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**CHALLENGES EXPERIENCED BY TEACHERS IN THE USE OF ICT TOOLS IN TEACHING AND
LEARNING: A CASE FOR SANYE SECONDARY SCHOOL.**

By

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requirement of the Bachelor of Science Degree in Biology.*

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Approval Form

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Dedication

This study is dedicated to my entire family, who gave me support throughout the whole project. Their support financial, spiritual and psychological support is outstanding. Above all I thank the almighty God for giving me strength, knowledge and wisdom throughout the course of the study.

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Firstly, I wish to give my sincere gratitude to God who is the source of my strength and as well as power, for giving me grace to further my studies all the praise and honour belong to him.

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Abstract

This study investigates the challenges experienced by teachers in the use of Information and Communication Technology (ICT) tools in teaching and learning at Sanye and Mushowani Secondary Schools. Despite the growing emphasis on digital integration in education, many teachers continue to face obstacles that hinder the effective use of ICT tools in the classroom. The study was guided by objectives that focused on availability of ICT gadgets, internet connectivity, teacher ability to use the internet, and learner-related challenges. A descriptive survey design was employed, using questionnaires to collect data from selected teachers. The findings revealed that major challenges included limited access to functional ICT tools, poor or unreliable internet connectivity, insufficient training, and lack of ongoing technical support. Additionally, some learners' misuse of devices and their lack of digital skills negatively affected teaching outcomes. The study concludes that without adequate infrastructure and professional development, ICT integration remains minimal. Recommendations include improving access to ICT resources, providing regular training, and establishing school-level support systems to enhance the use of ICT in teaching and learning.

Declaration

I 'Present Mashambanhaka' declare that this research project is my own work and has not been copied or lifted from any source without acknowledgement or published anywhere electronically or otherwise.

1 Signed.....

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1 INTRODUCTION

1.1 Introduction

Governments in all parts of the world are striving to achieve access and good quality education for their citizens (UNESCO, 2013). Information and Communication Technologies known as (ICT) are increasingly being used and viewed as important worldwide in all spheres of operation including education. This chapter is going to introduce the foundation of the whole study which will be conducted on the challenges which are experienced by teachers in the use of ICT tools in teaching and learning. The chapter will clarify the background of the study, limitations and delimitations of the study. It will also look at the statement of the problem and definition of key terms.

1.2 Background of study

Computers began to be used in schools in the early 1980s, and several scholars suggest that ICT will be an important part of education for the next generation (Bransford, Brown, & Cocking, 2000; Grimus, 2000; Yelland, 2001) quoted in UNESCO (2013).

Governments in all parts of the world are striving to achieve access to good quality education for their citizens (UNESCO, 2013). Globally, the incorporation of ICT in the education system has demonstrated advantages in improving teaching and learning processes according to Murithi and Jin Eun Yoo (2021), ICT in education is seen as a means of increasing access to education, especially to the rural population and making teaching and learning enjoyable. However, Zimbabwe like the rest of Africa lags the rest of the world in the adoption of ICT. According to Lockhood and Gooley (2002), the growth of e-learning programs is driven by the need for and potential of providing education in less expensive ways, increased access to information, effective learning and greater flexibility. People are finding themselves glued to different platforms.

According to Musarurwa (2011) Zimbabwean government developed a national ICT policy that made significant references to the promotion of ICT in education including their pedagogical use

in educational institutions. With this significant development, the office of the president also embarked on a campaign that provided most schools including those in remote areas in Zimbabwe and universities with computers that enabled them to utilize ICTs in the teaching and learning process. With this significant development, it became crucial to assess how effectively these ICT tools are being utilized in schools, particularly focusing on the challenges faced by teachers in using ICT tools in the teaching and learning process.

According to Grabe and Grabe (2007), technologies can play a role in student skills, motivation, and knowledge. They also claim that ICT can be used to present information to students and help them complete learning tasks. The vision of the basic education curriculum reforms is to equip learners with world-class standards and skills needed to thrive in the 21st Century such as digital literacy (KICD, 2017).

However, although the use of educational technologies in the classroom has many advantages, current research would suggest that it is not appropriate to simply assume that the use of ICT will necessarily transform science education (Osborne & Hennessy, 2003).

The researcher therefore saw the need to investigate the challenges being faced by educators in using ICT tools. The researcher is also eager to find solutions through this research, which will help raise awareness of these challenges and suggest some solutions to curb the problem.

Distinctly in the year 2020, education systems in all parts of the world were faced with the challenge of the COVID-19 pandemic. Governments in most countries were forced to close schools and minimize any form of gatherings to contain the spread of the deadly respiratory disease (Murithi and Jin Eun Yoo, 2021). Therefore, to get a better understanding of whether alternative methods of learning such as e-learning would succeed, this study focused on how teachers and schools were prepared for technological integration before the crisis. Since digital literacy is considered an important skill to cope with the 21st C developments, the teacher is a crucial player in the successful implementation of ICT and should be well prepared through adequate training (Hwang et al., 2010).

1.3 Statement of the problem

The introduction of ICT tools in the teaching and learning has transformed educational practices, offering new opportunities for engagement and collaboration. It also has the potential to enhance teaching and learning experiences significantly. However, because of the challenges being faced by teachers, they are failing to effectively utilize these tools in their classrooms. This hinders successful ICT implementation and hence affects students' engagement and learning outcomes. Barriers discourage teachers from integrating ICT into the classroom. It is reported that most modern institutions are fast equipping their schools or institutions with ICT gadgets. However, little is known concerning challenges faced by teachers in rural areas in the use of ICT tools in teaching, hence the current study focuses on the subject.

1.4 Significance of the study

The study will benefit: -

1.4.1 Learners - by providing them with opportunities for students to learn to operate in an information age, improving engagement and knowledge retention.

1.4.2 Teachers - by assisting them to overcome the challenges or barriers in order to become successful adopters of technology in the future. Technology provides opportunities to make the teaching and learning process fun and enjoyable, hence helping the educators to create such an environment which will enhance educational outcomes.

1.4.3 Policy makers - they will be informed about the necessary infrastructure and support systems in schools. These will include reliable internet access, provide adequate technical support and invest in appropriate hardware and software.

1.4.4 Innovative solutions - the study will help to stimulate innovative solutions and practices will address the challenges being faced by teachers in the use of ICT tools and educators can experiment with new teaching methods and technologies that may lead to more effective learning environments.

1.4.5 Future Studies - The study will also guide future studies on technology integration, which will help to build a comprehensive understanding of how ICT can be leveraged to enhance the teaching and learning process. The study will help in raising awareness to the school heads, donors and government authorities of the importance of ICT tools, showing them the benefits of using ICT tools and the challenges being faced by the teachers in trying to use them. In so doing it can help them in bridging the digital gap, ensuring that all schools have equal opportunities and infrastructure improvement from ICT in their education.

1.5 Research objectives

1. To establish challenges related to availability of ICT gadgets at Sanye Secondary School.
2. To explore the level of internet connectivity at Sanye Secondary School.
3. To establish the ability of teachers in the use of ICT tools.
4. To identify learner related challenges which affect the teachers' use of ICT.

1.6 Research questions

1. What are the challenges faced related to availability of ICT gadgets at Sanye Secondary school.
2. How reliable is internet connectivity at Sanye Secondary School.
3. Are teachers able to use ICT tools.
4. What learner-related challenges affect teachers' effective use of ICT in the teaching and learning process?

1.7 Assumptions of the study

- Teachers are interested in the use of ICT in the teaching and learning process, hence they will cooperate during the study.
- Teachers possess different levels of proficiency with ICT tools which will help reveal gaps and the need for targeted professional development. Different proficiency levels highlight specific challenges faced by teachers. Diverse experiences and practices also lead to richer qualitative insights.

- The Zimbabwean education curriculum supports the use of ICT tools in teaching and learning which means the research aligns with national priorities, making it more relevant and acceptable in schools. Hence schools are more likely to cooperate since it is in line with the curriculum.
- Access to Information and Communication Technologies (ICT) resources varies among students and teachers. The diverse access levels lead to a broader range of experiences and challenges, enriching the data.
- The use of ICT tools in teaching and learning can enhance students' engagement and learning outcomes. Hence the researcher can use this to justify the importance of studying ICT use in education.

1.8 Delimitations

The research is only limited to Sanye and Mushowani Secondary Schools in Mashonaland Central, Shamva District. Teachers from Sanye and Mushowani secondary schools across different departments will be included in the collection of data. Both females and males will be included as sources of information needed in this investigation for the research.

Conceptual Delimitation: -

This study focuses specifically on the "Challenges Experienced by Teachers" in the use of "Information and Communication Technology (ICT) tools" in teaching and learning. It is conceptually delimited to issues such as access to ICT resources, internet connectivity, teacher training and competence, and learner-related factors that hinder ICT integration. The study does not cover the use of ICT by learners independently, administrative uses of ICT, or ICT challenges at national policy level. Its scope is limited to pedagogical use within the classroom setting at Sanye and Mushowani Secondary Schools.

1.9 Limitations of the study

Financial constraints - as the research is self-financed, the researcher cannot manage to cover more schools. The researcher will need more transport money, and also more money for the printing out resources needed for the research, such as questionnaires. Therefore, the researcher

will try and find as much information necessary in detail from the school chosen, in order to cover the gap and minimize the disadvantages of the limitations.

Subjectivity of Responses - Teachers may exaggerate, underreport, or respond in socially desirable ways, which could affect the accuracy and objectivity of the findings. This limitation may influence the interpretation of the actual extent and nature of challenges experienced in using ICT tools. The teachers may give false information, which may affect the research. The teachers may also likely have limited knowledge of ICT tools, limiting their ability to sound responses.

1.10 Definition of terms

ICT (Information and Communication Technology): - ICT refers to technologies that provide access to information through telecommunications. It includes the internet, wireless networks, computers, and other communication mediums (UNESCO, 2013).

ICT Tools: - ICT tools are digital resources used to facilitate communication, processing, and transmission of information in teaching and learning, such as computers, projectors, tablets, and educational software (KICD, 2017).

Challenges: - Challenges refer to barriers or difficulties that hinder the successful implementation or use of ICT in education, including technical, pedagogical, financial, or attitudinal issues (Ertmer, 1999).

Barrier: - any condition that makes it difficult to make progress or to achieve an objective (WordNet, 1997, as cited in Schoepp, 2005).

Teaching and Learning: - Teaching and learning refer to the interactive process where teachers deliver knowledge or skills, and learners acquire them, often through planned instructional strategies (Bransford, Brown and Cocking, 2000).

Digital Literacy: - Digital literacy is the ability to use ICT tools effectively to find, evaluate, create, and communicate information (Martin and Grudziecki, 2006).

Pedagogical Strategies: - These are deliberate methods or approaches used by teachers to facilitate learning and improve student engagement and outcomes (Adair-Hauck and Donato, 2002).

Infrastructure: - Infrastructure in education refers to the physical and technological facilities required for ICT integration, such as electricity, internet connectivity, and hardware (Warschauer, 2004).

Professional Development: - Professional development involves training and continuous learning activities that enhance teachers' knowledge and skills, especially in using ICT for teaching (Ertmer and Ottenbreit-Leftwich, 2010).

Resistance to Change: - This refers to the reluctance or refusal to adopt new methods, such as using ICT in teaching, often due to fear, lack of confidence, or perceived threats (Fullan, 2001).

1.11 Chapter summary

Teachers face several challenges in the use of ICT, especially in remote areas. The chapter highlighted the foundations of the whole study. This included highlighting critical issues of concern about the subject as expressed by some concerned authorities, in the background of the study. The chapter also listed some research objectives and questions which will guide the research. Definition of key terms were included to provide a clearer understanding of the complexities and obstacles teachers encounter when using ICT tools in educational practices.

2 LITERATURE REVIEW

This chapter will provide adequate information on subject matter under study by reviewing related literature through capturing facts from a variety of authors. The writer also tries to provide a comprehensive overview of existing research, theories, and findings related to the topic. It will highlight key themes, gaps in the literature, and the implications for practice and policy. The literature review will not only summarize existing research but also critically analyze the findings and their implications for educators, policymakers, and researchers. By addressing these components, the review will contribute to a deeper understanding of the challenges teachers faced in using ICT tools and inform strategies for effective integration in teaching and learning.

2.1 Theoretical framework

This study is guided by the Social Learning Theory, Technology Acceptance Model and the Technological Pedagogical and Content Knowledge (TPACK) framework (Koehler & Mishra, 2009).

2.1.1 Social Learning Theory

The Social Learning Theory emphasizes that people learn through observation, imitation, and interaction within social contexts. In the context of ICT use, teachers adopt new technologies not only through formal training but also by observing peers and engaging in collaborative learning. This theory helps explain how teacher attitudes, school culture, and peer support influence ICT integration. Roblyer and Edwards (2000) argue that the use of ICT in education has evolved from two main instructional approaches: directed instruction and constructivist learning. Directed instruction is grounded in behaviorist learning theories and information processing theories, which emphasize structured, teacher-led activities. In contrast, constructivist approaches are rooted in cognitive learning theories, which focus on learners actively constructing their own understanding through exploration and interaction. The constructivist approach is based on the belief that learners can construct and create knowledge from prior experiences in their environment (Kalpana, 2014; KICD, 2017; Waweru, 2018). The proponents of this theory shift the focus from the teacher who was traditionally believed to be the source of knowledge to the

learner (Wang, 2008; Waweru, 2018). The theory explains that a learner assimilates new knowledge that adds to an existing body of knowledge. It is therefore important for teachers in the process of integrating ICT to understand that learning can be based on individual discovery and interpretation of information. This realization would help the teacher to emphasize the active participation and involvement of learners to harness their creativity and produce individual's fit for the 21st Century (Kalpana, 2014). (Murithi and Jin Eun Yoo, 2021). This study builds upon these foundations, recognizing that learners acquire knowledge differently based on individual learning styles. In particular, the research adopts Social Learning Theory as its guiding framework, emphasizing that learning occurs through observation, imitation, and collaboration. These key elements are supported by the integration of ICT tools in modern classrooms.

2.1.2 Technology acceptance model (TAM)

The Technology Acceptance Model (TAM) is based on the user's perception of usefulness and the perceived ease of use as cited by Sharples and Modules (2014). According to Marikyanhe (2004), the technology acceptance model (TAM) explains the acceptance of information systems by individuals. TAM postulates that the acceptance of technology is predicted by the users' behavioural intention, which is, in turn, determined by the perception of technology usefulness in performing the task and perceived ease of its use.

The theory has been used widely by researchers in the field of technology in education with various modifications as well as criticism (Bagozzi, 2007). The perceived usefulness of technology relates to the conviction among users such as teachers that it will make their work or that of their learners easier thus enhance job performance (Muinde & Mbataru, 2019). This means that if teachers think that the use of computers would make their day-to-day activities such as preparation of lesson plans, lesson materials, or analyses of student's results more organized and accurate, then they would probably use them. According to Venkatesh et al. (2003), perceived ease of use refers to the degree to which an individual believes that using a particular technology will be free of effort. In the context of education, this means that if teachers find ICT tools easy to use, they are more likely to adopt and integrate them into their teaching practices.

The acceptance and use of information technologies can bring both immediate and long-term benefits at organisational and individual levels, including improved performance, financial savings, time efficiency, and greater convenience (Foley & Curley, 1984; Sharda, Barr, & McDonnell, 1988). The Technology Acceptance Model (TAM) was developed to explain and predict users' acceptance of technology by focusing on key factors such as perceived usefulness and perceived ease of use. The theoretical aim of TAM is to provide insight into the psychological processes that influence technology adoption, while its practical objective is to guide practitioners in identifying potential barriers and enablers before implementing technological systems (Marikyan & Papagiannidis, 2024). The current study aims at establishing teachers' positions concerning TAM by exploring their attitudes, perceived ease of use, and usefulness of ICT tools in the classroom. This approach helps in understanding the specific challenges that affect the use of ICT tools at Sanye and Mushowani Secondary Schools.

2.1.3 Technological Pedagogical and Content Knowledge (TPACK)

The Technological Pedagogical and Content Knowledge (TPACK) paradigm elucidates these issues by highlighting the convergence of technology, pedagogy, and content knowledge (Koehler and Mishra, 2009). The TPACK framework provides a comprehensive view on how teachers can proficiently incorporate technology into subject-specific instruction while meeting the pedagogical requirements of learners (Farhana, Khan and Chowdhury, 2024). This framework is particularly relevant to the study as it underscores the need for balanced integration of technological tools, pedagogical approaches, and content knowledge. The difficulties teachers encounter—whether due to limited training, lack of resources, or insufficient support—can often be traced to gaps in one or more components of the TPACK model. Therefore, applying this paradigm helps to better understand the complex nature of ICT integration in the teaching and learning process.

2.2 Types of ICT tools

Human societies have experienced progress which has been brought about by the invention of technology such as mobile phones and other computer gadgets. Rebello (2010) posits that cellphones are one of the most rapidly growing new technologies in the world. Laptops, mobile

phones, stand-alone PCs, television, radios, digital projectors, tablets, video cameras and smart boards are among the technologies that can support learning. We are now living in a global LMS, platforms like Moodle, Canvas, and smartboards which provides a centralized online space for course materials, assignments, quizzes, and discussion forums. They facilitate communication and collaboration among students and teachers.

Examples of ICT-enabled tools used in the teaching and learning process include:

1. **Interactive Whiteboards (IWBs):** IWBs are large touch-sensitive boards that can display digital content from a computer. Teachers can use them to deliver interactive lessons, annotate content, and engage students in various activities (Higgins, S., et al., 2007).
2. **Learning Management Systems (LMS):** According to Yunus, Lubis and Lin (2009), several ICT tools and applications may be integrated in teaching and learning and some of these tools and applications may be designed specifically for educational purposes and some others for more general use.
3. **E-books and E-readers:** Digital textbooks and e-readers enable students to access educational content in electronic format. They often come with features such as search functionality, note-taking, and multimedia integration.
4. **Online Collaboration Tools:** Tools like Google Workspace (G Suite), Microsoft Teams, and Slack facilitate collaboration among students and teachers. They support real-time document editing, video conferencing, and communication (Miller, A., 2018).
5. **Virtual Learning Environments (VLEs):** VLEs create immersive online spaces where students can access resources, participate in discussions, and complete assignments. Virtual classrooms and webinars provide opportunities for remote learning.
6. **Simulations and Virtual Labs:** Simulations and virtual labs allow students to experiment and explore concepts in a controlled digital environment. They are particularly useful in science and engineering disciplines.
7. **Educational Apps:** Numerous apps cater for specific subjects or skills, providing interactive and engaging learning experiences. Examples include language learning apps, mathematical games, and science simulations.

8. **Video Lectures and Podcasts:** Educational content in the form of video lectures, podcasts, and educational channels on platforms like YouTube can supplement traditional teaching methods, offering alternative ways to convey information.
9. **Online Assessment Tools:** Platforms like Kahoot! Quizizz, and Google Forms enable teachers to create and administer assessments online. They often include features for instant feedback and analytics (Baker, R. S., 2016).
10. **Adaptive Learning Systems:** Adaptive learning platforms use data and algorithms to personalize the learning experience based on individual student needs. They adjust the difficulty and pace of content delivery to match each learner's abilities.

These ICT-enabled tools contribute to a more dynamic, interactive, and personalized learning environment, fostering engagement and improving educational outcomes. However, successful integration requires effective teacher training and ongoing support to maximize their potential in the teaching and learning process. In a village where individuals are interacting more using some technological gadgets. According to Byron (2008) social networking sites which include Facebook, LinkedIn and mobile apps like WhatsApp, Skype and blogs such as Twitter and YouTube are used to support learning. Nearly every family owns a smartphone, meaning that there is a high possibility that these learners interact with these gadgets. The smart phone and laptops became loaded with capabilities ranging from video recording and sharing to music playing and internet access, teens have ever increased repertoire of use. This constant use of cellphones by learners has further enhanced the flow of cyber culture.

2.3 Barriers to ICT integration

There are several factors which act as barriers to ICT integration including, lack of experience and skills in using ICT, lack of ICT curriculum for the teachers' colleges, lack of clear government policy on the teaching of ICT in the teachers' college curriculum, inadequate ICT resources, obsolete ICT hardware and soft wares, intensive teaching programs due to examination pressures, overcrowded classrooms, lack of time, heavy workload, slow internet connectivity, intermittent electricity supply and attitudinal barriers from the relatively older lecturers with technophobia. All these barriers hinder the proper use and integration of ICT tools,

which in turn offer challenges for teachers to properly use ICT tools. Some of the barriers also include technical challenges, lack of training and resistance to change as explained below.

2.3.1 Technical Challenges

Technical challenges refer to difficulties related to hardware availability, software compatibility, and internet connectivity. Several studies have highlighted that a major obstacle to the integration of ICT in schools is the inadequate provision of digital devices for teachers. This shortage limits the ability of educators to effectively implement technology-based teaching strategies. These findings are consistent with research conducted in Kenyan schools, which identified the lack of ICT devices as a significant barrier to technology integration (Langat, 2015; Tonui et al., 2016; Mingaine, 2013a, 2013b).

2.3.2 Lack of Training

This involves insufficient professional development opportunities for teachers to enhance their ICT skills. The lack of training is a significant challenge for teachers when it comes to using ICT tools in teaching and learning. Without proper training, teachers may struggle to understand how to effectively integrate technology into their lessons. This can lead to limited confidence, where teachers may feel unsure about using ICT tools, which can hinder their willingness to experiment with new teaching methods. It may also lead to ineffective use where, without training, teachers might not fully utilize the features of ICT tools, reducing their potential impact on learning outcomes. Lack of training may also lead to increased stress, the pressure to use technology without adequate preparation can add to teachers' workload and stress levels. Lastly it may lead to missed opportunities, whereby teachers may miss out on innovative ways to engage students and enhance learning experiences (Hew and Brush, 2007).

2.3.3 Resistance to Change

As highlighted in chapter 1, it involves the reluctance or opposition from teachers or educational institutions to adopt new technologies or methods, often due to fear of the unknown or comfort with traditional practices. Teachers' reluctance to adopt new technologies due to comfort with traditional teaching methods. Perhaps the most common reason mentioned by teachers for not actively integrating new technologies is that many teachers are satisfied with their current lesson

plans. Further, it was found that younger teachers had better technology integration skills compared to older teachers consistent with previous studies which showed that age correlates negatively with skill level in the use of technology (Harrison & Rainer, 1992 cited by Wambiri & Ndani, 2016)

2.4 Impact of institutional support

School leadership and institutional policies play a big role in facilitating or hindering ICT use. Administrative support, resource allocation, and professional development initiatives can influence teachers' experiences. The level of support from school administration and policies can significantly impact teachers' willingness and ability to use ICT. Lack of resources, technical support, and infrastructure can be major deterrents (Davis, 2004). If teachers lack or have inadequate training, they may struggle impacting their confidence and ability to use ICT tools. Institutional support is crucial for effective ICT integration (Ertmer and Ottenbreit-Leftwich, 2010). Limited Access to Resources due to insufficient funding for technology can restrict the availability of devices and software, therefore hindering the use of ICT. Lack of institutional support may also lead to poor infrastructure, which in turn lead to weak internet connectivity and outdated equipment which also can hinder lesson delivery (Hennessy and London, 2013). However consequently, governments have invested in the integration of ICT in education at all levels to equip the learners with the skills needed for modern life and beyond (Wambiri & Ndani, 2016).

2.5 Teacher attitudes and beliefs

Teachers' beliefs about technology play a role in education, affecting their willingness to integrate ICT tools. These include examining factors such as confidence, perceived usefulness, and previous experiences with technology.

Teacher attitudes and beliefs significantly impact the use of ICT in education. Many teachers may feel overwhelmed or skeptical about integrating technology into their teaching practices. Barriers include lack of confidence, fear of change, and perceived inadequacy of training.

Research shows that positive attitudes correlate with higher technology adoption (Ertmer, 1999; Inan & Lowther, 2010).

According to the research made by Murithi and Jin Eun Yoo (2021), the results indicated that teachers have a high attitude towards the use of ICT regardless of gender and the numerous challenges that they face. To encourage the younger teachers to use technology and to train their older colleagues on integration in teaching, the government should consider giving incentives. A reward such as official recognition or sponsorship for further ICT in education training could act as a good motivator to younger teachers.

2.6 Student engagement and learning outcomes

1. Student engagement and learning outcomes can be challenging for teachers using ICT (Information and Communication Technology). Factors include:
2. Digital Divide- Not all students have equal access to technology (Hattie, 2009).
3. Distraction- Devices can lead to off-task behavior (Bennett and Maton, 2010).
4. Skill Gap- Teachers and students may lack the necessary skills for effective use (Hattie, 2009).
5. Assessment- Measuring outcomes can be difficult due to varying the use of technology among learners (Selwyn, 2016).

2.7 Cultural and contextual factors

The integration of Information and Communication Technology (ICT) in education has the potential to enhance teaching and learning experiences significantly. However, numerous cultural and contextual factors can pose challenges for teachers effectively using ICT in the classroom. These factors highlight the complexities involved in the integration of ICT in educational settings and necessitate a thoughtful approach to professional development, resource allocation, and curriculum design. Here are 7 cultural and contextual factors that can challenge teachers in using ICT:

1. **Digital Divide** - Unequal access to technology can hinder effective use. Not all students have equal access to technology at home, which can complicate the use of ICT in

instruction. Teachers may feel constrained in their ability to assign technology-based tasks (Warschauer, 2004).

2. **Cultural Attitudes** - Resistance to change or technology can affect adoption. Different cultures have varying attitudes towards technology. In some cultures, there may be skepticism about the effectiveness of ICT in education, which can hinder its adoption (Ertmer, 1999).
3. **Training and Support** - Lack of professional development can limit teachers' skills. Insufficient professional development opportunities can leave teachers feeling unprepared to integrate ICT into their teaching practices effectively (Hug, 2005).
4. **Curriculum Constraints** - Rigid curricula may not integrate ICT effectively. When educational technology and content are not culturally relevant to students, engagement may suffer. Teachers may be challenged by the need to adapt global content to fit local contexts (Adair-Hauck and Donato, 2002).
5. **Language Barriers** - Language differences can complicate ICT usage. In multilingual societies, ICT tools often operate in dominant languages, creating a mismatch with local languages spoken by students and teachers. This linguistic gap can impede effective communication and learning when using technology.
6. **Resistance to Change** - Some educators may resist changing traditional teaching practices due to comfort with established pedagogies or fear of technology. This resistance can impede the effective incorporation of ICT (Fullan, 2001).
7. **Differing Levels of Digital Literacy** - Variability in students' and even teachers' digital literacy can create challenges. Teachers must consider varying skill levels when implementing ICT in lessons to ensure all students can participate (Martin and Grudziecki, 2006).

2.8 Gaps in literature

Despite growing research on ICT integration in education, a significant gap exists regarding the preparedness and challenges faced by biology teachers in developing countries like Bangladesh (Farhana, Khan, & Chowdhury, 2024). Most existing studies focus broadly on ICT in education but fail to address the specific obstacles biology teachers encounter when incorporating ICT into

their pedagogical practices. This lack of targeted research limits understanding of the unique needs and barriers within secondary biology education.

Additionally, there is insufficient investigation into teachers' acceptance and readiness to use ICT, particularly their proficiency with educational software and digital tools essential for effective teaching. The Technology Acceptance Model (TAM) offers a useful framework to evaluate biology teachers' willingness to adopt ICT in instruction (Masrom, 2007), yet it has not been widely applied in this context.

Furthermore, socio-economic and infrastructural challenges in Bangladesh — such as limited resources, inadequate teacher training, and restricted access to technology — exacerbate difficulties in ICT integration (Kaur, 2023). Students today are generally more comfortable with technology, highlighting the need for innovative teaching approaches that leverage ICT to enhance engagement and reduce monotony.

This study aims to fill these gaps by exploring the specific challenges biology teachers face in integrating ICT tools into their teaching, thus contributing to more effective strategies tailored to the realities of developing countries' educational environments.

2.9 Chapter summary

The theoretical framework included models which helped to explain teachers' attitudes and behaviors towards ICT integration. The chapter provided an overview of the various ICT tools commonly used in education, such as learning management systems, interactive whiteboards, and educational applications highlighting how different tools may present unique challenges. There are several barriers to integration of ICT which include technical challenges, lack of training and resistance to change.

3 METHODOLOGY

3.1 Introduction

Chapter three will outline the research methods. This chapter outlines the methods used to conduct research on the challenges experienced by teachers in the use of ICT tools in teaching and learning at Sanye and Mushowani Secondary Schools. It covers research design, methods, instruments, target population, sampling, data collection, and analysis procedures. A summary of the main aspects covered in the chapter will be provided at the end. On the other hand, research methodology explains the methods by which you may proceed with your research. Research methods involve conduct of experiments, tests, surveys and the like. In this respect, mixing qualitative with quantitative methods provides opportunity to corroborate results from diverse methods of studying a given phenomenon in a more rigorous manner (Neuman, 1997).

3.2 Research design

This study adopted a descriptive survey design, which is suitable for gathering data on current conditions, practices, and challenges experienced by teachers in the use of ICT tools in teaching and learning. This design allows the researcher to collect both qualitative and quantitative data from the targeted population.

3.3 Research methods

The research includes both quantitative and qualitative methods. Quantitative research methodology is the type by which you test the significance of your hypothesis, in other words you answer the words: How much? Is there a relationship? Quantitative research methods tend to be systematic and use numbers. However, Qualitative methodology is the type by which you depend on your observations and descriptions. It is subjectively and descriptive, no facts. This kind of method is used to assess knowledge's, attitudes, behaviours, and opinions of people depending on the topic of the research. Researchers in this type of method can use his or her opinion and experiences which are not allowed to be used in quantitative method at all. Thus, qualitative research methods include action research, case study, ethnography, grounded

research, semiotics, discourse analysis, hermeneutics and narrative while quantitative research methods encompass surveys, simulation, mathematical modelling, laboratory experiments, statistical analysis, econometric and structured equations modelling (Myers, 2009).

3.4 Research instruments

Questionnaire: Used to collect data from teachers, with both closed and open-ended questions, also including Likert-scale items to measure perceptions and challenges to help in gaining a comprehensive understanding of the challenges. A questionnaire is a written list of questions, the answers to which are recorded by respondents. In a questionnaire respondents read the questions, interpret what is expected and then write down the answers. Closed-ended questions limit respondents' answers, the participants are allowed to choose from either a pre-existing set of dichotomous answers, such as yes/no, true/false, or ranking scale response options. When a question has two possible responses, we consider it dichotomous. Questionnaires often use dichotomous questions that ask for a Yes/No, True/False or Agree/Disagree response. So, in this project questionnaires were used to try and find out what could be the challenges facing teachers in the use of ICT, and the responses given by the learners also helped to have a clear picture on these responses. A questionnaire can produce both quantitative and qualitative results. Fifteen (15) questionnaires will be administered to teachers at Sanye and Mushowani secondary schools.

3.5 Pilot study

A pilot study was conducted with a small group of teachers from a nearby school who were not involved in the main research to test the clarity, reliability, and validity of the questionnaire. Feedback was used to revise ambiguous items and improve the instrument.

3.6 Population

The population consists of all teachers at Sanye and Mushowani Secondary School who are involved in classroom teaching and are expected to be using ICT tools in their instructional delivery.

3.7 Sample

The sample involved all teachers who are actively involved in teaching across different departments at Sanye and Mushowani secondary schools who participated since these are small secondary schools. A total of Fifteen (15) teachers participated in the study.

3.8 Data collection procedures

Questionnaires were distributed to teachers and collected over a two-week period.

3.9 Data presentation and analysis

The investigator used tables and graphs to present the data got from the questionnaires. Quantitative data were analyzed using descriptive statistics (percentages, frequencies), while qualitative data were analyzed through thematic analysis, identifying common patterns and categories.

3.10 Ethical considerations

Permission was sought from the school authorities and informed consent was obtained from all participants. Confidentiality and anonymity were ensured throughout the research process.

3.11 Chapter summary

The research involved both the qualitative and quantitative methods and the research instruments which were used to make these methods successful are questionnaires. Tables and graphs were used in data presentation and analysis.

4 RESULTS AND DISCUSSIONS

4.1 Introduction

This chapter focuses on presentation, description, interpretation and analysis of data gathered during this project. The data is presented using tables and graphs. The researcher used both quantitative and qualitative data analysis. Oates (2006) defined quantitative data as data or evidence based on data and qualitative data including all non-numeric data.

4.2 Response rate

Of the 15 participants chosen for the research, only 10 managed to respond to the questionnaires. This translates to about 66.7 % responses. Hence 10 responses will be analyzed providing data for the research.

Table 1: Respondents by age

Age group	Male	Female	Total	Percentage (%)
30 and below	0	0	0	0
31- 35	1	2	3	30
36- 40	0	3	3	30
41- 45	1	1	2	20
46 and above	2	0	2	20
TOTAL	4	6	10	100

From the data collected using questionnaires it shows that the respondents belonged to different age groups as shown by table 1. A total of three (3) teachers, one (1) male and two (2) females giving a total percentage of 30% belonged to the age group of 31- 35 years. Zero (0) males and three (3) females belonged to the age group of 36- 40 years giving a total percentage of 30%.

One (1) male and one (1) female belonged to the age group of 41- 45 years with a total percentage of 20%. The last age group was 46 and above, had a total percentage of participants of 20%, comprising of two (2) males and zero (0) females.

4.3 Gender of teachers

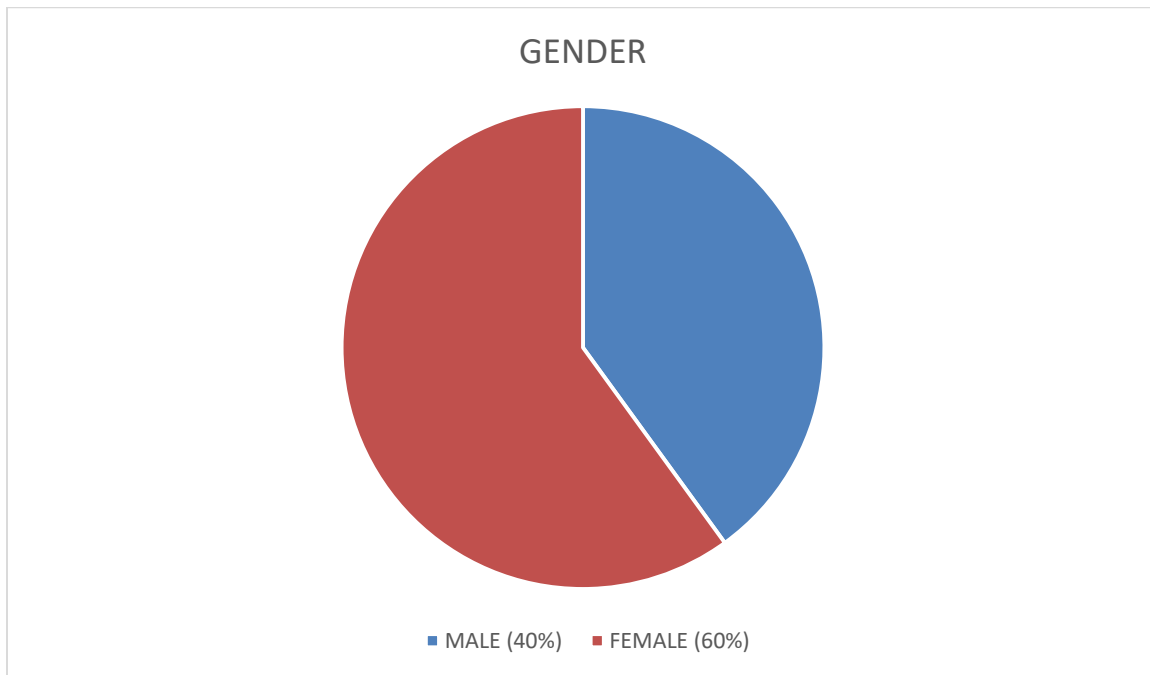


Figure 1: Respondents by gender

The respondents were mainly females as shown by the data given by the questionnaires. Six (6) females responded adding up to a total of 60%, whilst only 4 males responded adding up to a total of 40%.

4.4 Respondents highest level of qualification

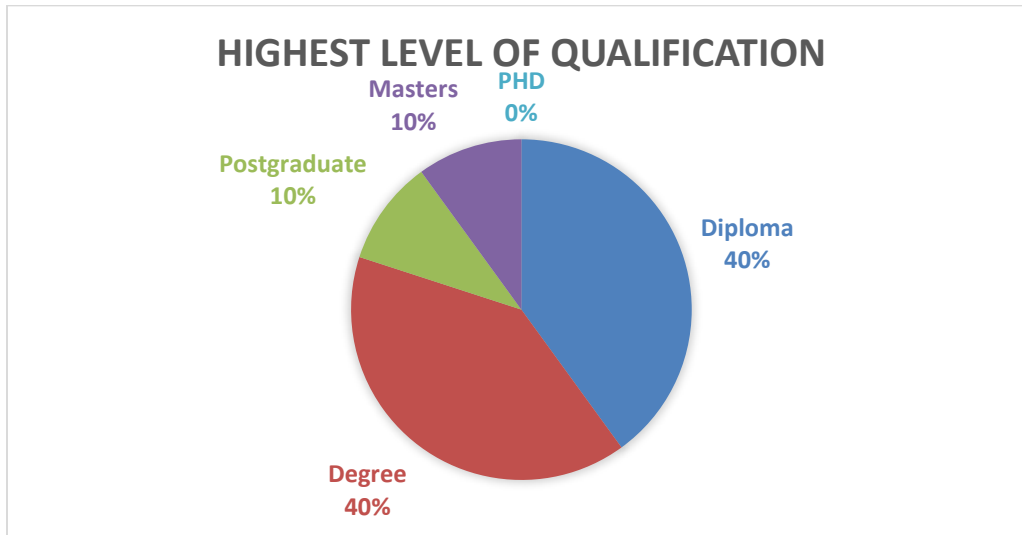


Figure 2: Respondents by level of qualification

The respondents had different levels of qualifications as shown by the chart above.

Table 2: Subject(s) taught by respondents

RESPONDENT	SUBJECT
1	Mathematics
2	Heritage
3	Commerce and Agriculture
4	English, Shona and Physical Education
5	Mathematics
6	History and Sociology
7	Agriculture
8	Mathematics
9	History and Heritage
10	Mathematics

The data from the questionnaires showed that the respondents were from different learning areas as shown by the table above.

4.5 Availability of ICT Gadgets

Table 3: My school has enough ICT gadgets for teaching purposes?

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
0	0	0	0	2	20	2	20	6	60

The results show that most respondents strongly disagreed (6) or disagreed (2) with the statement, “my school has enough ICT gadgets for teaching purposes”. Only 2 respondents were neutral, and none agreed or strongly agreed. This indicates a clear concern among teachers that the school lacks adequate ICT equipment for effective teaching. The low availability of ICT tools may be limiting the integration of technology in the learning process, suggesting a need for investment in ICT infrastructure.

Table 4: ICT gadgets are available and sufficient for the number of learners?

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
0	0	0	0	0	0	3	30	7	70

The results clearly show that no respondents agreed or strongly agreed with the statement that ICT gadgets are available and sufficient for the number of learners. Instead, 7 strongly disagreed and 3 disagreed, with 0 neutral responses. This indicates a strong consensus that ICT gadgets at the school are insufficient for the current number of learners. This may hinder effective teaching

and learning through technology, highlighting the urgent need for more ICT resources to support digital education.

Table 5: The available ICT tools are regularly maintained and functional.

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
0	0	1	10	1	10	2	20	6	60

The results indicate that most respondents strongly disagreed (6) or disagreed (2) with the statement, "The available ICT tools are regularly maintained and functional". Only 1 respondent agreed, and 1 was neutral, with no one strongly agreeing. This suggests that most ICT tools at the school are poorly maintained or often non-functional, which may limit their effectiveness in supporting teaching and learning. There is a clear need for improved maintenance and regular service of ICT equipment.

Table 6: I face the following challenges related to the availability of ICT gadgets at my school?

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
5	50	3	30	2	20	0	0	0	0
3	30	3	30	3	30	1	10	0	0
1	10	3	30	4	40	1	10	1	10
5	50	2	20	2	20	0	0	1	10
5	50	1	10	3	30	1	10	0	0

The data reveals the main learner-related challenges affecting teachers' use of ICT tools:

1. **Not enough devices** – Majority strongly agreed (5), with others agreeing or neutral. This shows a serious shortage of ICT gadgets.
2. **Some devices are not working** – Responses were mixed but leaned toward agreement, indicating maintenance issues with existing tools.
3. **Devices are outdated** – Most respondents were neutral or agreed, showing concern about the relevance and performance of the devices.
4. **Limited access due to class schedules** – Many strongly agreed or agreed, suggesting timetable conflicts limit ICT use.
5. **No challenges** – Very few respondents agreed here, indicating most teachers do face challenges when using ICT in teaching.

Teachers face multiple barriers in using ICT tools effectively, mainly due to a lack of sufficient, functional, and up-to-date devices, as well as limited access. This highlights the need for improved ICT infrastructure and better scheduling to support effective integration of technology in education.

4.5.1 What improvements would you suggest regarding ICT equipment in your school?

Here are some of the improvements for ICT equipment in schools suggested by the participants:

1. Increase the number of available devices like computers, tablets, and projectors.
2. Regular maintenance and timely repairs to keep equipment functional.
3. Upgrade outdated devices to support current software and teaching needs.
4. Provide accessories such as headphones, webcams, and printers.
5. Create dedicated ICT labs with enough space and resources.
6. Ensure power backup to avoid disruptions during lessons.
7. Offer training sessions for teachers to effectively use the equipment.
8. Schools should introduce ICT levy to help in funding schools so that they can buy the necessary ICT equipment.
9. Learners should also bring their own devices to school.

4.6 Internet Connectivity

Table 7: Internet services are affordable for teachers and the school

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
0	0	0	0	1	10	2	20	7	70

Most respondents strongly disagreed (7) or disagreed (2) with the statement, "Internet services are affordable for teachers and the school". Only 1 respondent was neutral, and no one agreed or strongly agreed. This clearly indicates that internet services are largely viewed as unaffordable, posing a significant barrier to effective ICT use in teaching and learning. The findings suggest a need for more budget-friendly internet options or institutional support to improve accessibility and digital integration in schools.

Table 8: The school has reliable internet access

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
0	0	0	0	0	0	3	30	7	70

The results show that 7 respondents strongly disagreed and 3 disagreed with the statement, "The school has reliable internet access". There were no neutral, agree, or strongly agree responses. This clearly indicates that the school's internet access is widely viewed as unreliable, which poses a major challenge to the integration of ICT in teaching and learning. Addressing this issue would require improving internet infrastructure to support digital education effectively.

Table 9: I avoid using online tools due to unreliable internet access

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
4	40	4	40	1	10	1	10	0	0

Many respondents either strongly agreed (4) or agreed (4) with the statement, "I avoid using online tools due to unreliable internet access". Only 1 was neutral, and 1 disagreed, with none strongly disagreeing. This indicates that unreliable internet access significantly discourages teachers from using online tools in their teaching. The results highlight the need to improve internet reliability in schools to encourage greater adoption of digital resources in the learning process.

Table 10: Internet connectivity affects my teaching in these ways?

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
5	50	5	50	0	0	0	0	0	0
1	10	1	10	2	20	3	30	3	30
1	10	2	20	1	10	2	20	4	40
2	20	2	20	3	30	2	20	1	10

The results show mixed responses to how internet connectivity affects teaching:

1. **“It helps me work more efficiently”** – Most respondents strongly agreed (5) and agreed (5), showing that when internet is available, it enhances teaching efficiency.

2. **“It sometimes interrupts my work”** – Responses were more varied, with agreement levels spread across the scale. This suggests occasional connectivity issues that interfere with teaching.
3. **“It often disrupts my work”** – A few strongly disagreed (4) and others showed mixed opinions, indicating that while disruptions occur, they are not always severe or frequent for all teachers.
4. **“I do not use internet for teaching”** – Responses were also mixed, showing that some teachers do not rely on internet, possibly due to lack of access or confidence.

While the internet is seen as a helpful tool for improving teaching efficiency, unreliable or inconsistent connectivity still presents a challenge for some teachers. Increasing reliability and training could help maximize the benefits of internet use in education.

4.6.1 What changes do you think could improve internet access for teachers?

Here are some of the suggested changes that could improve internet access for teachers:

1. Installation of stronger and more reliable Wi-Fi routers across the school.
2. Upgrading to higher bandwidth packages to support multiple users.
3. Partnering with internet service providers for subsidized educational plans.
4. Providing teachers with data allowances or Wi-Fi access points for teaching use.
5. Installing backup power sources, for example solar or batteries to keep internet running during power cuts.
6. Improving computer labs and staff workrooms with consistent internet connections.
7. Introducing ICT training to help teachers make full use of online resources once access is improved.

4.7 Teachers' Ability to Use ICT Tools.

Table 11: I have received sufficient training in the use of ICT tools

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
3	30	4	40	0	0	1	10	2	20

The results show that while some respondents strongly agreed (3) or agreed (4) that they have received sufficient training in the use of ICT tools, a notable number disagreed (1) or strongly disagreed (2). There were no neutral responses. This indicates that although a portion of teachers feel adequately trained, there remains a significant group who believe the training provided is insufficient. This highlights the need for more comprehensive and ongoing ICT training programs to ensure all teachers are confident and capable in using technology effectively in teaching.

Table 12: I feel confident using ICT tools in my lessons

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
3	30	5	50	0	0	1	10	1	10

The results indicate that most respondents agree (5) or strongly agree (3) that they feel confident using ICT tools in their lessons. Only a few teachers disagreed (1) or strongly disagreed (1), with no neutral responses. This suggests that while most teachers feel confident integrating ICT in their teaching, a small number still lack confidence, highlighting the need for continued support and training to boost ICT skills among all educators.

Table 13: I can use educational software, online platforms, or digital content effectively

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
2	20	4	40	2	20	1	10	1	10

The results show that most respondents strongly agreed (2) or agreed (4) that they can use educational software, online platforms, or digital content effectively. Two were neutral, while one disagreed and one strongly disagreed. This suggests that most teachers feel confident and capable in using digital tools for teaching. However, the presence of neutral and disagreeing responses indicates that some teachers may still require support or further training to fully utilize educational technology effectively.

Table 14: I need more training to fully integrate ICT into my teaching

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
3	30	3	30	1	10	2	20	1	10

The results indicate that most respondents either strongly agreed (3) or agreed (3) with the statement, "I need more training to fully integrate ICT into my teaching". One respondent was neutral, while 2 disagreed and 1 strongly disagreed. This suggests that while many teachers recognize the need for additional ICT training, some feel adequately prepared. Overall, the data highlights the importance of providing ongoing professional development to ensure all teachers can confidently and effectively use ICT in their teaching.

Table 15: I face the following challenges when using ICT tools?

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
2	20	2	20	1	10	3	30	2	20
4	40	4	40	0	0	2	20	0	0
3	30	5	50	1	10	0	0	1	10
2	20	2	20	5	50	0	0	1	10
0	0	0	0	5	50	1	10	4	40

The results reveal the main challenges teachers face when using ICT tools:

1. **Lack of training** – Responses were spread across all options, with most being neutral or disagreeing. This shows that while some feel undertrained, others do not see it as a major issue.
2. **Lack of access to tools** – Most respondents strongly agreed (4) or agreed (4), clearly showing inadequate access to ICT tools is a significant barrier.
3. **Poor internet connectivity** – Majority strongly agreed (3) or agreed (5), confirming that unreliable internet is a major and consistent challenge.
4. **Not enough time in class** – Mixed responses, with most disagreeing (5) or strongly disagreeing (2), suggesting that time may not be a major obstacle for most.
5. **No challenges faced** – Majority strongly disagreed (5) or disagreed (1), indicating that most teachers do face ICT-related challenges.

The findings show that the most significant challenges are poor internet connectivity and lack of access to ICT tools, while time constraints and lack of training are less severe. This highlights the need to prioritize infrastructure and equipment availability to support effective ICT use in teaching.

4.7.1 What kind of support or training would help you improve your ICT use?

Here are examples of support or training that would help improve ICT use for teachers suggested by the participants:

1. Staff development on the use of ICT.
2. Hands-on training workshops on using educational software, online platforms, and digital tools.
3. Regular refresher courses to keep up with new technologies.
4. Technical support staff to assist with troubleshooting and maintenance.
5. Access to user manuals, video tutorials, or online help centers.
6. Training on integrating ICT into lesson planning and assessment.
7. Workshops on using internet resources safely and effectively.
8. Peer mentoring or ICT champions to offer on-site help and guidance.

4.8 Learner-related challenges

Table 16: Many learners lack access to ICT devices at home, which affects lesson continuity.

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
5	50	3	30	0	0	1	10	1	10

The results show that most respondents either strongly agreed (5) or agreed (3) with the statement, "Many learners lack access to ICT devices at home, which affects lesson continuity". Only 1 disagreed and 1 strongly disagreed, with no neutral responses. This indicates a strong consensus that limited access to ICT devices at home is a major challenge impacting learners' ability to follow up on lessons outside school. The findings highlight the need for strategies to bridge the digital gap at home, such as providing shared devices, offline learning materials, or community access points.

Table 17: Learners get easily distracted when ICT is used in class

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
1	10	2	20	4	40	2	20	1	10

The results show that responses to the statement "Learners get easily distracted when ICT is used in class", were mixed. While 1 strongly agreed and 2 agreed, a significant number (4) were neutral, and 3 disagreed (2 disagreed, 1 strongly disagreed). This suggests that while some teachers observe distraction among learners during ICT use, many are either unsure or do not find it a major issue. The high number of neutral responses may indicate that the impact of ICT on learner focus varies depending on how it is used, or that more structured integration is needed to maintain student engagement.

Table 18: Teaching slows down because learners need constant help using ICT tools

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
2	20	6	60	1	10	1	10	0	0

The results show that most respondents agreed (6) or strongly agreed (2) with the statement "Teaching slows down because learners need constant help using ICT tools". Only 1 was neutral, and 1 disagreed, with no strong disagreement. This indicates a clear concern that learners' limited ICT skills are slowing down lesson delivery, placing extra pressure on teachers during class time. The findings suggest a need to improve learners' digital literacy through early ICT training or support systems to ensure smoother integration of technology in teaching.

Table 19: Learners often misuse ICT tools, e.g., for gaming or social media during lessons

Strongly agree 5	%	Agree 4	%	Neutral 3	%	Disagree 2	%	Strongly Disagree 1	%
3	30	5	50	1	10	1	10	0	0

The results indicate that most respondents agreed (5) or strongly agreed (3) with the statement "Learners often misuse ICT tools, for example gaming or social media during lessons". Only 1 respondent was neutral and 1 disagreed, with no strong disagreement. This shows a strong concern among teachers that ICT tools are sometimes misused by learners, which can disrupt learning. The findings highlight the need for better monitoring, digital discipline, and structured use of ICT to keep learners focused during lessons.

4.8.1 What suggestions would you make to help overcome learner-related challenges in using ICT?

Here are some of the suggested ways to help overcome learner-related challenges in using ICT:

1. Provide basic ICT skills training for learners to build confidence and independence.
2. Set clear rules and guidelines on appropriate use of ICT during lessons.
3. Supervise learners closely when using ICT to prevent misuse.
4. Incorporate engaging, educational content that keeps learners focused.
5. Create peer support groups where learners help each other with ICT tasks.
6. Ensure equal access by providing shared devices or learning centers.
7. Limit distractions by using apps or software that restrict non-educational use.
8. Offer regular refresher sessions to update learners' ICT skills.

5 CONCLUSION AND RECOMMENDATIONS

5.1 Conclusion

The study explored the challenges experienced by teachers in the use of ICT tools in teaching and learning at Sanye and Mushowani Secondary School. The findings revealed that teachers face multiple obstacles, including limited availability of ICT gadgets, poor internet connectivity, inadequate training, and a lack of technical support. Additionally, learner-related issues such as misuse of devices and low digital literacy further hinder effective integration of ICT. While teachers demonstrated a positive attitude towards the use of ICT, their ability to use the tools effectively was hampered by infrastructural and capacity gaps. The study also highlighted that although ICT tools are available to some extent, they are insufficient and not regularly maintained. These findings align with previous studies that suggest successful ICT integration require both resources and proper training.

5.2 Recommendations

Based on the findings, the following recommendations are proposed:

5.2.1 Availability of ICT Gadgets

- Increase the number of available devices like computers, tablets, and projectors.
- Regular maintenance and timely repairs to keep equipment functional.
- Upgrade outdated devices to support current software and teaching needs.
- Provide accessories such as headphones, webcams, and printers.
- Create dedicated ICT labs with enough space and resources.
- Ensure power backup to avoid disruptions during lessons.
- Offer training sessions for teachers to effectively use the equipment.
- Schools should introduce ICT levy to help in funding schools so that they can buy the necessary ICT equipment.

5.2.2 Internet Connectivity

- Installation of stronger and more reliable Wi-Fi routers across the school.
- Upgrading to higher bandwidth packages to support multiple users.
- Partnering with internet service providers for subsidized educational plans.
- Providing teachers with data allowances or Wi-Fi access points for teaching use.
- Installing backup power sources, for example solar or batteries to keep internet running during power cuts.
- Improving computer labs and staff workrooms with consistent internet connections.
- Introducing ICT training to help teachers make full use of online resources once access is improved.

5.2.3 Teachers' Ability to Use ICT Tools.

- Staff development on the use of ICT
- Hands-on training workshops on using educational software, online platforms, and digital tools.
- Regular refresher courses to keep up with new technologies.
- Technical support staff to assist with troubleshooting and maintenance.
- Access to user manuals, video tutorials, or online help centers.
- Training on integrating ICT into lesson planning and assessment.
- Workshops on using internet resources safely and effectively.
- Peer mentoring or ICT champions to offer on-site help and guidance.

5.2.4 Learner-related challenges

- Provide basic ICT skills training for learners to build confidence and independence.
- Set clear rules and guidelines on appropriate use of ICT during lessons.
- Supervise learners closely when using ICT to prevent misuse.
- Incorporate engaging, educational content that keeps learners focused.
- Create peer support groups where learners help each other with ICT tasks.
- Ensure equal access by providing shared devices or learning centers.
- Limit distractions by using apps or software that restrict non-educational use.

- Offer regular refresher sessions to update learners' ICT skills.

5.3 Chapter Summary

The study done at Sanye and Mushowani secondary schools proved that teachers in rural schools face different challenges in the use of ICT tools. Some of the suggested recommendations are as highlighted below:

- **Provision of Adequate ICT Infrastructure-** The school should invest in more up-to-date ICT devices and ensure that they are sufficient for both teachers and learners. Maintenance schedules should also be established to ensure functionality.
- **Improvement of Internet Connectivity-** Affordable and reliable internet access should be prioritized to allow for consistent use of online educational resources.
- **Capacity Building for Teachers** - Regular professional development and in-service training programs should be conducted to improve teachers' confidence and competence in using ICT.
- **Learner Digital Literacy Programs** - Learners should be trained on responsible use of ICT tools to minimize distractions and misuse.
- **Technical Support Services** - Schools should consider appointing ICT technicians or support staff to assist teachers with technical issues during lessons.
- **Policy Support and Monitoring** - School administrators and the Ministry of Education should support ICT integration through policies that encourage and monitor effective implementation.

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Appendix 1

Questionnaire: ICT at Sanye Secondary and Mushowani Secondary Schools

Dear Respondent, my name is Present Mashambanhaka. Currently I am studying towards an Honours Bachelor of Science Degree in Biology Education at Bindura University of Science Education. I am conducting research On the Challenges Being Faced by Teachers in the Use of ICT Tools in Teaching and Learning, as part of my academic research. The purpose of this questionnaire is to gather your honest views and experiences related to the use of ICT in education. Your participation is voluntary, and all responses will be kept confidential. They will only be used strictly for academic purposes. There are no right or wrong answers, just your perspective. If there are any questions that you do not understand you are free to ask. Your input is highly valuable and will contribute greatly to the success of this study. Thank you for taking the time to participate.

Section 1: Personal information

Date: /...../.....

Gender: Male ☐ Female ☐ **Age:** ☐

Highest Level of Qualification:

O' level: F1 ☐ F2 ☐ F3 ☐ F4 **A' Level:** F5 ☐ F6 ☐

Tertiary: Diploma ☐ Degree ☐ Postgraduate ☐ Masters ☐ PHD ☐

Please indicate which subject(s) you teach:

Maths ☐ English ☐ Combined Science ☐ Others (please specify):.....

Please select how much you agree or disagree with the following statements using the key below. [Indicate using a tick (✓) on the spaces provided in the boxes below to indicate your choice of answer].

Key

5	4	3	2	1
Strongly Agree	Agree	Neutral	Disagree	Strongly Disagree

SECTION 2: Availability of ICT Gadgets

1. My school has enough ICT gadgets for teaching purposes?

5	4	3	2	1

2. ICT gadgets are available and sufficient for the number of learners?

5	4	3	2	1

3. The available ICT tools are regularly maintained and functional.

5	4	3	2	1

4. I face the following challenges related to the availability of ICT gadgets at my school?

	5	4	3	2	1
Not enough devices					
Some devices are not working					
Devices are outdated					
Limited access due to class schedules					
No challenges					

5. What improvements would you suggest regarding ICT equipment in your school?

Section 3: Internet Connectivity

1. Internet services are affordable for teachers and the school.

5	4	3	2	1

2. The school has reliable internet access.

5	4	3	2	1

3. I avoid using online tools due to unreliable internet access.

5	4	3	2	1

4. Internet connectivity affect my teaching in these ways?

	5	4	3	2	1
It helps me work more efficiently					
It sometimes interrupts my work					
It often disrupts my work					
I do not use internet for teaching					

5. What changes do you think could improve internet access for teachers?

Section 4: Teachers' Ability to Use ICT Tools.

1. I have received sufficient training in the use of ICT tools.

5	4	3	2	1

2. I feel confident using ICT tools in my lessons.

5	4	3	2	1

3. I can use educational software, online platforms, or digital content effectively.

5	4	3	2	1

4. I need more training to fully integrate ICT into my teaching.

5	4	3	2	1

5. I face the following challenges when using ICT tools?

	5	4	3	2	1
Lack of training					
Lack of access to tools					
Poor internet connectivity					
Not enough time in class					
I do not face any challenges					

6. What kind of support or training would help you improve your ICT use?

Section 5: Learner-related challenges

1. Many learners lack access to ICT devices at home, which affects lesson continuity.

5	4	3	2	1

2. Learners get easily distracted when ICT is used in class.

5	4	3	2	1

3. Teaching slows down because learners need constant help using ICT tools.

5	4	3	2	1

4. Learners often misuse ICT tools, e.g., for gaming or social media during lessons.

5	4	3	2	1

5. What suggestions would you make to help overcome learner-related challenges in using ICT?
