited your teaching or learning practices?

2. What are some of the challenges you face when using ICT in the classroom?
3. How do you think the school can address some of the challenges associated with ICT use?

Section 4: Future Directions and Recommendations

1. What are your recommendations for improving ICT integration in teaching and learning at Mutoko Primary School?
2. How do you think the school can ensure that all students have equal access to ICT resources?
3. What are your thoughts on the potential role of ICT in enhancing student learning outcomes at Mutoko Primary School?

Section 5: Conclusion

1. Is there anything else you would like to share about your experiences with ICT integration in teaching and learning at Mutoko Primary School?
2. Do you have any final recommendations or suggestions for the research study?

Thank you for participating in this focus group discussion! Your thoughts and opinions are valuable to this research study.

Anti-plagiarism report

Not available since the institution does not have a Turnitin at the moment.

