

DISSERTATION SUBMISSION

Title: Experiences of School Management Teams Towards Implementing Information and Communication Technology In High Schools

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*Inspiring
excellence,
transforming
lives through
quality,
impact, and
care.*

Declaration

I, HLENGIWE MALINGA (2020469645), declare that the thesis, *Experiences of school management teams towards implementing information and communication technology in high schools* submitted for the qualification of Masters (M.Ed.) at the University of the Free State is my own independent work. All the references that I have used have been indicated and acknowledged by means of complete references. I further declare that this work has not previously been submitted by me at another university or faculty for the purpose of obtaining a qualification.



SIGNED

29. November. 2024

DATE

Abstract

School Management Teams (SMTs) are crucial for the effective implementation of information and communication technology (ICT) in schools. The involvement of SMTs in the implementation of ICTs in schools brings with it both positive and negative experiences. The study investigates SMT experiences concerning the use of ICTs during the teaching and learning process and in school administration activities. This study investigated the experiences and involvement of SMTs in the implementation of ICT in high schools. Furthermore, the study sought to identify the important variables that may impede SMTs' leadership responsibilities in successfully building suitable ICT infrastructures in their schools. The study was based on the diffusion of innovations (DOI) theory, which examined how educators and SMT used ICT innovations in schools. In addition, the study adopted the interpretive paradigm, the qualitative research approach and the phenomenology research design.

The research participants consisted of ten SMT members from two high schools in the Mangaung Municipality in the Free State province. The study utilised the following research instruments for data collection, namely:

- Individual semi-structured interviews
- Document analysis

SMT members at the two schools availed themselves on specific dates scheduled for discussions and interviews. All SMT members participated in the interviews to gain a collective view of their experiences with ICT implementation at their schools. Qualitative methods were employed in this study to analyse the data and explore the experiences of SMT members towards ICT implementation.

The analysis of the data disclosed that SMT members who participated in this study have derived experiences about ICT, both positive and negative, due to individual experiences when implementing ICT at their schools. A majority of the SMT members who participated in the study felt that the complex task of implementing the ICT infrastructure in the schools should be distributed among themselves and/or outsourced completely for those members lacking technological proficiency. In addition, most SMT members had positive experiences and made positive remarks about the endless benefits ICT has had on the teaching and learning processes and how it made administrative tasks easier and more manageable. SMT members from both schools reported that the younger generation of SMTs and teachers seemed to be more

knowledgeable about ICT than their older counterparts. With relevance to ICT implementation, the SMT members seemed to demonstrate a better understanding of the importance of exposing learners to technology, thus labelling ICT as an educational “tool.”

However, based on the data collected, it was found that differences amongst the SMT members were only significant in terms of implementation, teaching practices, and ICT skills. This study also offers several recommendations for the SMT members to consider as well as suggest ways that could be used to implement ICT infrastructures in high schools. The study deduced the following recommendations to enhance the implementation of ICT in schools:

- The need for better teacher training and professional development.
- The importance of strong leadership in driving ICT adoption.
- The necessity of adequate funding and resources for infrastructure development.
- The value of collaborative approaches to ICT implementation, including the involvement of teachers, learners, and the wider community.

Key Words: School Management Teams, Information and Communication Technology

Dedication

This thesis is dedicated to:

- To my mom and dad, Mr. John and Mrs. Beauty Malinga. I deeply appreciate your indispensable contributions to my life, particularly your illumination of the path of education as the most profound method for an individual's holistic development. I will always be grateful to you for the enduring values you have instilled in me.
- To my siblings, Mr. Nkosinathi Malinga and Mr. Mbuso Malinga. I express my profound appreciation for the unwavering support that stems from a strong family bond. This achievement is dedicated to both of you, my dear brothers. May it serve as an enduring source of inspiration and model for our future generations.
- To my son, Ndzalo Phiwokuhle Khoza, who was born during the course of this study: "Son, you are my blessing from the Lord and my reason for living. Thank you for giving me a fighting spirit to carry on with my studies."
- I also wish to extend my appreciation to my beloved husband, Mr. Prince Khoza for all your support, love and patience during this academic journey, thank you.

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List of Acronyms

CAT	Computer Applications Technology
DBE	Department of Basic Education
DOE	Department of Education
DHET	Department of Higher Education and Training
4IR	Fourth Industrial Revolution
HOD	Head of Department
ICT	Information and Communication Technology
K-12	Kindergarten to Twelfth Grade
LMS	Learning Management System
LEA	Local Education Authorities
SGB	School Governing Body
SMT	School Management Team
SA-SAMS	South African School Administration Management System
SADC	Southern African Development Community
TPACK	Technological Pedagogical Content Knowledge

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Chapter 1

STUDY ORIENTATION

1.1 INTRODUCTION

This study examines the experiences of school management teams (hereafter SMTs) regarding the implementation and of information and communication technologies (hereafter ICTs) in high schools. This study focuses on investigating the experiences of SMTs towards the implementation of ICTs in schools located in the Mangaung Municipality in the Free State province. This study unpacks the experiences that SMTs undergo during implementation of ICT resources to improve the overall school functions in administration and pedagogy.

According to Nayar and Koul (2020) the teaching and learning processes in schools have been significantly impacted by the effects of emergent technologies on a global scale, resulting in the development of high student expectations in any learning environment. High schools have become a critical component of the academic hierarchy, as they serve as the culmination of basic education and provide learners with the opportunity to progress to the next level of higher education and training (Mahlo 2020). This study examines the experiences of SMTs regarding the implementation of ICTs in high schools. The following key points are addressed in this chapter as part of the study's orientation: the background of the study, the statement of the problem, research questions, research objectives, research methods, value of the study, key concepts, and the chapter outline.

1.2 BACKGROUND

The researcher's interest in the study phenomena stems from the fact that the introduction of ICTs has transformed the education sector in several ways (Wen *et al.* 2021). The researcher was eager to examine and learn about the experiences that SMTs have in guaranteeing the seamless adoption of ICT infrastructures in schools, as well as what causes certain schools to succeed in having enough ICT resources. In South Africa, high schools play a crucial role in a student's academic journey as they mark the end of basic

education, which in turn determines students access to higher education and training (Mahlo 2020). Moreover, Sanusi, Oyelere and Omidiora (2022) state that SMTs play a major role in facilitating the implementation of technological resources in schools and managing the teaching and learning process to ensure that students acquire the necessary skills and knowledge for using technology as an educational tool prior to university.

According to the South African white paper on e-education (RSA DoE 2003 chapter 2:17) “ICTs create access to learning opportunities, redress inequalities, improve the quality of learning and teaching, and deliver lifelong learning”. SMTs play an important role in the decision-making process, policy development, planning, and budgeting for technological equipment and its installation (Rifai and Rombot 2023). The SMT is fundamentally responsible for the proper provision of ICT resources within schools, as they play an important role in the decision-making process, policy development, planning, and budgeting for technological equipment and its installation. The use of ICTs in schools facilitates the effectiveness of administrative processes and enhances the presentation of lessons in a more inclusive way. Consequently, it is imperative that SMTs become acquainted with the potential of contemporary technology and implement it in inventive ways to facilitate learning, instruction, and management (Aruleba and Jere 2022).

According to Wen, Gwendoline and Lau (2021:371) SMTs are responsible for developing and submitting a well-prepared annual budget proposal to the School Governing Body (hereafter SGB) which is a committee that approves and allocates finances for the procurement of ICT resources. For example, the budget may include a list of the exact technological equipment required in the classrooms, such as printers, computers, visualisers, microphones, and speakers (Mahlo 2020). Extensive planning by the SMT is required, which might quickly create a bottleneck during the implementation phase. To resolve this issue, SMTs may assume responsibility and seek guidance from a computer technician or teacher, either internally or externally, with the primary goal of assisting with the planning, implementation, and maintenance of technology within the school (Wong, Li, Chan, and Cheung 2022:135).

One of the critical components of ICT is computers, which provide productive tools for lifelong learning and enhance educational policies, procedures, and decision-making processes (Mingaine 2013:33). Additionally, Wong et al. (2022:136) emphasise that public high schools encounter challenges in incorporating ICTs into educational environments. There are numerous processes and procedures that the SMT should undertake in pursuit of implementing ICTs in public schools worldwide (Cheng and Parker 2023). For instance, in the USA, China, and Japan, the federal governments allocate a substantial amount as a budget for school provision for acquiring ICT equipment, implementation, and maintenance. In addition, Baker, Gowda, and Salamin (2018) mention that the implementation of ICTs in schools is a mediocre process that must be kept in check by SMTs to ensure that the technology is efficiently utilised.

The SMT plays a vital role in driving the essential academic transformation and effectively implementing ICTs. In addition, Mingaine (2021:35) highlighted the importance of the SMT demonstrating enthusiasm, commitment, and support for the implementation of ICT programs to enhance the school's progress. The growing need for having teachers who embrace modern technology and implement it into teaching and learning was echoed by Thannimalai and Raman (2018), who emphasised the importance of having SMT members who are open-minded in order to adapt to the rapid pace of technological advancements.

The management of ICTs in schools is a costly process. Given that information and communication technologies are constantly evolving, with new technologies being developed at a rapid pace each year and new versions of these technologies being developed and modified all over the world, it appears that managing the efficient use of these technologies in public high schools is a costly process (Bustamante *et al.* 2022).

Technology plays a major role in education. According to Barbour *et al.* (2019:4), countries such as the United Kingdom (hereafter UK), Canada, the United States of America (hereafter USA), Indonesia, and Turkey have developed K-12 programs

integrating technology and e-learning. The phrase "K-12" encompasses educational institutions that provide classes from kindergarten (K) to the twelfth grade (12) (Cherubini 2020:61). According to Cheng and Parker (2023), the introduction of ICTs in schools involves a multitude of different elements. The implementation of ICTs in schools is a very complex process that requires constant monitoring by SMTs to ensure its successful usage, applicability and implementation (Baker, Gowda, and Salamin 2018). In the USA, the federal government contributes enormous amounts of resources to the development of technology infrastructure.

Today, teachers must have the appropriate skills to use ICT for administrative and instructional objectives (Mahlo 2020). The SMT is responsible for ensuring that all teachers receive some type of training, whether internal or external (Mingaine 2019:34). As a result, educators must have the necessary knowledge and abilities through training in order to properly carry out their administrative and teaching tasks (Delgado, Morán, José and Burgos 2021:1). Teachers should use technology to facilitate classroom learning and administration, including the supply of lesson plan samples (Bindu 2020:79).

In the capacity of leading the SMT, it is imperative for the SMT to exemplify strong leadership and cultivate the necessary competencies to drive a pedagogical transformation that embraces the implementation of technology (Sanusi *et al.* 2022). Teachers often face challenges when it comes to selecting top-notch technology for their classrooms. As a result, they rely on the expertise of computer technicians to guide them in making the best equipment choices (Delgado 2021).

Furthermore, although South Africa's education system widely acknowledges the use of ICTs, it encounters several challenges in high schools (Stöhr and Adawi 2018:22). This makes hosting e-education challenging, as students have limited access to electronic gadgets (Mahay 2020:4). According to Khalaf (2018:14), SMTs must expand their usage of technology by combining engaging teaching approaches to cultivate technologically inclined learners.

ICT plays an important part in South Africa's education system. According to Stöhr and

Adawi (2018), although ICT is widely accepted in South Africa's education sector, high schools face a number of obstacles. Hosting e-education becomes difficult when students have limited access to electronic gadgets (Mahaye 2020). According to Khalaf (2018), in order to promote active learning among students, SMTs should investigate strategies of familiarising pupils with ICT equipment, such as offering computer studies as core subjects in high schools.

Despite the implementation of ICTs in schools, there are underlying conflicts that require attention. According to a study by Sabič, Baranović, and Rogošić (2022:354), a prevalent internal conflict in schools' centres around the attitudes of the older generation of teachers towards learning new skills and modern teaching methodologies. However, according to Semerci and Aydin (2018:94), younger teachers who are adequately trained tend to feel more at ease incorporating technology into their classroom instruction.

Despite the extensive research on teachers' and students' perceptions of technology in schools (Sanusi *et al.* 2022), there remains a research gap concerning the experiences of SMT members with ICT implementation in high schools. This study focuses on the experiences of SMTs during the implementation of technology in schools.

1.2 PROBLEM STATEMENT

Studies reveal a lack of motivation among SMTs to aid in the implementation of ICTs in schools. According to Ghavifekr and Yulin (2021:9), most high schools have computers; however, not all educators use them. Aruleba and Jere (2022) identify several obstacles to ICT implementation in high schools, such as the absence of trained management and leadership experts, teachers' reluctance to acquire ICT skills, and insufficient curriculum support. The focal point of this study is to investigate the experiences of SMT members regarding the implementation of ICTs in high schools.

1.3 THEORETICAL FRAMEWORK

The goal of theories is to explain and gain a more precise understanding of a phenomenon, such as why or how a research problem exists (Lederman and Lederman 2015).

This study's theoretical underpinning is the diffusion of innovations theory. Rogers defines diffusion of innovation as "the process by which an innovation is communicated through certain channels over time among members of a social system" (Menzli *et al.* 2022:3). Dearing and Cox (2018:183) define diffusion as a social process involving people who have been told of an innovation and plan to adopt it. This theory is based on the premise that each new innovation or development requires time to adopt and, more crucially, to apply in a given situation (Sahin 2006). Individuals perceive innovation or technology differently (Makovholo, Batyashe, Sekgweleo and Iyamu 2017:462).

In schools, the SMT is predominantly responsible for the discovery and implementation of the majority of technical advancements identified by the Department of Education (hereafter DoE) (Sahin 2006). The theory of diffusion of innovations is applied when SMTs hold regular meetings with teachers in order to urge them to participate in the implementation of technology in high schools (Pashaeypoor *et al.* 2016). Instead of technical mastery, the SMTs' cooperative efforts produce ICT implementation (Sartipi 2020:2), and persuasion is required here as well.

1.4 RESEARCH QUESTIONS

1.4.1 Primary research question:

1. What are the SMT members' experiences with implementing ICT in high schools?

1.4.2 Secondary research questions:

1. What challenges do SMT members face when facilitating the implementation of ICT in high schools?
2. How does the type of training that SMTs receive empower them to facilitate the implementation of ICT in schools?
3. How do SMTs ensure that schools have adequate and updated ICT resources?

1.4.3 RESEARCH AIM AND OBJECTIVES:

1.4.3.1 Research Aim:

1. To explore the experiences of SMTs on the implementation of ICT in schools.

1.4.3.2 Research objectives:

From the broad research aim mentioned above, the supporting objectives that need to be achieved are as follows:

1. To determine the challenges faced by SMT members when facilitating the implementation of ICTs in high schools.
2. To determine how does the type of training program needed by SMTs to enable them to facilitate the implementation of ICT in schools.
3. To understand the processes that the SMT undergo in order to ensure that schools have adequate and updated ICT resources.

1.5 RESEARCH METHODOLOGY

1.5.1 Research Paradigm

A paradigm is a collection of information that aims to answer questions that the researcher has about the phenomenon, which involves the relationship between the researcher and the subjects or objects (Wilson 2017).

This study used the interpretive research paradigm. Interpretive paradigms enable individuals to construct and reconstruct various social realities through significant interactions in their activities, and to assign meanings through interactions with others in their daily social environments (Davies and Fisher 2018:3).

The interpretive paradigm was appropriate for this study as it allowed me as the researcher to analyse semi-structured interviews concerning the experiences of SMT members with the implementation of ICTs in high schools.

1.5.2 Research approach

A research methodology is delineated by Basias and Pollalis (2018:91) as a plan and procedure that consists of the steps of broad assumptions and detailed methods of data collection, analysis, and interpretation.

The study utilised a qualitative research methodology. Qualitative researchers conduct studies and analyse phenomena in their original and unaltered environments (Rahman, 2020). Aspers and Corte (2019:140), define qualitative research as a type of research that aims to produce explanations for social phenomena in order to comprehend the social world and the reasons behind people's behaviour and actions.

The researcher utilised a qualitative technique to analyse the data gathered from interviews and document analysis. This allowed them to interpret the information and gain an understanding of the experiences of SMT members regarding the implementation of ICTs in high schools.

1.5.3 Research design

Research designs prepare the conditions for data collection (Sileyew 2019:3). Research designs are defined as “the organisation of preconditions for data collection and analysis in a systematic manner” (Dannels 2018).

This study employed the phenomenological research design. As stated by Vagle (2018:5), phenomenology allows researchers to comprehend the essence or significance of the actual experiences of a specific group of individuals. The central focus of phenomenology is that it enables researchers to examine the behaviors of social actors in various environments and interpret the acts of others. It also explores how individuals, through their interactions, construct meaningful worlds.

Furthermore, this study included the document analysis data gathering method in addition to interviews. This methodology was suitable for this research as it allowed for the examination of significant data by the researcher, such as meeting minutes pertaining to the implementation of ICT, the school's policies on ICT implementation, and any other written materials outlining the responsibilities of senior management team (SMT) members in the implementation of ICT within the school. The data obtained from papers is

subsequently utilised to corroborate the information gathered from interviews (Heale and Noble 2019:36).

This research design enabled the researcher to employ probing questions, encouraging participants to provide additional insights into their experiences with the implementation of ICTs in high schools.

1.6 DATA COLLECTION

This study employed semi-structured interviews as the main approach for gathering data. An interview, as defined by Kallio (2016:162), is a purposeful exchange of information between individuals with the goal of gathering data on a certain subject. Magaldi and Berler (2020) employ a semi-structured interview as a qualitative research technique to gather unrestricted information that explores participants' perspectives, emotions, and convictions on a specific subject.

The data obtained from the interviews was documented and transcribed. Transcription, as defined by Lester, Cho and Lochmiller (2020), refers to the process of converting audible words into a written form. Qualitative research commonly uses this method as it facilitates analysis. Therefore, it is crucial for a researcher to capture audio recordings during the data gathering process.

Aside from conducting interviews, the researcher employed the document analysis data gathering approach. This methodology was appropriate for this research because it allowed the investigator to examine significant data, including meeting minutes, school policies regarding ICT implementation, and any other written materials related to the duties of SMT members in implementing ICT in the school. The data obtained from documents was utilised to cross-reference and validate the information gathered from interviews (Noble and Heale 2019).

1.7 SAMPLING

The study employed purposive sampling. Bhardwaj (2019) provided a definition of purposive sampling as a technique that enables researchers to intentionally select

participants who possess expertise regarding the topic under investigation.

For the purposes of this research study, the sampling population is limited to two high schools in the Mangaung Municipality and about ten SMT members from both schools. The sample includes: two principals (one from each school), two deputy principals (one from each school), and six head of departments (three from each school).

The rationale for selecting these participants is that they are all members of the SMT and, as a result of their expertise, are better equipped to provide responses to enquiries and exchange information regarding the experiences of SMT members in relation to the implementation of ICTs in secondary schools.

1.8 DATA ANALYSIS

The inductive thematic analysis was employed to organise the data for the objectives of this investigation. Sundler *et al.* (2019) assert that thematic analysis enables researchers to organise the collected information into distinct themes, which will serve as an overview of the data.

The inductive thematic analysis is a method for identifying, analysing, and presenting patterns (themes) derived from gathered data (Braun and Clarke 2006). This study utilised inductive thematic analysis which allows researchers to extract several themes and sub-themes directly from the data. The utilisation of thematic analysis proved to be important for this study as it aided the researcher in interpreting and comprehending the data, organising it based on the study's aims, and addressing the research questions.

1.9 VALUE OF THE RESEARCH

This research aims to enhance the level of understanding of current and prospective SMT members in schools, as well as other teachers, parents, and learners about the challenges faced by school management teams when installing an ICT infrastructure in high schools.

Moreover, the study has a goal to sensitise teachers and learners by informing them about

the necessity of enabling technology exposure in high schools and the techniques to implement the same.

The results of this study will be useful to the department of education, SMTs, school governing bodies (SGBs), teachers, and district officials. The information that will be presented in this study may also help educational policymakers in forming policy directives concerning ICTs in high schools.

1.10 LIMITATIONS OF THE STUDY

There is a limitation to every research study (Lindberg, Maddow and Boonstra 2016). The study findings are limited as they only reflect the circumstances occurring in schools within the Mangaung municipality of the Free State province.

This research intends to investigate the experiences of SMT members, thereby excluding the perspectives of school instructors and students from this review. The lack of school administrators, deputy principals, or department heads will constrain the study's scope.

1.11 ETHICAL CONSIDERATIONS

"Ethics relate to doing actions that are good and morally acceptable. Consequently, the protection of human subjects or participants is crucial in any research study" (Wiles 2012).

The researcher requested an ethical clearance certificate from the University of the Free State in order to maintain ethical standards. The researcher also requested authorisation from the Free State Education Department to undertake the study at two high schools. The researcher submitted the ethical clearance certificate, DHET approval letter, and consent forms to the school principals, seeking permission to visit the schools. The school heads reacted favorably, welcoming the researcher to conduct the interviews. The researcher designated and employed pseudonyms to safeguard participant identification throughout the study. The researcher guaranteed all participants complete anonymity and secure cloud storage of the data gathered during the interviews. Finally, the researcher requested that all participants sign consent forms to authorise the researcher to use the

data collected for the objectives of this research.

1.12 LAYOUT OF CHAPTERS

Table 1: Chapter outline

CHAPTER	DESCRIPTION
Chapter 1	This chapter serves as an introduction. The chapter provides detailed information on the background of the study, the statement of the problem, the objectives of the research, the research questions, the conceptual framework, and the research methodology and design.
Chapter 2	The focus of this chapter is to examine the existing literature. The chapter conducts a comprehensive evaluation of the existing literature on this issue, encompassing the works of scholars from both international and national contexts.
Chapter 3	This chapter provides a comprehensive discussion of the research approach, research paradigm, and research design.
Chapter 4	This chapter discusses the methodology behind the data collection process, including sampling and the analysis of the data.
Chapter 5	This chapter presents a concise summary of the study's constraints, findings, and recommendations for future investigation.

1.13 DEFINITIONS OF KEY TERMINOLOGY

Table 2: Definitions of key terms

KEY TERM	DEFINITION
Information And Communication Technology	ICT, short for Information and Communication Technology, refers to the infrastructure and gadgets that facilitate modern computing (Chen 2020).
School Management Team	A school management team consists of teachers who hold official leadership positions within a school's organisational structure (Mqina and Goosen 2021). The SMT consists of the principal, the deputy principal, and the heads of

departments, also referred to as HoDs.

1.14 CONCLUSION:

This chapter elucidates the significance of the research and establishes the context of the study. The researcher systematically analysed the research phenomenon and outlined the study aim and objectives. The researcher examined the study's conceptual framework and subsequently enumerated all research questions, aims, and objectives. The researcher examined the research design, paradigm, and strategy, detailing how the chosen method facilitates the attainment of the study objectives for each category. The researcher subsequently addressed the study's value and presented a list of individuals who gained from the research. The chapter outline and definitions of key terminology were ultimately examined. The chapter that follows will focus on the study's literature review.

Chapter 2

REVIEW OF THE LITERATURE

2.1 INTRODUCTION

This chapter begins with an examination of the current body of literature concerning the experiences of SMTs in relation to the implementation of ICT in secondary schools. The chapter progresses to discuss literature regarding the impact of ICTs in schools. Next, a global overview of the implementation of ICTs in various countries around the world is discussed. The study provides an analysis of the advantages and difficulties faced by the SMT when implementing the use of ICTs in high schools. The chapter further unpacks the theoretical framework that guides the study.

According to Hermanto and Srimulyani (2021:47), technology for educational purposes is more advanced in developed countries; therefore, it is important that students are exposed to the use of technology before finishing high school, as some students finish grade 12 and go to study overseas. What necessitated this study was a need to investigate how the experiences of the members of the SMT influence the decision-making and the prioritisation of technology implementation in schools. Teachers would also benefit from this knowledge, as it would enable them to liberate themselves from a scenario where their practices are regulated and they have no way to express their worries over the implementation of technology. Moreover, they can actively and constructively participate in the implementation of technology in the teaching and learning process.

2.2 THE IMPLEMENTATION OF ICT IN HIGH SCHOOLS

Globally, Altbach, Reisberg, and Rumbley (2019) reported that the implementation of technology to enhance the quality and provision of education in high schools is undoubtedly one of the most remarkable advancements in education throughout the past century. However, the international experiences accumulated by school management teams have not been adequately shared. This literature review addresses this need and adopts a global perspective. In this literature review, the researcher analyses the experiences encountered by the SMT and teachers when implementing technology in high school education.

According to Mestry (2017:2), schools require experienced personnel as well as effective leadership to implement technology successfully. Similarly, as noted by Bottoms (2008:16) the SMT must consist of people that can exert leadership in carrying out the schools' vision, mission, goals, and objectives.

Mirzajani, Mahmud, Fauzi Mohd Ayub and Wong (2016:28) assert that when implementing technology, the SMT must thoroughly investigate the perspectives of teachers, as they are the ones who will ultimately utilise the technology in classrooms for teaching purposes. Additionally, Baskin (2006) emphasised that it is important for the SMT to consider teachers' viewpoints during this process to avoid implementing technologies that they (teachers) are unable to use. Hlasa (2022) asserted that an SMT should consider the lived experiences and challenges of teachers when implementing technology in schools. Hence, it is crucial for SMTs to be aware of the developments in the education system, particularly concerning the implementation of technology in high schools.

The adoption of ICTs in schools ranked as Quantiles 1-3 has not been as common as anticipated (Molefe 2013). Gilpin (2022:18) defines quantile 1-3 schools as schools that are predominantly found in low socio-economic settings, whereby the learners attending these schools were exempted from paying school fees because the government provides a budget for learners' tuition fees. According to the South African School's Act (hereafter SASA) (RSA 1996:S.34(1)) "the state must fund public schools from public revenue on an

equitable basis in order to ensure the proper exercise of the rights of the learners to education and the redress of past inequalities in education provision.”

2.2.1 The involvement of SMTs in the implementation of ICTs

Quality education is the top priority of the Department of Education. According to Molefe (2013:20), the SMT has the main duty of ensuring a high standard of classroom instruction and learning and that the changing needs involving the implementation of ICTs in schools have changed the view of the SMTs in terms of their management functions within the contemporary era. Furthermore, the insufficient number of SMT members and teachers proficient in educational technology has impeded the effective implementation of ICT infrastructure in schools (Tunjera and Chigona 2022:81).

Change is deemed necessary in schools, as Sekome and Mokoele (2022:1) attests to the fact that it builds a platform across which the SMT, the parents, the teachers, and the students work toward achieving a common goal. The SMT influences decision-making and is solely responsible for the acquisition of ICT resources that can be implemented in the classrooms for teaching purposes (Ramango 2021). The SMT is also responsible for preparing a budget, planning for ICT resource acquisition and an ICT infrastructure implementation at the school, and motivating and engaging educators and students in the use of technology at all moments of the teaching and learning process (Sekome and Mokoele 2022:3). Kotter (2013:2) further states that SMTs oversee the process of soliciting a budget that will be enough to finance the purchase of technology in schools, the installation, and actual usage in classrooms by pupils and teachers.

Education evolves, and it is the responsibility of SMTs to identify and promote opportunities that will ensure that our learners participate in modern methods of instruction and learning. Verhoef and Du Toit (2018:2) argue that SMTs must have a vision to lead a school, and by extension, the implementation of ICT infrastructures, incorporated into the process of teaching and learning, should serve to inspire and encourage both educators and students in schools.

According to Stosic, Dermendzhieva and Tomczyk (2020:129) we need influential and strong SMTs to lead and support the initiation of ICT infrastructure implementation in schools. If schools are well run, they are very likely to be more productive. ICT implementation in schools is largely successful because of an efficient management team (Brinson 2022).

A school is the main component of education, and educating learners is the heart of the school's operation (Ramango 2021); as a result, it should be taken seriously when selecting its SMT members, which are HODs, senior teachers, deputy principals, and the principal of the school. Over time, however, SMTs realised that they needed to work in partnership with others in the community (Rao 2019). The SMTs have to budget, coordinate staff duties, organise and lead, and implement policies to manage, discipline, control, evaluate, and strategically plan the school's future (Molefe 2013). SMTs are principally expected to influence the School Governing Body (hereafter SGB) to approve the budget to purchase the ICT resources, which will enable teaching and learning processes to take place without hiccups.

Linder (2017) stated that SMTs are responsible for coordinating the incorporation of ICT resources, mainly computers, providing teachers with professional development programmers for using ICT resources, and preparing students to learn and be able to operate ICTs.

2.2.2 The impact of ICTs on high school education

The impact of ICTs in South Africa has brought about some significant changes in education over the last few decades. According to Snart (2010:14), the implementation of ICT-related teaching methods complemented the traditional text-book-based teaching where learners solely relied on the teacher's knowledge and interpretation of learning concepts. The internet has proven to be an essential learning tool in education because it gives learners access to a variety of sources of information that can be used for research purposes when compiling formative tasks such as assignments and homework (Levin and Arafeh 2002:6). The findings in the study conducted by Nogård (2021:12) reveal that

internet-savvy students reported positive experiences. For instance, they mentioned that technology enabled them to conduct research, download and print online study guides, send email messages to friends and teachers, and download PowerPoint presentations for class the next day. In addition, the internet is a global library, which has made it a necessity for education institutions to adopt ICTs.

The inclusion of ICT infrastructures has enhanced the marketability of education, leading to a surge in demand for school reconstruction and the provision of cutting-edge technological equipment for students to utilise (Snart 2010:28). According to Bulman (2016) schools equipped with ICT systems are more likely to experience good teaching and learning outcomes. Yeo (2021(b):304) states that education is a market that competes intensely, just as ICT application is fierce where learning establishments are persuaded to win a student-client as a customer. This is a plus since schools with ICT equipment have a high student intake to cater to audio-visual learners who easily understand class work when displayed on a projector in classes other than thinking of what is said or written on a class text book. Students of today's generation are used to high-tech gadgets such as cell phones, tablets, iPads, and computers for academic purposes and research (Agyei 2021).

The implementation of ICTs has had an impact in ensuring that teachers are at least trained with the basic knowledge of using ICTs for educational purposes. Serrano *et al.* (2019) argue that SMTs should include teachers and facilitate their training in pertinent skills to effectively use technology in the course of instruction and learning. The implementation of technology in educational environments is crucial, as it significantly motivates educators to undergo short courses to acquire new skills in using technology for teaching and administrative tasks, such as computerising the marking and recording of student marks. Therefore, it is important for SMTs to make sure that teachers are provided regular training in the effective use of the latest technological tools as a teaching and learning resource (Rao 2019).

2.2.3 The South African Standard for Principalship

The South African Standards of Principalship (RSA DoE 2007:8(2)) outline the expectations for a school principal. The primary responsibilities of a principal include the facilitation, supervision, implementation, and enforcement of optimal methods for instruction and learning. In addition, according to the Education Roadmap (RSA DoE 2019) it is the responsibility of school principals to motivate teachers in order to maintain the highest possible standards of performance in current teaching practices at both provincial and national levels.

In governing the use of technology in schools, SMTs should keep in mind other general standards with legislative frameworks that are relevant to both basic and higher education and training (Nikolopoulou 2020). Therefore, it becomes crucial to accurately assess the ICT state of the school and decide how to best use what is currently in place. Considering the school's anticipated direction, it is crucial to maintain a realistic perspective on what is feasible and what is not.

Ultimately, the crucial role of the school principal in implementing technology in schools cannot be overstated. Nikolopoulou (2020) revealed that the principal is accountable to the department of education; therefore, he/she is responsible for overseeing the implementation process. The implementation of high-quality technology in schools necessitates that members of the SMT possess the requisite abilities to fulfil 21st-century educational demands using technology (Botha and Herselman 2015:106).

2.2.4 The state of ICT infrastructures in high schools

ICT is a broader term for information technology (IT), which in turn refers to all the technological modes of communication and methods of gathering and processing, redistributing, and distributing information (Cherubini 2020). Consequently, the majority of schools in South Africa lack adequate technical instruments to facilitate the instructional and learning processes (Agyei 2021). During the last years, the incorporation of ICTs in secondary schools encompasses the characteristics of compounds between the digital

world and education (Bustamente and Farjardo 2023). In using ICTs, it becomes possible to provide synchronous teaching, which is simultaneously conducted for students present on site and for those who follow it remotely via a technological platform (Hrastinski 2019).

Teachers have also been hesitant to use technological gadgets for teaching purposes in classrooms (Agyei 2021), but still, the push towards upgrading not only devices but infrastructure remains a long journey for SMTs in the country. The implementation of ICTs into schools means that SMTs have to provide opportunities for professional development, including teacher training programs, which would upskill teachers with the necessary IT competencies to use technological tools for teaching and for online purposes (Winter *et al.* 2021:9).

SMTs are anticipated to allocate resources to educators by supplying technological tools such as laptops, enabling teachers to leave school premises and continue their job during flexible hours (Agyei 2021). New teachers benefit from having on-site mentors or supervisors, as well as IT technicians, to whom they can direct their enquiries and who can resolve technological issues, alleviating their anxiety regarding potential technological failures (Abdallah and Abdallah 2023).

2.2.5 The implementation of ICT in high schools

A study by Abdell and Collins (2017) found that incorporating ICTs in high schools improved basic administrative duties, lesson plan development, and data storage. Moreover, the advancement of technology, which encompasses the utilisation of computers, projectors, and visualisers within the classroom setting is becoming more crucial as education progresses and helps teachers circumvent the conventional textbook-based teaching method (Koh 2019).

There are several reasons why technology has become increasingly important for teachers and learners in recent years (Hiep 2000). For instance, technology is essential for carrying out academic research, teaching, capturing marks, or even communicating with students, making announcements on the group chats, and other administrative tasks (Abdell and Collins 2017). Computers provide enhanced security for data preservation,

particularly for examination data; reliance on printed paper can be eliminated since all data is encrypted and stored on a server (Koh 2019).

Nowadays, the technology used to transmit information has altered the nature of the role of educational technology in teaching. As technology advances, additional opportunities emerge for students and teachers to communicate using various technical gadgets like smart phones, laptops, desktop computers, tablets, and other ICT equipment (Gunter 2021).

Not all types of technological equipment are suitable for teaching and learning. According to Stosic (2020), SMTs and teachers commonly use three types of ICT equipment for teaching purposes. Technology makes it possible for students to keep recordings of lecturers for future referencing. Technology gives students access to platforms like YouTube, enabling them to explore more teachers discussing the same subject and offering diverse interpretations, thereby enhancing their comprehension of the learning concepts.

The use of technology as an instructional aide is best represented by the facilitation of visual or graphic explanation of learning concepts on a screen by the teacher using technologies such as computers, projectors, and visualisers (Cunanan 2022:14).

The implementation of ICTs in schools enables students to utilise computers and the internet as a learning tool. This is when students rely on technology to search for up-to-date information that can be useful in compiling academic research projects, assignments, or home work (Stosic 2020).

2.3 A GLOBAL VIEW OF THE IMPLEMENTATION OF ICTs IN SCHOOLS

Internationally, schools in most countries have moved from the conventional instructional approaches to the contemporary learner-centred approaches that prioritise the needs of students and enable them to use technology in education (Serrano *et al.* 2019).

2.3.1 United States of America

Rooney (2013) discovered that in developed countries like the United States of America ('USA'), school management faced challenges in implementing technology in schools. This was due to the resistance of many teachers towards the use of technological tools in the classroom, which left them unaware of how to effectively utilise these tools.

The use of tech-based infrastructures in schools in the USA occurred in phases. This was mainly because unskilled teachers could not deliver online lessons to learners at home, overloading school management teams, which then had to organise training workshops for teachers to provide them with the necessary expertise (Agyei 2021).

According to Singh, Steele, and Steel (2021), many teachers in the USA believe that face-to-face teaching is the only method that allows them to maintain their professional identity as subject experts. Students look to these teachers for explanations and interpretations of learning concepts, which puts the SMT in a challenging position when it comes to encouraging teachers to adopt technology-integrated teaching in schools.

2.3.2 United Kingdom

Research indicates that during the COVID-19 pandemic, SMTs in the United Kingdom (UK) encountered challenges in managing the teaching and learning processes, as students and teachers struggled to fully utilize online teaching platforms like Microsoft Teams, Blackboard Collaborate, or Google Class (Xalmurzayev *et al.* 2021). Furthermore, the provision of computers in Britain's secondary schools was funded by the government, which was largely routed through the Local Education Authorities (LEAs) (Aduwa-Ogiegbaen and Iyamu 2005).

2.3.3 China

The cost of new technologies is rising in most Chinese secondary schools, which limits high school students' opportunities to acquire computer literacy before entering universities (Baker and Unni 2018:4).

In some instances, research studies have also discovered that SMTs' use of ICTs was influenced by the experiences they had with students, who valued the implementation of technology into the educational process and believed that instructors should acquire the skills necessary to use technology as a tool for remotely collaborating with students and loading lessons (Tham and Tham 2011.).

2.3.4 Eswatini

The small landlocked Kingdom of Eswatini, which was previously known as Swaziland, is one of the developing countries in Africa in the Southern African Development Community (SADC). Technology management and implementation in high schools is in its infant stage and is gradually gaining acceptability (Mphuthi and Thselane 2022:2).

While COVID-19 forced the closure of most high schools, research indicates that in places like Eswatini, 70% of schools in rural areas were without access to computers, more so the internet (Ngwenya, Bhebhe and Nxumalo 2019). Teachers were obliged to utilise easy access to devices, for instance, cell phones, in which information was shared by the teachers with students to keep them busy with school work during the pandemic wave (Natalia *et al.* 2022).

2.3.5 Botswana

Tladi and Nleya (2021:22) noted that the introduction of technology created numerous opportunities and challenges for SMTs, teachers and online learners in Botswana.

Insufficient infrastructure, financial constraints, limited computer proficiency among teachers and students, lack of consistent electrical supply, and unstable internet connection are some obstacles that complicate the adoption and management of ICT establishments in high schools (Thomas 2010).

Furthermore, it is important to acknowledge that technology in African developing countries is not necessarily seen as an instrument for education. For instance, a study conducted by Seleka, Mgaya, and Sechaba (2009) found that 75% of students aged between 18 and 24 use the internet for their own leisure and social purposes and not for educational purposes.

2.3.6 South Africa

An investigation undertaken by Prahani *et al.* (2020) indicated that ICT usage is prevalent in nearly all universities in South Africa but not widely implemented in all high schools, particularly in rural regions. Verhoef and Coester (2021) advocate for the use of online Learning Management Systems (LMS) based on classroom management systems, which, according to Ndlovu and Mostert (2018:131) is important as it serves to guard students against plagiarism, cheating, and leaking of exam papers. The rise of education technology and learning tools allows colleges and universities to promote formative and summative assessment at any age (Zhang *et al.* 2019). In addition, the utilisation and support for technology resources for education has been seen as a valuable instrument to support distance learning and extend remote access to quality education for students studying in less-preferable sites, such as rural zones (Kim *et al.* 2021).

2.4 BENEFITS OF IMPLEMENTING ICT INFRASTRUCTURES IN HIGH SCHOOLS

The experiences of SMTs regarding the rollout of ICTs in high schools are dependent on a number of factors, such as the technological readiness of the school, the school's resources, the leadership commitment in the school, and the state of ICT infrastructure in the school.

2.4.1. Enhanced teaching and learning:

Jacobsen and Smith (2022) wrote that using ICTs in schools has helped in a variety of ways with both teaching and learning. Interactive software programs, online platforms, as well as equipment have allowed students to learn in a much more engaging and personalised way, and the digital tools could be utilised by educators to deliver complex concepts for their students. In addition, Mohosen and Shaffeeq (2014), through a study, found that Canadian English Language teachers utilised IT behaviours to deliver classes and to use the Blackboard collaborate system to upload students' feedback for formative and summative assessments.

2.4.2 Access to vast resources:

The school administration is responsible for ensuring the availability of suitable teaching and learning materials in the schools. This role extends beyond the conventional textbooks and includes the supply of specialised technological resources. Digitalisation has increased the demand for ICT, which gives access to the expanding online libraries, research databases, and educational websites, spreading the information horizons so that students could explore the subject to go deeper (Marek, Chew and Wu 2021). Ajmi (2022) says SMT plays a significant role in ensuring that there is a computer technician available on board to solve any technical issue, as technical glitches are another recurrent issue to why teachers become frustrated—most teachers felt that technology as a toolbox is not always reliable.

2.4.3 Efficient administration:

To ensure the successful use of ICTs in schools, SMTs must lead the school administration's use of ICTs. Barake and Barake (2021) reported that the implementation of technology in high schools made it easier and more convenient for teachers to pre-record lessons for students. Moreover, Mihai and Nieuwenhuis (2015) add that technology makes it possible for teachers in remote schools to conduct online classes and teach students remotely.

2.4.4. Monitoring and Evaluation:

In South Africa, SMTs are encouraged to install technological programs such as the SA-SAMS system. Herselman and Botha (2020:2) defined SA-SAMS as a computerised program or system employed in South African schools for the purpose of documenting data related to the school, personnel, and students. In addition, the SA-SAMS system, as noted by Herselman and Botha (2020:3), offers several advantageous features for schools. These include a feature that monitors students' grades in various subjects, a component for financial management allowing teachers to record and submit receipts to districts, and the ability to establish standards for school administration systems and school data at the operational level. Jewitt *et al.* (2020:17), emphasise that these computerised programs, such as the Learning Management System (LMS), enable teachers to identify areas in which students may need additional support and track student progress and performances throughout the year.

2.4.5 Professional development:

Gorgoretti (2019:5) highlights that the introduction of ICTs in schools offers an option for teachers to take part in in-service training, which provides them with skills that can be applied to these digital tools within classroom environments. These computerised technological programs provide links and websites that the SMT can access from time to time to upload the latest information that would update teachers about, for instance, emailing, upcoming events, sport activities, word of the day, quote of the week, lesson insights, etc. These professional development programs encourage teachers to keep

checking out interesting news online and thus encourage them to use technology on a daily basis.

2.4.6 The alignment of teaching platforms

The implementation of ICTs in schools comes with numerous benefits in the education sector globally (Wong, Li, Chan and Cheung 2022). The obvious benefit is the alignment of different teaching platforms that offer custom-designed learning opportunities for students both in class and online. These platforms allow students to participate in learning activities and group discussions that help keep them engaged throughout the course. Students can also access learning content and consult with teachers remotely (Pollock 2022). Online educational institutions utilise teaching platforms like Blackboard for lesson uploads and student performance tracking, while employing Microsoft Teams for student communication and engagement in virtual classrooms.

2.4.7 Online learning resources

ICTs stimulate students active learning; for instance, teachers may provide pre-recorded lectures, recommend educational websites, images, and short videos for students to enhance the syllabus timeously for students to go through prior to class discussions (Ajmi 2022). By providing supplementary online content, students gain more interest and are inspired to learn and understand the course material on their own (Dangara 2016).

Last, but not least, ICTs enable students to read at their own pace. Students can choose a more convenient time to learn and listen to the recordings, be exposed to a vast selection of both online and offline learning materials, and they can replay the lecture recordings multiple times to digest what has been said within the lecturer (Nguyen, Barton and Nguyen 2015:190). In addition, Tucker (2020) found that the student learning outcomes of online learners were greater than those of learners taught using traditional teaching methods.

The use of ICTs for studying is of great benefit to students who desire to learn more regarding where and how to access genuine online information, those who have more exposure to online educational tools, and others who prefer to learn and to be acquainted with technology for studying purposes (Pucciarelli and Kaplan 2021:7).

2.5 CHALLENGES FACED BY SMTs DURING THE IMPLEMENTATION OF ICTs IN HIGH SCHOOLS

The use of ICTs in schools presents the SMT with a multitude of obstacles. Tigere and Moyo (2022:4) classifies these difficulties into two distinct categories: external and internal barriers. External challenges encompass a scarcity of ICT resources, poor assistance with technical issues, time constraints, and insufficient training, while internal challenges include teachers' views and points of view on ICT proficiency, instruction, and learning.

One of the primary challenges encountered by schools, especially those located in rural areas, is the inadequate availability of ICT equipment and internet connectivity (Tigere and Moyo 2022:6). For instance, the results of a research done in Kenya revealed that certain schools own just one computer, situated in the office (Salehi and Salehi 2012). An additional issue is the significant learner-computer ratio that persists even in educational institutions equipped with computers (Ghavifekr, Razak and Ibrahim 2014:2).

In Malaysia, Shah (2022:5) reported that teachers were not provided with sufficient time to learn and use ICT. Training and professional development programs should be provided for teachers; hence, the SMT should prioritise internal and external training programs that will help teachers understand how to effectively use these ICT tools (Mingaine 2013:34).

The lack of ICT-sufficient equipment is another challenge that SMTs face. According to Salehi and Salehi (2012:40), a significant challenge faced by schools in Kenya, especially those in rural regions, is the inadequate availability of ICT equipment and internet connectivity. For example, several schools in rural Kenya were equipped with a single

computer, which was located in the welcome office exclusively for administrative tasks. The SMT had to find ways to outsource funds either from donations or sponsors who can contribute towards the purchase of more equipment (Mingaine 2013:35).

Another challenge identified by Ghavifekr *et al.* (2014:8) is the difficulty faced by SMTs in outsourcing or hiring computer technicians. This is because most schools lack on-site computer technicians to address technical issues, which often leads to despair among teachers. In their study, Munje and Jita (2020:269) found that SMTs faced challenges in motivating teachers to use Information and Communication Technologies (ICTs). This is primarily due to the prevalent fear among teachers about the potential failure of ICT equipment in classrooms, such as computer virus attacks or malfunctioning printers, which subsequently hinders the teaching and learning process.

Furthermore, whereas a traditional teacher prepares the daily lesson plan on a weekly basis, an ICT-using teacher faces the challenging task of preparing and uploading tasks at the start of the course to ensure each student can successfully complete the course. The teacher must prepare all off-class activities, homework, and assessments before the course is conducted (Sutisna and Vonti 2020).

It can be seen that SMTs experiences regarding the implementation of ICTs in high schools have been some success and some challenges. According to Bottino (2020), it is important to note that technology is not static and the experience of SMTs will also change in time. Therefore, it is crucial for the SMT to promote more inclusive and effective teaching methods that implement the use of ICT (Shah 2022). The SMT can do this by confronting all the difficulties that are associated with acquiring ICT resources cost-effectively and making the right investment in infrastructure and training (Tigere 2020).

2.5.1 Infrastructure and connectivity:

In South Africa, Dzansi and Amedzo (2014:341) reported that most schools are simply unable to secure a decent, reliable, high-speed internet connection, frustrating an ICT-

driven approach. According to Munje and Jita (2020), SMTs in rural schools find it daunting to secure and devise the requisite hardware and software for the teachers and students here. The SMTs need to ensure that there are computer lab assistants to help students whenever they visit the electronic resource center.

Without these skills, students may struggle with how to search effectively for academically relevant resources online (Rao 2019). Students often struggle to comprehend some of the information presented in the online environment, leading to potential misinterpretation of the online learning content (Limqueco and Armstrong 2021). Rather than having the teacher physically present to explain difficult-to-understand concepts, ICT learning offers platforms such as the Blackboard, which allows students to work together even remotely with the educators. A student can ask a question to their teacher even when they are at home.

2.5.2 Cost and budget constraints

School management teams are struggling with the costs associated with acquiring and maintaining an adequate ICT platform; sourcing the infrastructure, the software, and the bandwidth is expensive, as is the ongoing need to outsource, install, and maintain this. Moreover, the use of funds for buying computers, software user licenses, and technical support becomes expensive for the SMT's annual budget (Tigere 2020).

2.5.3 Digital divide

Socio-economic disparities can create a digital divide in students from different backgrounds (Mihai and Nieuwenhuis 2015:1). Therefore, SMTs and teachers in schools bear the responsibility of ensuring equal exposure to ICT education for all students (Dzansi and Amedzo 2014:345). Not all students have access to personal devices or the internet at home, which can impact their ability to fully participate in ICT-based learning activities. Therefore, the SMT should include curriculum in schools to edify students' knowledge on ICT (Bottino 2020).

Management also faces the challenge of selecting the right technological tools for each grade. Not every technological gadget can successfully run lessons in various grades in high schools; therefore, it is crucial to purposefully choose technology tools, each tying into a specific function that yields the desired learning outcomes (Sanusi *et al.* 2022). Technology that is well implemented improves the quality of teaching and encourages student engagement, motivation, and learning (Raboca and Cotoranu 2020:119). Modern-day students have access to numerous technologies in their daily lives, which they use for communication and entertainment.

2.5.4 Teacher training resistance

Kamilah and Anugerahwati (2016:2) report that one of the biggest challenges that SMTs face is teachers' refusal to learn new ICT skills. To successfully implement ICTs into the curriculum, Nsolly and Charlotte (2016) mention that the SMT, together with the teachers in schools, ought to have received adequate training. Some educators in schools might be resistant to change or lack the necessary skills to effectively use technology in the classroom (McKenzie and Scheurich 2008:118).

School management must keep up with technological advancements, which also cause several problems for both the educator and the students.

According to Shafie, Majid and Ismail (2019:24) Technological Pedagogical Content Knowledge (TPACK) is the underpinning that helps teachers select the most suitable technological tools to implement in different grades; for instance, a computer will not be useful for pre-primary students who do not know how to operate it; however, for grade 12 students, it could be the most appropriate tool to implement into lessons. When teachers or students struggle with using technological tools, teaching will be greatly disrupted; hence, it is advisable that teachers be trained and students be orientated on how to use technological tools right at the start of each course (Schimid, Brianza and Petko 2020).

2.5.5 Privacy and security:

The SMT must securely manage student information and data to safeguard the privacy and security of both students and parents. The SMT should guarantee that the implementation of computerised programs in schools, such as the SA-SAMS system, which is intended to fulfil the management, administration, and government criteria for South African schools, is not susceptible to easy compromise or hacking (Nkambule and Ngubane 2024:3).

The SMT should ensure that teachers security of office computers is maintained because that is where teachers type daily lesson plans, prepare PowerPoint presentations, and store formative and summative assessment tasks such as question papers and marking guidelines; therefore, it is important to ensure that the school premises are well secured and not easily accessed by the students (Nsolly and Charlotte 2016).

2.6 THEORETICAL FRAMEWORK

The present work employed the Diffusion of Innovation (DOI) framework. Rogers, as quoted by Menzli *et al.* (2022:3), defined diffusion as “the process by which an innovation is communicated through certain channels over time among members of a social system.” Diffusion, as defined by Dearing and Cox (2018), is a social phenomenon that takes place when individuals obtain knowledge about an innovation and then proceed to adopt it. Moreover, Garcia-Aviles (2020:1) defines DOI as “a theory that seeks to explain how, why, and at what rate new ideas and technology spread.” This notion was primarily supported by Rogers, who, as cited by Bennet and Bennet (2003:53), defined diffusion as “the transmission of innovation through specific channels over a certain duration among the individuals in a social system.” The researcher considered this theory significant for the study as it encouraged an in-depth exploration of the SMTs experiences with the implementation of technology in schools. This investigation aimed to unravel the mechanisms, reasons, and pace at which new ideas and technology are adopted in schools.

Rogers's Diffusion of Innovations (DOI) theory offers a recognized framework for elucidating the communication and implementation of modern ICT infrastructures in schools. Since its introduction in the 1950s, this framework has been subjected to empirical testing, critiques from a variety of perspectives, and application in program planning (Minishi-Majanga and Kingplat 2005:212). It has consistently demonstrated its value to students, scholars, and professionals, and it remains pertinent in a variety of disciplines, including education (Rogers 1995). The researcher used this framework to determine the value of implementing ICTs in high school education and the experiences of the SMT in doing so since ICTs are used in both meso (administrative) and micro (pedagogical) activities.

According to Meier, Ben, and Schuppan (2013), the DOI theory has a belief that there is always resistance towards the introduction and implementation of a new innovation. This resistance is brought about by the fact that people in organisations form their comfort zones, making them difficult to change in order to accommodate new innovations (Bakkabulindi 2014:8). This notion is supported as Clarke (2001:2) claims that some entrenched mindsets are very difficult to shift. Through the DOI framework, the researcher identified key resistance factors that presented challenges, leading to negative experiences for the SMT regarding the implementation of technology in high schools. For instance, decisions pertaining to the implementation of technology in schools were derailed due to a lack of training and knowledge about the importance of technological innovations.

The DOI theory proposed by Rogers (2003) is the most suitable framework for studying the implementation of technology in educational settings. The researcher reckoned this theory fitting for this study because, according to Menzli *et al.* (2022:3), this theory permits researchers to investigate the experiences of the SMT and their influence and contribution towards ensuring the implementation or non-implementation of ICT usage in schools.

For Rogers, as quoted by Clarke (2001:2), technology designed for instructional use reduced the uncertainty in the hardware and software; hence, it was reliable to use in education. Bakkabulindi (2011:38) reports that according to Rogers, the hardware "is the

tool that embodies technology in the form of a material or physical object," whereas the software is "the information base for the tool", therefore the adoptability of hardware such as computers and software such as SA-SAMS is in high demand in schools.

In addition, according to Bharawaj, Samrat, and Deka (2021:138), the DOI theoretical framework is useful in the assessment of factors that facilitate web-based education.

2.6.1 HISTORICAL BACKGROUND OF THE DOI THEORY:

The DOI theory was developed by Everett Rogers and published in 1962 (Rogers 2003). Rogers put forth the idea that the spread of an innovation occurs through a process called diffusion, where it is passed on from person to person within an organisation through specific channels (Clarke 2001:3).

The DOI theory is widely used in various disciplines, such as medical sociology, education, marketing, and communications, yielding significant impacts (Dearing and Cox 2018). Rogers, in his book, delineated several pivotal components of dissemination, including invention, communication routes, time, and social system (Bennet and Bennet 2003:55).

Rogers, as referenced by Bennet and Bennet (2003:55), delineates four fundamental elements that influence the dissemination of technology in educational institutions: innovation, communication channels, time, and organisational structure.

2.6.2 THE TENETS OF THE DOI THEORY

Rogers' DOI theory is of particular significance due to its influence on numerous other theories of adoption and diffusion (Minishi-Majanja 2004). The extensive applicability of diffusion theory is the reason for the ongoing increase in diffusion of innovation research (Rogers 1995: 2). The authors Surry and Farquhar (1997:24) outline three justifications for the usefulness of Rogers' theory of the diffusion of innovations in the domain of educational technology: In addition, Surry and Farquhar (1997:24) argue that most educational technology practitioners lack knowledge of the factors influencing the acceptance or rejection of innovations. They suggest that Rogers' theory of the diffusion

of innovations is crucial in understanding these phenomena. Furthermore, the notion of innovation is intricately connected to the domain of educational technologies. Roger' idea about how innovations spread is used in more educational tools, making them better prepared to work with potential users. Thirdly, researching Rogers' theory of the spread of innovations could help create a structured model for how innovations are adopted and spread in the field of educational technology. Therefore, it is due to these reasons that the researcher felt this theory was more aligned with the study because it is particularly well-suited to the examination of ICT diffusion, as Rogers employs the terms "innovation" and "technology" interchangeably.

Innovation: According to Kadi, Kamal, Yusof, and AlSakka (2022), "an innovation is an idea, practice, or project that is perceived as new by an individual or other unit of adoption." According to Goh and Sigala (2020:156), the adoption of ICT innovations in education depends on the SMTs level of knowledge, persuasion, and decision about the benefits of their implementation. The SMT should be knowledgeable about the advantages of implementing ICT in high schools.

Moreover, innovation, as described by Rogers (1995: 11), is an idea, activity, or thing that is recognised as novel by a person or any other entity that adopts it. This concept emphasises that the assessment of whether an idea is considered fresh or not depends on the perception of the individual or social system involved. An idea does not need to be newly conceived in order to be considered an innovation (Rogers 1995:12). This issue arises when an individual possesses knowledge of the invention but lacks the conviction to embrace it (Rogers 1995:13). The more knowledge they had about the importance of technology, the highly likely they were to work towards its implementation, and vice versa.

Communication channels: Diffusion occurs among people or organisations. In accordance with Garcia-Aviles (2020:2), methods of communication facilitate the transmission of information between two separate groups. Communication between the SMT and SGB is crucial in the adoption of new technologies in education. Clarke (2001), provided a definition of communication as "a process involved in

the creation and exchange of information between participants with the aim of achieving a shared understanding."

Rogers (1995:18-20) defines a communication channel as a specific medium that facilitates communication between individuals. As a highly effective mass medium, the channel can effectively generate awareness and comprehension of innovations. Furthermore, it can serve as an interpersonal medium, enabling direct contact between multiple individuals (Wario 2014). Although mass media continues to effectively distribute information to vast audiences, human interaction has a particularly strong impact on individuals' decision-making processes on the adoption of an innovation. Individuals tend to rely more on suggestions from those who have already embraced the idea, rather than statistical evidence, when making decisions about innovation (Rogers 1995:20). Internet-based communication platforms, including email, chat rooms, discussion forums, and blogs, have greatly influenced the adoption of new concepts and technology in recent times (Wario 2014:37). Hence, the researcher discovered that the primary means of communication prevalent in high schools was in-person meetings conducted by the SMT members on a weekly basis to deliberate on matters pertaining to the implementation of new technologies for educational objectives. Furthermore, the SMT members actively encouraged the sharing of information among staff members. For example, computer teachers exchanged technical knowledge with other teachers on how to play instructional YouTube videos and display them on a whiteboard during class.

Minimum conditions for diffusion to take place include the establishment of communication patterns or capabilities between parties (Atkin, Hunt and Lin 2015). The procurement of ICT resources for schools in South Africa is a highly intricate procedure. Minishi-Majanja and Kaplang'at (2005:2) explained in their study that diffusion is a communication process that gradually disseminates a novel concept, practice, or product among individuals within a social system through specific channels. The diffusion process in South African schools commences when the School Management Team (SMT) formulates an annual strategic plan, during which the members engage in deliberations on the objectives of the school. According to Mlambo, Rambe, and Schlebusch (2020), the strategic plan would then be communicated and presented to the SGB, who must be

convinced by the SMT about the importance of the ICT resources that the school needs. Once the SGB approves, the strategic plan is then communicated to the finance department, who then issues out money for purchasing the equipment. After approving the financial resources, the team liaises with an ICT specialist, like a computer technician, to support their purchases from reputable companies. It is worth noting that communication from one team to the next takes time; therefore, this prolongs the procurement process (Garcia-Aviles 2020).

Knowledge: Rogers (1995: 22) noted that the acceptance of technology considerably affects the level of knowledge of how to govern it in relation to targeted technology. According to Larsen (2001:211), the introduction of innovations is often rejected when the quantity of knowledge is not enough to ensure a successful test period. In the context of educational technology, this is the point at which most SMT members decide not to implement technology in their schools because they feel frustrated or overwhelmed and lack proper training or technical support. In a similar vein, Seemann (2003:28) stresses the value of user insight within the context of technological implementation, focusing on both 'know-how' and 'why' knowledge. The researcher found out that some members of the SMT, especially the older generation, were demotivated to use ICTs in high schools because they lacked proper training and skills to use technology for administrative purposes and for teaching and learning in classrooms.

Time: Goh and Sigala (2020) noted that Rogers emphasised the importance of recognising that the innovation-diffusion process is not immediate but rather takes time to unfold. In order for innovations to be embraced, the passage of time is essential. It is uncommon for them to be adopted immediately; rather, these processes can take months or even years to fully develop and be implemented (Rogers 2003).

Time, which is the third most crucial factor in the diffusion of innovation processes, encompasses three dimensions of diffusion: the innovation decision process, which involves the initial awareness of an innovation, the formation of an attitude towards the innovation, the decision to adopt or reject the innovation, its implementation, and ultimately the confirmation of this decision. The researcher discovered through the

diffusion of innovations theory that technology evolves rapidly, and it is always best not to rush decision-making and to always be well informed about the latest forms of technology as they change from time to time.

Persuasion: The persuasion stage is linked to user reflection: in the persuasion stage, individuals or social units such as the SMT actively seek knowledge and form positive attitudes towards the innovation, rather than simply developing generalised perceptions (Rogers 1995:24). Persuasion focuses primarily on emotions and sensations, as opposed to knowledge acquisition. The researcher found that through the DOI theory, the combination of knowledge and persuasion resulted in SMT members experiences influencing them to either accept or reject ICT implementation in schools. In Rogers' terminology, this is referred to as the "decision stage." Acceptance is the deliberate decision to completely embrace an invention as the most advantageous alternative, while rejection is the choice to withhold adoption of the innovation (Rogers 1995: 171).

Social system: Garcia-Aviles (2020:2), provided a definition of a social system as "a collection of interconnected agents involved in collaborative problem- solving to achieve a shared objective." According to Al-Rahmi *et al.* (2021:3), a social structure is formed by the amalgamation of these external factors. Therefore, these external influences may come from the DoE, SGB, parents, teachers, students and communities about the implementation of technology and may either positively or negatively affect the decision-making of the SMT in schools.

Rogers proposed that the inherent characteristics of an innovation influence its acceptance rate within a social system (Rogers 1995:15-16). The characteristics that govern the pace of adoption of an innovation encompass the advantages of compatibility, complexity, trialability, and observability. Therefore, the spread of a new technology would gradually increase if prospective users believed that the innovation had the following aspects: superiority relative to previous innovations, compatibility with current practices and values, ease of understanding and use, feasibility for small-scale testing before adoption, and clear results. Rogers (1995:12) argued that individual perceptions of these attributes were a reliable indicator of the rate at which innovations were embraced.

Rogers further noted that although there has been considerable study on the distribution of adoption categories, there is a dearth of research on the impact of perceived qualities of innovations on the implementation of technology. The objective of this study is to examine the perspectives of SMT members regarding the implementation of technology in educational institutions.

Within an organisational structure, the members may include individuals who constitute a school's SMT, informal groups, organisations, and/or subsystems. The adoption of an innovation is shaped by social norms, the varying ability of opinion leaders to influence the attitudes or overt behaviour of others, the specific types of innovation decisions made, and the outcomes of these innovations. According to Gunter and Gunter (2020), the SMT collaborates closely with the principal in a school environment to systematically implement innovations from the DoE. Diffusion denotes that the iterative process by which the SMT engages with the SGB, teachers, and students to persuade them to actively participate in the technology implementation process in their schools (Alismail and McGuire 2015).

2.6.3 RELEVANCE OF DOI THEORY TO ICT RESEARCH

Clarke (2001:5) defines diffusion in research as the study of how the key mechanisms of diffusion, together with several additional elements, interact to either promote or hinder the acceptance of a certain product among individuals in a certain group of adopters. Experts in several fields, including SMTs have applied the DOI theory to improve the application of ICT resources in educational institutions.

In summary, the DOI theory revealed that organisations face a far more complex innovation adoption process that involved organisations having a tension for change, which is the motivation for purchasing ICT resources, compatibility to see if the kind of technology would be beneficial for the organisation, and observability, which is the assessment of implications that come with integrating ICTs.

2.7 CONCLUSION

The use of technology in the classroom is critical for students' proper education in both physical and online settings. Technology provides a variety of educational tools for both students and teachers, including research, attendance tracking, reflections, and feedback.

This literature review also addressed the implications of ICT implementation. A complete review of ICT implementation was conducted. The chapter evaluated the benefits and challenges that SMTS faced when implementing ICTs. The theoretical framework of DOI that underpins this investigation was discussed, as well as its relevance to the research.

Chapter 3

RESEARCH METHODOLOGY AND DESIGN

3.1 INTRODUCTION

This research study delves into the experiences that SMTs encounter when implementing appropriate ICT in schools. The experiences of the SMT were thoroughly examined to gain insight into how this impacts their decision-making when it comes to implementing and maintaining ICT in schools. This chapter explores the methodological components of the study, encompassing the research paradigm, research methodology, research design, data collection tools and procedures, population and sample methods, and ethical constraints. The incorporation of these methodological elements was crucial in addressing the research questions and sub questions, which facilitated an understanding of SMT experiences in implementing ICT in high schools. In this chapter, the researcher provides a comprehensive overview of the research methodology, building upon the introductory discussion in Chapter 1.

3.2. RESEARCH METHODOLOGY

Research methodology, as described by Basias and Pollalis (2018:91), refers to the systematic framework and strategies used to do research. Research methodology is a systematic advancement from general assumptions to specific methods for collecting, examining, and interpreting data. The discipline of methodology focuses on the methodical organisation and integration of many techniques employed to collect data on a certain subject. According to Tracy and Carmichael (2013:41), qualitative research aims to provide a comprehensive understanding of a phenomenon by analysing descriptive data instead of relying on numbers. The methodology encompasses more than just research procedures; it also encompasses the reasoning behind the selection of the applied procedures (Pandey and Pandey 2021:78). The study proposed and selected an analytical and conceptual approach that aimed to elicit the personal perspectives of SMT members on the implementation of ICTs in high schools. In this chapter, the researcher

explores the methodological approach used in this study to gain a more comprehensive understanding of the subject matter and to interpret it from the participants' perspective.

3.2.1 RESEARCH PARADIGM

A paradigm is a compilation of concepts or beliefs that guide empirical investigations carried out by scholars (Bogna, Raineri and Dell 2020). An empirical paradigm posits that the formation of reality is subject to variation depending on an individual's cognitive interpretation. A research paradigm, as conceptualised by Kuhn (2015), posits that reality is shaped in several ways depending on an individual's viewpoint.

The researcher opted for the interpretivist paradigm. This paradigm served as the focal point of the research. According to Alharahsheh and Pius (2020:2), the interpretive paradigm allows researchers to have interactions with the study participants. It must be understood that the interactions of the researcher and participants bring forth interpretations and an in-depth understanding of the study phenomenon. The interpretivist paradigm, as described by Scauso (2020), advocates for the examination of experience and the exploration of many interpretations of particular social events in order to achieve a thorough understanding of the phenomena being studied. By adopting this paradigm, the researcher was able to get a valuable understanding of the hands-on experiences of SMT members regarding the implementation of ICT in high schools. As a researcher using the interpretative paradigm, my goal was to actively participate in social interactions with the members of the School Management Teams (SMTs) in these schools in order to derive meaningful interpretations from their oral accounts. To do this, the researcher meticulously analysed how the participants' experiences influenced the methods and protocols of using ICT. The purpose of this study was to establish a thorough understanding of the particular elements that influence the behaviour, decisions, and practices of the participants as they perceive them. Bhattacharjee (2012:19) proposes the following aspects of qualitative research in terms of its interpretive paradigm: First, it must be carried out in the most natural manner possible. Secondly, this perspective aims to

achieve understanding instead of seeking definitive answers. Thirdly, anything being said through this scheme should be seen as what it is. Finally, speech and actions employed by respondents are essential constituents of interpretive analysis. To do this, the researcher conducted meaningful interviews with the participants and used open-ended questions, which encouraged the participants to freely share information about their experiences with the implementation of ICTs in high schools.

The researcher chose this paradigm because it permitted investigating more about the experiences of SMTs. Key to this research were the comments and observations made by SMTs about the implementation of ICTs in schools. The researcher transcribed the interviews, analysed, and interpreted the data to derive themes. The objective of this investigation was to examine the experiences of SMT members regarding the implementation of ICTs into high school settings. The goal was to allow every participant to describe their experiences without any limitations imposed by the current literature about interpretation.

3.2.2 RESEARCH APPROACH

According to Basias and Pollalis (2018:4), a research approach is described as a systematic plan and procedure that encompasses various steps, from initial assumptions to specific methods of data collection, analysis, and interpretation. According to Creswell and Creswell (2017), an approach encompasses a set of principles and guidance that exceeds mere assumptions and incorporates comprehensive methods for gathering, analysing, and interpreting empirical data. The researcher intentionally chose the qualitative research approach, focusing on data collection, to gain a comprehensive understanding of the subject under study.

For the purposes of this study, the researcher opted for the qualitative approach. Researchers employ a qualitative technique to examine and understand phenomena

within their genuine settings (Rahman, 2020). Aspers and Corte (2019:140) state that the qualitative research approach produces extensive data by particularly examining the verbal or written expressions and observable behavioural patterns of individuals. Data was collected by the researcher by conducting interviews with SMT members who participated in this study to get their experiences regarding the implementation of ICTs in schools. Variations in idea interpretations may exist among individuals. Denny and Weckesser (2018) contend that qualitative research offers valuable understanding of SMT experiences by employing narrative data analysis to develop an interpretation of the social context. Through the use of this study approach, the researcher acquired an understanding of the varied experiences articulated by the participants on the incorporation of ICTs in high schools. Perceptions of objects from the viewpoints of persons themselves can only be understood through qualitative investigation. Moreover, qualitative research is a methodical strategy that produces a deeper understanding of the research participants by identifying new significant differentiations that arise from examining the relevant phenomena (Riese 2019). As the researcher, I found this research approach suitable for this study as it allowed me to investigate the experiences, feelings, attitudes, appreciation, beliefs, and impressions of the participants regarding the implementation of ICTs in high schools. This research approach also enabled me as the researcher to gather data by administering semi-structured interviews consisting of a predetermined set of questions.

3.2.3 RESEARCH DESIGN

A research design, as defined by Dannels (2018), is the systematic organisation of necessary conditions for collecting and analysing data. Research designs provide researchers with explicit guidelines, including suitable activities and methods that will facilitate their methodical analysis and response. A research plan establishes the precise parameters for collecting data (Sileyew 2019:3). Therefore, it was imperative for me, in my role as the researcher, to possess a well-elaborated research design outlining the planned study phenomena and data gathering techniques in order to effectively tackle the research questions.

For the purposes of this study, the researcher opted to use the phenomenology research design. According to Moran (2002:6), phenomenology is a research design that concentrates on delineating the shared experiences of participants about a phenomenon, including their collective experiences. The researcher employed this research design to conduct semi-structured interviews, with the aim of identifying the mutual experiences of the SMTs and how these experiences shaped their attitudes towards the implementation of ICTs in high schools.

In addition, phenomenology is also defined by Vagle (2018:5) as a research design that enables researchers to grasp the fundamental nature or importance of the empirical experiences of a specific group of people. I chose to use phenomenology because it enabled me, as the researcher, to investigate the study phenomena. The researcher, using semi-structured interviews, discerned the daily experiences of SMTs regarding the processes involved in technology implementation at the visited high schools.

3.3 DATA COLLECTION INSTRUMENTS

Data collection instruments are proven systematic methods used to obtain information for the purpose of analysis. The data gathering methods employed in this qualitative research study include semi-structured interviews and document analysis. According to Noble and Heale (2019) instruments in the context of data collection correspond to the specific methodologies that a researcher chooses to use. The subsequent section delineates the data gathering equipment employed in the present study.

3.3.1 Semi-structured interviews

In this particular study, semi-structured interviews were used as the main instrument for gathering data. An interview, as described by Kalio *et al.* (2016), is a two-way conversation between individuals with the purpose of gathering information about a specific subject. The semi-structured interview is a qualitative research technique specifically developed to collect unstructured data by eliciting the attitudes, emotions, and

viewpoints of participants on a certain topic (Magaldi and Berler 2020). The chosen data collection instrument was appropriate for the study as it granted the researcher the freedom to randomly select the primary theme questions to ask the participants without any prearranged sequence. The researcher utilised open-ended questions to promote direct communication with participants, therefore allowing them to offer more detailed perspectives on their experiences with the incorporation of ICT. The researcher chose interviews in order to explore a broader spectrum of questions and encourage participants to share their thoughts, stories, and relationships relevant to their experiences. In order to improve comprehension, interpretivist researchers typically seek to analyse and interpret the statements provided by the participants.

The researcher meticulously documented and transcribed the material acquired from the interviews. Transcribing, as described by Lester *et al.* (2020), is the mechanical procedure of transforming oral language into written text. Qualitative research often utilises this approach as it enables analysis. Therefore, it is imperative for a researcher to generate audio recordings when collecting study data.

3.3.2 Document Analysis

In addition to semi-structured interviews, the document analysis was used to gather more empirical evidence. The researcher focused on analysing two policy documents: the White Paper on E-Education (RSA DoE 2004 chapter 2:15) and the White Paper on E-Learning (RSA DOE 2003 chapter 3:22). These policy documents issued by the DoE purposefully provide significant insights into the topic being studied (Bowen 2009:28). Morgan (2022:6) argues that a principal benefit of document analysis is their easy availability. As the researcher, I used document analysis, which allowed me to save a significant amount of time on data collection.

However, upon visiting the schools, the researcher noted that the schools under investigation did not have a readily available ICT policy and were unable to provide any

records of minutes taken during SMT meetings discussing the implementation of ICT. It was at this point therefore that the researcher scrutinised pertinent documents such as the White Paper on E-Education (RSA DoE 2004 chapter 2:15) and the White Paper on E-Learning (RSA DoE 2003 chapter 3:22). The researcher analysed these policy documents to ascertain whether the schools followed the official guidelines as set by the Department of Education on ICT implementation.

Implementing the document analysis data collection method allowed the researcher to thoroughly examine large amounts of data, including the White Paper on E-Education Policy (RSA DoE 2004 chapter 2:15) and the E-Learning Policy (RSA DoE 2003 chapter 3:22) issued by the Department of Education. The data acquired from documents was used to establish a correlation and verify the conclusions drawn from interviews (Noble and Heale 2019).

The White Paper on E-Education Policy (RSA DoE 2004 chapter 2:15) set time frames for developing public schools as e-schools, with the primary objective of improving teaching and learning in schools. This policy was ambitious and aimed to achieve its key objectives, but it did not make its way into schools until well after technology had been implemented in schools. The policy appeared to be purely symbolic, as it was not an integral part of the many iterations of the curriculum policy, nor was it promoted at a systematic level as a policy that needed to be implemented.

As a researcher, I found this to be absolute, as members of the SMT reported that schools did not have an ICT policy in place, although they had computers and taught computer-based subjects, but there was no policy to guide the implementation of these resources.

The E-Learning Policy (RSA DoE 2003 chapter 3:22) aims to “transform learning and teaching through information and communication technologies”, to keep pace with technological advances and to promote economic growth and social development in South Africa.

It was hoped that the use of ICT would enable e-schools to change teachers' practices and improve learners' learning experiences. As a researcher, I have found that, unfortunately, these policies have never been implemented as a matter of priority.

RESEARCH SITE

Data was gathered from a survey conducted from two public schools situated in the Mangaung Municipality, Moebe District, in the Free State Province. The selection of the schools was deliberate, taking into account their locality, student enrollment and official standing. Furthermore, the selection of the schools was determined by their proximity to the domicile of the researcher. Telecommuting to the participants from this site was a simple and efficient endeavour, greatly minimising travel expenses and time constraints. Given their common position as public schools, the schools operate on a similar scale and adhere to the same required regulations and processes. The student enrolment at these schools showed minimal fluctuation; yet the significant advantage in their classification as public schools, resulting in a considerably higher average pupil enrolment in comparison to private schools. By extension, the sample size increased as the number of teachers and SMT members increased in direct proportion to the number of learners.

3.4 DATA COLLECTION PROCEDURE

The statistical data collection process lasted for one month. Initially, the researcher sent formal correspondence to the respective institutions, requesting a visitation appointment to conduct interviews with the SMT. After receiving consent for the appointment dates, the researcher reached out to the school principals, who provided guidance on appropriate visiting hours to meet with the participants. The researcher provided a detailed explanation of the interviews, clarifying that each interview would require a time commitment of roughly 15–20 minutes per participant. The initial school suggested that the researcher carry out interviews during the early morning hours prior to the start of lessons, while the latter school preferred the afternoon hours after school.

At the start of the interview, the researcher provided a detailed explanation to the SMTs about the study aim and objectives and how their comments would be valuable for its progress. The researcher explained to the SMTs that their identities would be concealed and kept confidential. Moreover, the researcher requested participants to fill out consent documentation as a means of confirming their voluntary involvement in the study. The researcher conducted interviews with the participants in designated locations, such as isolated offices, to guarantee the maintenance of anonymity and reduce unwanted disruptions. The researcher subsequently led and directed all sessions, providing guidance throughout the conversations. After capturing and archiving all responses on an audio recorder, recordings were saved on cloud which enabled the researcher to transcribe recordings in preparation for data analysis.

3.5 DATA ANALYSIS

The process of analysing data involves the organisation of collected data into themes in order to improve comprehension. Creswell and Poth (2018:225) define the components of data analysis as; text analysis, the organisation of data, the administration of an introductory examination of the database, the development of themes from classified data, and the presentation and interpretation of the data. Following that, the researcher systematically arranged the remarks of the participants by recognising themes which would be analysed.

Quality data analysis is the systematic arrangement and explanation of spoken or visual material in order to establish assertions about the indicated level of meaning development associated with the topic matter and the subjective and social meanings it transmits (Flick 2014:4). Data analysis requires either a reduction in the capacity or complexity of the data or an enhancement of the material through the documentation of interpretations of new text (Flick 2014:2). Through the meticulous transcription of the unprocessed data, the researcher successfully generated interpretations that were both more understandable and practical.

3.6 THEMATIC ANALYSIS

The data that was collected by the researcher underwent an inductive thematic analysis. Thematic analysis, as defined by Sundler *et al.* (2019), is a method for organising the quantity of data collected into distinct topics in order to obtain a comprehensive understanding of the data. The inductive thematic analysis was employed by the researcher to organise the data into codes, which subsequently led to the identification of the study themes following the laborious transcription of audio recordings. This enabled the data to be sorted by themes and grouped into specific classifications. The researcher subsequently decoded and interpreted the data in accordance with the study's objectives and purposes.

An inductive thematic analysis is conducted once material has been transcribed (Sundler *et al.* 2019). Thematic analysis is a method used to identify, analyse, and present recurring patterns (themes) in collected data (Braun and Clarke 2006:78). Christou (2022:81) outlines that thematic analysis consists of six distinct stages discussed below:

Firstly, **a researcher acquaints themselves with their data**; the researcher had to listen to the audio recordings and read through the transcripts to understand the feedback from the respondents and to familiarise herself with the information obtained from the interviews.

Secondly, **a researcher allocates initial codes to the data depict the information**; after transcribing, the researcher then started to sort the data into different codes.

Thirdly, **a researcher endeavours to identify patterns or themes within their codes across the various interviews**; the researcher sorted out the data into broad themes and assigned the coded data under each theme.

Fourthly, **a researcher evaluates the underlying patterns**; the researcher then provides a detailed analysis of the identified themes to respond to the research questions in a comprehensible manner.

Fifthly, **the researcher identified themes are further delineated and assigned pseudonyms names**; the researcher then assigned each theme a specific name to differentiate it from the rest of the patterns that were formulated.

Lastly, a report is produced by the researcher (Mortensen 2020); after the analysis, the researcher then reported the findings and further made recommendations and suggestions for future research. The report also contained essential information about the importance of this study and its benefits.

3.7 SAMPLE OF THE STUDY

In this investigation, purposive sampling was implemented. Purposive sampling, also known as judgement sampling, involves the researcher deliberately selecting participants based on specific characteristics. (Berndt 2020). Bhardwaj (2019) states that purposive sampling allows researchers to intentionally select people who possess expertise about the topic.

The research was performed only at two high schools situated inside the Margaung Municipality. The participants consisted of approximately ten individuals from the school administration teams of both schools.

For the purposes of this research study, the sampling population is limited to two high schools in the Margaung Municipality and about ten SMT members from both schools. The sample includes: two principals (one from each school), two deputy principals (one from each school), and six head of departments (three from each school).

The rationale for choosing these participants was that they were all members of the SMT and possessed the necessary expertise to provide insightful answers and share information regarding the experiences of SMT members in implementing ICTs in high schools.

3.8 TRUSTWORTHINESS

The study ensured trustworthiness throughout through open coding. Lemon and Heyes (2020:605) allude that coding is a process of systematically analyzing and sorting data into numerous themes. Elo *et al* (2014:2) elucidate that the objective of trustworthiness in qualitative research is to give a detailed report about research findings to qualify the data collected as authentic.

3.8.1 Credibility:

Credibility in qualitative research refers to the authenticity and truthfulness of the research findings (Stewart, Gapp and Harwood 2017:6). The researcher assured the utilisation of the interview protocol derived from the semi-structured interviews to uphold credibility. The researcher incorporated open-ended questions into the interview protocol to ensure that the interviews encouraged the disclosure of comprehensive information regarding the use of ICTs in schools. Shenton (2004:65) asserts that credibility is attained through utilising member verification to guarantee accurate collection of data. Gunawan (2015:12) indicated that researchers should engage in activities such as prolonged engagement and meticulous observation while also involving multiple investigators in the collection of data to guarantee reliability. Adler (2022:601) proposed that researchers should conduct interviews in multiple locations rather than relying just on one source. This approach facilitated the acquisition of valuable insights and enhanced the study's credibility. The researcher demonstrated credibility by comparing all collected data against previously conducted research on the implementation of ICT in high schools.

3.8.2 Dependability:

Anney (2014) asserts that dependability ought to be attained by ensuring that the results of the study can be replicated among the same set of participants. In order to guarantee reliability, the researcher utilised a semi-structured interview schedule to conduct the interviews, resulting in the acquisition of extensive data that would then be processed to provide a comprehensive depiction of the phenomenon under study. Researchers can ensure reliability by adhering to a systematic, verifiable, and documented approach (Johnson and Christensen 2024). Readers can evaluate the credibility of research by

examining the research method (McMillan and Schumacher 2010). The researcher maintained dependability by comparing the responses of each participant with data from documents such as ICT policies.

3.8.3 Conformability:

Conformity is the degree to which the results can be independently verified by other researchers. The researcher avoided employing her own inferences and maintained a neutral stance to ensure conformity, thereby preventing any potential influence on the study's results (Stahl and King 2020:27). Conformity refers to the conclusions and rationales of the study that are derived only from the examination of the data. The researcher must fully explicate the process by which results and interpretations are derived (Vanio 2013). According to McMillan and Schumacher (2010), in order to establish conformity, researchers must achieve reliability, transferability, and credibility. In order to maintain uniformity, the researcher employed markers that encompassed rationales for theoretical, methodological, and analytical decisions across the complete study.

3.8.4 Transferability:

Transferability, as defined by Anney (2014), refers to the degree to which the findings of a study can be made applicable and extended to various contexts or settings. In order to guarantee the broader applicability of the findings, the researcher chose to use the purposive sampling method.

Adler (2022) suggested utilising the transferability technique, which involves readers independently drawing their own conclusions rather than relying on the researcher to present a transferability model. Furthermore, the researcher ensured transferability by furnishing the reader with ample information to evaluate the relevance of the research findings to their particular circumstances.

3.9 Ethical considerations

Ethical considerations are a crucial component of every scientific endeavour. "Ethics

pertain to engaging in actions that are virtuous and morally commendable." Therefore, ensuring the safeguarding of human subjects or participants is of utmost importance in any research endeavour (Wiles 2012). Creswell (2003) asserts that researchers should uphold the dignity, needs, values, and wants of participants. In order to accomplish this, the researcher obscured the identities of all participants and schools to safeguard their confidentiality.

3.10.1 Permission to conduct research:

The researcher secured ethical approval from the University of the Free State (UFS) before initiating the study and received research authorisation from the Free State Department of Education to carry out the study in high schools. Furthermore, the researcher communicated with and obtained written consent from the SMTs of the two high schools included in this study and thereafter obtained permission to visit the schools.

3.10.2 Informed consent and full disclosure:

The process of informed consent involves presenting research participants with a comprehensive description of the planned research, therefore enabling them to make a well-informed decision regarding their participation (McMillan and Schumacher 2010). Participants were advised by the researcher that they had the option to withdraw from the study at any point. In order to participate, participants were required to provide written consent.

Johnson and Christensen (2024) provide a list of potential information that could be included in a consent form. This list includes the purpose and duration of the study, potential risks, research benefits, and the option for the participant to endorse a signature indicating their willingness to participate. The researcher ensured that the consent forms were comprehensively explained to each participant and that they were encouraged to sign them prior to the initiation of the interviews, thereby maintaining transparency.

3.10.3 Confidentiality and anonymity:

De Vos, Preiser, and Masterson (2021:119) argue that the notion of personal security is inherent in the idea of privacy. Consequently, only the researcher has the authority to access participant profiles, responses, behaviour, and other data. In order to protect the actual identities of the subjects, the researcher provided them with pseudonyms. Due to the implementation of anonymity, it is not possible to identify any research participant based on the reported results (Vainio 2013:687). The researcher took measures to ensure that the data and replies provided by the participants were kept hidden and not revealed. In this study, the researcher transcribed all recordings manually to ensure the highest level of anonymity.

3.10.4 Actions and competence of the researcher

With the guidance of my supervisor, the researcher was confident that she was capable and experienced enough to carry out the investigation and made sure that the project was conducted in a morally acceptable way. When it comes to the sources of information, the researcher took great care to properly reference and acknowledge the work of others (McMillan and Schumacher 2010).

3.11 Conclusion

This chapter has successfully addressed the research questions, objectives, and aims of the study through the effective execution of the research design and methodology. The chapter offered a thorough explanation of the systematic methodology employed in qualitative research. The investigation encompassed a comprehensive examination of the methodologies utilised for data collecting and the protocols implemented for their execution. Furthermore, the chapter delineated the significance of credibility and trustworthiness, as well as the approach utilised to attain them throughout the investigation. The subsequent chapter carefully examines the interpretation and analysis of results derived from qualitative data.

Chapter 4

DATA PRESENTATION, ANALYSIS, AND INTERPRETATION

4.1 INTRODUCTION

The preceding chapter examined the research methodology and design that underpin this study. In this chapter the method of data capturing, data analysis, and an interpretation of the responses provided by the study participants are discussed.

The study examined SMT experiences with high school technology implementation. This section of the qualitative study also looked at SMT attitudes towards technology implementation, school ICT resources, and SMT barriers to ensuring instructors use technology during the teaching and learning processes.

4.2 REPORT ON DATA CAPTURING

The participants who were involved in the study were ten SMT members from both schools visited within the Mangaung municipality.

According to Brayda and Boyce (2014:318), the researcher and the participants should determine a place where the interviews will take place, and upon arrival, the researcher should obtain consent to proceed with the interview and record it. Likewise, the researcher ensured that participants were free to choose an interview environment that would ensure their greatest comfort. Recordings of the interviews were immediately taped and transferred to a computer and saved on the cloud for manual transcription. During the transcription process, pseudonyms were assigned to protect the participants identities.

4.3 DATA COLLECTION

According to Mason and Allmark (2000:204), when it comes to research ethics, informed consent is often referred to as the "cornerstone." Its purpose is to ensure that individuals who take part in research do so willingly and with a clear understanding of the implications of their involvement. For the purposes of this research, the researcher conducted semi-

structured interviews with each participant lasting 15-20 minutes. The interviews and discussions took place on school grounds and lasted for the predicted times. Every participant offered a time that worked best for their own schedules. During the interviews, the researcher posed questions and allowed the participants to respond whilst taping the conversations using an audio recorder. The recordings were then used in the transcribing and analysis process. Participants were given sufficient time to respond to questions in the English language.

After conducting the interviews, the researcher began manual transcription. According to Kowal and O'Connell (2014:64), transcription enables researchers to conduct a comprehensive analysis by providing them with a written record of qualitative data that can be readily reviewed, annotated, and coded. Before transcribing, the researcher listened to the recorded responses to acclimate herself with the material and thereafter she concurrently organised and transcribed the data. Upon transcribing the audio, the researcher meticulously read and reread the data multiple times to enhance comprehension and identify patterns and subthemes. Castleberry and Nolen (2018) characterise this process as the first stage of immersion, where the researcher actively engages with the material, generates first concepts, condenses the data, and gains a comprehensive understanding of the data before commencing a methodical analytical procedure. This procedure was referred to as memoing by McGrath (2021:245). Memoing involves the formulation of reflective notes concerning the researcher's observations of the data, aimed at systematically discerning themes and codes. Reflexivity and memoing are critical elements of thematic analysis, significantly contributing to the accuracy and trustworthiness of the research analysis (Clarke & Braun, 2017). (Siedlecki, 2022). The researcher attempted to identify consistent replies and patterns from the responses of all the participants. Each participant's response was assigned a code. Subthemes were formed by grouping similar replies into distinct themes for further discussion.

4.4. DATA ANALYSIS

Data analysis was done using a thematic analysis process. Thematic analysis is described by Clarke and Braun (2017) as a process of identifying and reporting patterns within and across data in relation to participants lived experiences, views and perspectives, and behaviours and practices. The recordings of all the interviews were manually transcribed by the researcher.

Macguire and Delahunt (2017) outlined the six steps that researchers follow when they employ a thematic analysis.

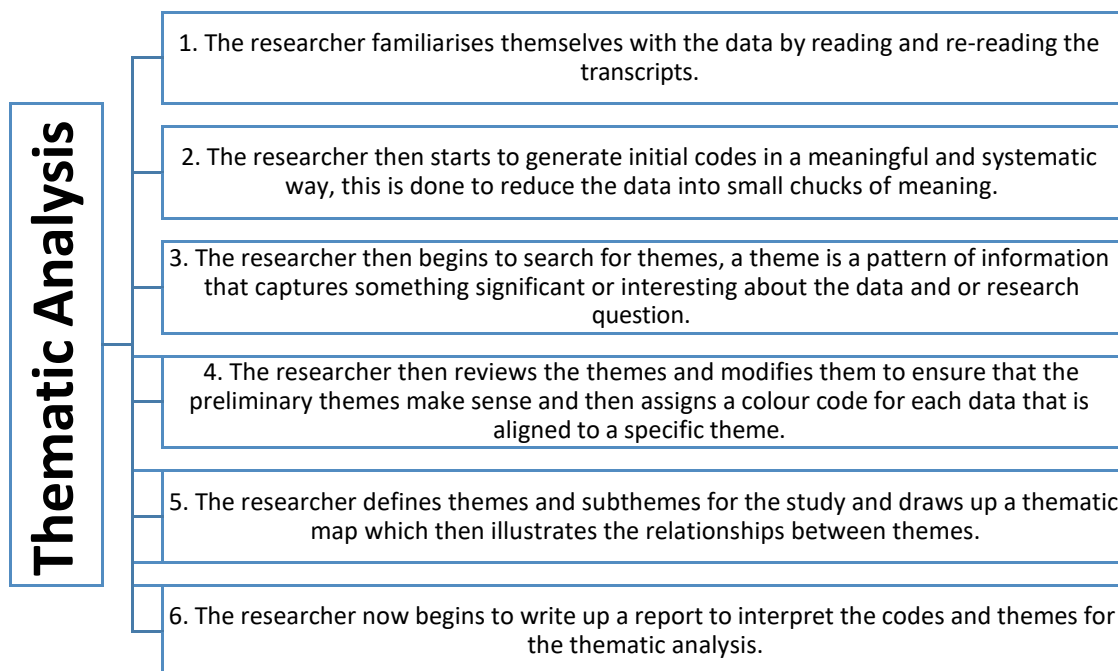


Figure 1: Thematic Analysis steps (Maguire & Delahunt, 2017).

The definition of coding, according to Auerbach and Silverstein (2003), is the process by which you assign codes, words, or phrases that identify what topics or issues you refer to within the data in an organised way that makes it easier for further analysis.

From this point, the researcher assigned alias names to protect the identity of the participants and the school's original identification. Lahman, Thomas, and Teman

(2023:680) state that “pseudonyms are used to de-identify participants and other people, organisations, and places mentioned in interviews and other textual data collected for research purposes.”

The participants were assigned letters and numbers to identify them for discussion and analysis purposes. They were thus coded as follows:

Table 3: Schools, participants and codes allocated.

SCHOOL	SCHOOL CODE	PARTICIPANTS CODE
School A	SA	SAP 1 - 5
School B	SB	SBP 1 - 5
Total Number:	2 schools	10 participants

Table 4.1 above illustrates that the study participants comprised members of the SMT from both schools that were visited. According to Han *et al.* (2013), to ensure participant anonymity and safeguard their privacy, researchers are required to eliminate participants' names and allocate pseudonyms. For each school, the acronym “S.A.” which refers to School A and “S.B.” School B was used. For each participant, P1, P2, P3, P4, and P5 were used. Therefore, the pseudonyms for School A read as: **SAP1, SAP2, SAP3, SAP4, SAP5**. The pseudonyms for School B: **SBP1, SBP2, SBP3, SBP4 and SBP5**.

The common patterns that were identified emerged as the following themes and subthemes; the subthemes were used for the coding process:

Table 4: Study themes and sub-themes

THEMES	SUB-THEMES
1: EXPERIENCES	▪ SMT views on ICT implementation. ▪ SMT personal experiences on ICT implementation ▪ SMT experiences regarding the use of ICT resources. ▪ SMT experiences working with computer technician.

2: CHALLENGES	▪ ICT challenges ▪ ICT contingency plans ▪ Feedback regarding ICT implementation
3: TRAINING PROGRAMMES	▪ Type of ICT training program ▪ Professional development programs ▪ SMT perceptions on advanced ICTs
4: ICT RESOURCES	▪ Maintenance of ICT resources ▪ ICT Policy ▪ ICT resources procurement processes ▪ Needed ICT resources

Research aims and objectives:

The main purpose of this study was to address the following research aim and objectives: As highlighted below, the themes and subthemes discussed in the research findings align with the following research aim and research objectives:

Research Aim:

1. To explore the experiences of SMTs towards the implementation of ICT in schools.

Research objectives:

From the broad research aim mentioned above, the supporting objectives that need to be achieved are as follows:

1. To determine the challenges faced by SMT members when facilitating the implementation of ICTs in high schools.
2. To determine how does the type of training program needed by SMTs to enable them to facilitate the implementation of ICT in schools.
3. To understand the processes that the SMT undergo in order to ensure that schools have adequate and updated ICT resources.

To achieve the above, the inductive thematic analysis method was used. Inductive thematic analysis is described by Clarke and Braun (2017) as a process of identifying and reporting patterns within and across data in relation to participants lived experiences, views and perspectives, and behaviours and practices. The recordings of all the interviews were manually transcribed by the researcher.

4.5 PRESENTATION AND ANALYSIS OF DATA

According to Saris and Gallhofer (2014), analysis is designed to address enquiries or resolve issues. The process of analysis frequently entails the examination and interpretation of data sets, the identification of patterns and trends, and the formulation of predictive conclusions based on the evidence. Analysis is the process of unravelling complex data into smaller components to obtain a more comprehensive understanding of it (Tracy 2024). The study investigated the experiences of SMT members in facilitating the implementation of technology, their experiences regarding the type of training programs needed by SMTs to empower them to facilitate the implementation of ICTs in schools, and lastly, their experiences in the processes that SMTs undergo to ensure that schools have the necessary as well as updated ICT resources in place.

Therefore, to ensure that the data presented is accurate and represents issues as they are. In order to achieve this, I employed the process of data triangulation. According to Wallen and Fraenkel (2013), triangulation is “the cross-checking of data sources or multiple data-collection procedures. Triangulation of multiple data-sources was achieved through analysing the interview transcripts and document analysis.

The following section provides an analysis of data obtained from the interview transcripts. A thematic content analysis was used to analyse data for each theme.

4.6.1 THEME: 1 - SMT EXPERIENCES

The SMT is accountable for the development and implementation of a strategic plan for the implementation of ICT in schools. They supervise the comprehensive implementation of ICT into classrooms and make certain that appropriate resources as well as help are accessible (Chigona and Tunjera 2022). This theme emerged from the first research question, which delved into the experiences of SMT members regarding the implementation of ICT in high schools. The questions posed served as instruments to collect data regarding SMTs awareness of the importance of implementing ICTs in schools. SMT members were questioned about their experiences about the implementation of technology in the schools. The following section presents an analysis

of the responses given by the participants.

4.6.1.1 SMT VIEWS ON ICT IMPLEMENTATION

According to McLeod, (2015:227) a school management team must have a vision concerning the implementation of technology to commit to the effective use of technology within the school. The purpose of the research question cited below was to ascertain the views of the SMT towards the implementation of ICT in the high schools.

The research question that was asked to participants in this section was:

“As a member of the SMT, what are your views regarding the use of ICT in this high school?”

The participants expressed numerous opinions regarding the implementation of ICTs within high school environments. Responses were classified into positive and negative experiences: several participants expressed a longstanding appreciation for the implementation of technology into their teaching methods, as it enhanced the teaching and learning process.

“I’ve always been a person that likes technology because it feels to me you can use it in teaching so much to make it more interesting” (SAP2).

“Technology is basically making a huge difference at the school” (SBP4).

“I would say it’s much easier and quicker to use technology” (SBP3).

On the contrary, there were participants who expressed that their experiences regarding the implementation of technology were not as easy. According to Orey (2010:288), computer-mediated communication in schools involving the use of email, video, audio, text messaging, bulletin boards, and multi-player video games is still a challenge as most teachers still rely on the traditional textbook-based teaching method. Some views that also emerged are that learning to use technology has not been an easy exercise. In the beginning, there were challenges, but as time went by, it became easier.

“Okay, when I started teaching in 2004, we did not use a lot of technology, I mean we did not use the cell phones and computers and projectors in the class which we now use and has made our teaching a lot easier” (SAP4).

In order to curb the above challenge as stated by SBP4 it therefore becomes crucial for SMTs to keep up to date and familiarise themselves with the use of various ICT resources for administrative duties and teaching purposes (Ghavifekr & Rosdy, 2015:175). It therefore becomes crucial for teachers to keep up to date and familiarise themselves with the use of various ICT resources for teaching purposes (Ghavifekr & Rosdy, 2015:175). This was echoed by:

“In my classroom I’m using a projector with a visualizer, and I need it on my laptop. This has made my teaching so much easier. I can take last year’s notes and you just again show the students” (SBP1).

However, SAP4 had a positive view as they struggled using technology due to a lack of proper training. The participant said:

“... but now what happened with me being from the old school, I struggled with some of the things such that I had one of the teachers that I was mentoring, and she helped me with the technology, and she showed me how to create and use WhatsApp groups and send information to the students” (SBP4).

Considering the above comment, it is worth noting that the implementation of technology in schools comes with a lot of positive and negative experiences. For SMTs who are not familiar with WhatsApp, it becomes difficult for them to control things such as cyberbullying and inappropriate postings from students, therefore it is important that SMTs and teachers receive proper training. According to Spiteri and Chang (2020:115), SMTs should attend induction programs to ensure that they are knowledgeable about the use of these technological educational tools. It is important for SMTs to undergo training to understand the various types of technology that teachers need to outsource to deliver lessons appropriately in classrooms.

Participants shared similar sentiments, which showed positive views towards the

implementation of ICT in schools.

“I would say it’s much easier and quicker to use technology” (SBP3).

“... so, in my point of view in my subject I can draw now with the learners and show them exactly how to use the instruments and the compasses and the pencils and how to hold it on the screen” (SBP4).

“... so, this has made our lives much easier. We have access to Wi-Fi, and we also have access to SA-SAMS” (SBP1).

Considering the above comment by SBP1, the SA-SAMS system has made the lives of SMT members easier as it simplifies the capturing of administration tasks. The SA-SAMS system has simplified record keeping, secured data storage in computers, and eliminated the old manual filing system in schools, as evidenced by the remarks of the participants. SA-SAMS is a computer program that is provided by the DoE to assist schools in maintaining a record of student profiles, monitoring student progress, generating class lists more quickly, and recording marks in a systematic manner (Maremi, Herselman, & Botha, 2020:2).

4.6.1.2 SMT PERSONAL EXPERIENCES ON ICT IMPLEMENTATION

Research studies show that SMTs play a major role in the successful implementation of technology in schools. According to Twomey, Schamburg, and Zieger (2006), the experiences concerning the implementation of technology have led to school management teams opting for alternative teaching methods that disregard the importance of using or rather setting up proper ICT infrastructures in schools. Maintaining a definite management of ICTs is important in schools despite positive or negative experiences, as this would enable SMTs to keep their schools contemporary (Jerald 2009).

The research question that was asked to participants in this section was:

“How would you describe your personal experience regarding the implementation of ICT in this high school?”

The implementation of technology in schools has more pros than cons. In both schools

and homes, ICTs are widely seen as enhancing learning (Livingstone 2012:10). The participants had various personal experiences to share regarding the implementation of ICTs in high schools. Responses were categorised as positive and negative experiences: some participants mentioned that the implementation of technology in the school made the teaching and learning process easier and made lessons more interesting for the students.

SAP5 reported that they had a positive experience with the use of technology in class. The participant said,

“... so, it makes your teaching time a lot more efficient because you don’t have to spend half the day writing on the board” (SAP5).

In addition, the participant also mentioned that computer programs such as SA-SAMS have made it easier to track student profiles, which makes it easy for teachers to search student records quicker.

“Management wise, as I say, it’s so easy. You can immediately go into our SA-SAMS system. For example, if you see this kid takes these subjects. He will be in that class now, so you don’t have to run around looking for somebody. You can immediately go and check his parents, what they do, where they live” (SAP5).

Moreover, SBP1 mentioned that the use of technology was also important for classroom management purposes, as members of the SMT now use technology to create class lists, generate special event posters for notice boards, and they also encourage prefects in the school to use technology for reporting purposes. So, this makes the school management flow smoothly with an automatic record-keeping benefit that whatever information is disseminated technologically can always be used again in the future. The participant said,

“Whether it is now sorting out the classes on the class list here, whether it is now arranging a special event for the students, I use my computer for those purposes” (SBP1).

ICTs provide many methods of assessment beyond conventional written tests. Digital quizzes, surveys, and interactive exercises provide teachers with immediate data on student learning advancement (Lugrin et al. 2016:26). Furthermore, SMT members stated

that the use of technology in this school has made teaching more efficient as students are now allowed to make use of their cell phones during class time to receive information from teachers, such as PowerPoint slides sent on WhatsApp groups for discussion purposes. The COVID-19 pandemic brought about a lot of changes globally, whereby schools relied on technology to gain access to students during that period.

“After COVID, we said it’s part of our policy that they must have the cell phones available and they must have data so that if we want to send information to the kids, then they can look at the information” (SAP4).

Similarly, SBP5 recalled that in their school a solid transition from traditional teaching methods to using technology for teaching purposes happened during the COVID pandemic. The participant said,

“Most of the transition happened during the COVID period, when we actually were forced to use more technology in the classes with lots of groups and so on” (SBP5).

SMT members shared mostly positive experiences regarding the use of technology. SAP1 came across as an avid technology user as she shared that they had an effortless transition from using traditional teaching methods to using technology in classrooms.

“...you can’t teach children in a classroom or engage with parents on the various stakeholders of any school without using any form of technology, not just our school in most learning institutions” (SAP1).

In addition, SAP1 also shared that technology makes it possible to enhance students learning and understanding, as technology makes it possible for teachers to play YouTube videos and podcasts in classrooms, and teachers can also share certain webpage addresses with students to encourage them to read further on certain topics. According to Mahlo (2020), technology plays a major role in enhancing the teaching and learning process to ensure that students obtain the requisite skills and knowledge for using technology as an educational tool. Verhoef, Broekhuizen, Bart, Bhattacharya, Dong, Fabian and Haenlein 2021:889).

“... we have WhatsApp groups. So, it has become a primary tool of communication which we use for gathering information, distributing information, whether it’s from the parents or the learners themselves” (SAP1).

“... so now I send PowerPoint presentations on WhatsApp. So that’s how I’ve integrated technology use in class, ... most of my lessons were prepared for use on the data projector with PowerPoint slides, ...I was using media and things like that, YouTube videos and that type of thing in my class long before any of my other colleagues were, ... “... also, I do ask learners to go and look at Podcasts and I give them URLs for certain Podcasts” (SAP1).

“... I encourage the learners also, especially with the prefects, we need to quickly do something, use the technology that is available to us” (SBP1). Participant SBP2 also mentioned that; *“technology has enabled me to get my learners to listen to the recitation of poems via YouTube, where poets themselves read the poem aloud so that they can hear the different emotions and not only get my view, but various views from other educators online” (SBP2).*

“... you can show videos and things like that ... we only had Wi-Fi for teaching and administration staff so this year we decided to extend Wi-Fi connection to all classrooms which has enabled teachers to play YouTube videos in class” (SBP4).

“... you can link your laptop to the visualizer and your projector, so then anything that you write on paper, the learners can have access to” (SBP3).

The above comments clearly show that most participants had a positive experience with the use of technology in the classrooms. The ability of SMTs and teachers to use various forms of technology greatly enhanced the learning experiences of the students and improved their understanding of the learning concepts. SMT members appreciated the different types of technological equipment installed in classrooms, rather than just computers.

On the contrary, participants reported that they have had undesirable experiences concerning the implementation of technology in the schools. The participants expressed

that classrooms were not fully equipped with technological equipment; for instance, some classes had data projectors but had no computers inside. This meant that teachers had to use their personal laptops to improvise and project lessons in those classrooms.

“... but ninety percent of the classrooms are equipped with projectors and not computers” (SAP5).

“... but we have computers in our staff rooms and in the staff offices, but we do not have computers in every classroom” (SAP5).

“It took about a year or so before we were really fully incorporated in the use of technology” (SBP5).

This leads to teachers not learning how to use the technology. According to Aruleba and Jere (2022), “challenges concerning the implementation of ICTs in high schools include lack of management and leadership experts who are trained to facilitate the implementation of ICTs, the unwillingness of teachers to learn ICT skills and the lack of curriculum support.”

“... it can also be negative because instead of me trying to find out exactly how it works, I just call her quickly, like phone a friend, come and help, so I end up relying on someone else” (SAP4).

“it took about a year or so before the school was really fully incorporated in the use of technology, it was a bit difficult for the older teachers, they didn’t understand everything” (SBP5).

These negative experiences faced in the schools are very common, as highlighted by Bustamante *et al.* (2022), “the management of the effective usage of ICTs in public high schools is a rather costly process because ICTs are everchanging, newer versions are emerging every year and educators require constant trainings from time to time in order to effectively use the latest versions of technology efficiently.”

4.6.1.3 SMT EXPERIENCES REGARDING THE USE OF ICT RESOURCES

It is imperative for members of a school management team to have technology skills for them to lead in a technology-rich environment (McLeod, Logan and Allen 2020). This section presents the study findings on the experiences of School Management Team (SMT) members in using ICT resources for both administrative and teaching purposes in schools.

The research question asked in this category was:

“What are your experiences regarding the use of technology within the school’s administration area and also in teaching and learning?”

The participants had various experiences to share regarding the use of ICT resources in high schools. Responses were categorised as positive and negative experiences for each school:

The participants reported a number of optimistic experiences that they had had regarding the implementation of technology within the school’s administration area as well as in teaching and learning. According to McKnight *et al.* (2016), “the digital conversion of the classroom is not determined by the technology but by how technology enables teaching and learning.” The use of technology in the classroom was different amongst the teachers, as it depended on the teacher’s ability to creatively use the ICT resources for teaching purposes.

“Those are the teachers that’s a little bit younger perhaps, that’s more technologically ahead. They use maybe a little bit of PowerPoint, or they can use videos, online videos like YouTube” (SAP3).

Participants further articulated that those utilising visualisers for mathematics instruction proved to be more efficient than inscribing calculations on paper, as the visualiser’s projected calculations onto the screen, which significantly expedited the process in comparison to traditional chalkboard methods.

“I teach mathematics, so you can easily write calculations on a piece of paper and project on the screen using the visualizers, we no longer write long calculations on the chalkboard” (SAP3).

Li (2007:377), in his research, found that students who attended math and science were more motivated when teachers used technology to show them videos of science experiments in class rather than relying on textbooks and imagination. Nowadays learners are more visually inclined, so having to use ICT resources in classrooms to display videos and pictures makes learning interesting.

“it is actually a very good thing for me. You know, learners are more visibly inclined these days” (SBP5).

In addition, SAP4 mentioned that another advantage of using visualisers is that they automatically record lessons, and these can later be sent to the students to watch at home or during revision sessions.

“... so, I am able to explain to kids on that visualizer and it shows, and then it was recorded and it was sent to the kids in the free messaging, that was also very nice” (SAP4).

The participants also reported that technological resources available in the school enable them to process administrative tasks such as capturing information on the SA-SAMS system and using Microsoft Excel to type out student class lists.

“... SA-SAMS, is a technological system that is from the department” (SBP4).

“That is your computer application technology so that is where learners are taught certain programs such as Microsoft Excel. So, we upgraded those classes so those old computers that old ones we put those ones in the classes which was the only way we could manage that” (SBP4).

Furthermore, the participant said.

“Some teachers have their own laptops and things like that but then the department also gave us laptops for the engineering graphic and design teachers” (SBP4).

In addition, participants indicated that they were now leaning towards using Google Forms, which was an easier option for managing class registers and generating class lists on a weekly basis.

“...we are planning on starting to use google forms, instead of writing everything out, if you have a document that you need to submit on a weekly basis, you can just edit” (SBP3).

Furthermore, participants expressed that having ICT resources like data projectors and speakers in every classroom was a great experience for both teachers and students.

“Every classroom is equipped with the necessary technological devices, such as your data projector, we even have visualizers in our classes, and they are currently busy installing speakers in our classrooms” (SBP2).

Conversely, the participants emphasised that they encountered unfavourable situations when implementing technology for administrative purposes. The lack of ICT resources was among these. The schools only have two that can be shared amongst teachers for use in classrooms.

“We have two visualizers, I think, available that people can use” (SAP3).

Additionally, participants reported that despite the school policy allowing students to use cell phones as educational technology in class, students often misuse this opportunity.

“I think there’s a bit of misuse when it comes to phones and technology for learners” (SAP3).

Moreover, participants reported that even though students are allowed to use cellphones, they are not allowed to use their personal laptops in classes. For safety purposes and for classroom management purposes.

“Our learners are not restricted, so they are allowed to use phones, but we don’t allow laptops or anything like that, because it’s just a really big school” (SAP3).

Lastly, SAP5 mentioned that even though the school has 90% of the classrooms equipped with fully functional projectors, there were still teachers who were reluctant to use them.

“... here and there you have a teacher who doesn’t want to use it, but projectors are available for every person that wants to use it,” (SAP5).

According to Bustamante *et al.* (2022), “negative experiences are perpetuated by the lack of skills and knowledge; the most effective way SMTs can promote technology implementation and proper use of ICT resources is to themselves be knowledgeable and effective users of technology.”

Overall, most of the participants reported that the implementation of technology brought numerous benefits and made the teaching experience for both teachers and students exciting, as Flemmer (2007) said, “Education is an area where technology can enhance the overall experience for teachers and students, and society is embracing this idea.”

4.6.1.4 SMT EXPERIENCES WORKING WITH A COMPUTER TECHNICIAN

Research stresses the importance of having a strong technical support team that would be responsible for monitoring, repairing, teaching, and planning for the effective implementation of technology in schools. According to Cakir *et al.* (2012), it is vitally important for schools to have enough computer teachers and computer technicians who embrace their profession and communicate well with other teachers. Computer technicians play an important role in the implementation of ICTs in schools because they influence decision-making; they are available in times of need to resolve technical issues, and they monitor ICT resources to ensure they are properly maintained and in good working order for students to use.

The main research question that was asked in this category was:

“What is your experience with working with a computer technician?”

Explain.

The participants had various experiences to share regarding working with a computer technician in high schools:

a. COMPUTER TECHNICIAN AVAILABILITY

According to participants in one of the schools visited, there was a computer technician on-site to help with maintaining the computers, servers, and the overall running of technology within the school; however, in the other school visited, a computer technician was outsourced, meaning that he came to the school on request to deal with specific issues as they arose. Overall, all the participants were satisfied with the services rendered by computer technicians. Participants in school A reported the following:

“Our own computer technician is incredibly helpful” (SAP5).

“We have a computer technician internally” (SAP4).

“... no, we don’t have somebody who works on it, but we do have somebody externally” (SBP4).

“We have a lady that helps us with all of the technology, offers help if we have problems with our laptops or anything” (SAP2).

In one of the schools visited, the school had an external technician who came on call when needed. The unavailability of the computer technician on-site created problems and delays as teachers had to wait for a longer period to get computers fixed and projectors working. Participants also reported that there was also a lot of pressure on the external technician because by the time he came to the school, there’s usually a long list of issues waiting for him to resolve, and this results in delays that teachers wait longer for issues to be resolved.

“... no, we do not have a technician on-site, but he comes in like maybe three times a week or once a week or when needed” (SBP1).

The department of education should prioritise the employment of computer technicians in schools. It is important for every school to have a computer technician on-site to help with

resolving technical problems as they arise. Technical problems discourage teachers from using technology in classrooms; it takes a long time to fix a problem, and class periods are assigned limited time slots per day. Therefore, having a technician is important, as they can assist the teacher immediately.

Some participants reported that an advantage of having an internal technician was their ability to resolve technical issues quicker, whereas some participants reported that external technicians were also very good with resolving issues even though they had to wait for a longer period.

“He is very good with fixing equipment and being onsite he quickly resolves issues” (SAP2).

“When we had technical issues, we call the computer guy to come and then that same day he will come and repair or upgrade software and make sure the computers are up and running again” (SBP4).

SBP3 mentioned that since they have an external technician, they usually try and resolve minor problems themselves and only request the technician to come for major issues.

“They are efficient, however, when we have minor problems, we try to sort it out. It will take us hours and hours waiting for them to arrive, sometimes by the time they come we would have figured out a solution ourselves and everything is up and running” (SBP3).

Lastly, a school computer technician serves as a first line of assistance that provides technical and instructional support related to the use of computers by students and teachers. According to Tompkins (2013), the role of computer technicians is to provide support to the school’s teaching staff and the administrators through assisting to readily resolve problems and helping teachers to realise the value of teaching with computers. Moreover, Scardamalia and Bereiter (2019) mention that the job of a computer technician in a school is to install computers and other forms of technology, provide training to teachers on how to use that technology, and they are also responsible for maintaining technological equipment and ensuring that it is always functional and easily accessible to students and teachers for teaching and learning purposes.

4.6.2 THEME: 2 ICT CHALLENGES

According to Mihai and Nieuwenhuis (2015), there are several obstacles that stand in the way of the effective implementation of ICTs. According to Baskin and Williams (2016), the leadership of schools has been relying on the government and development partners to a significant degree to provide schools with information and communication technology (ICT) infrastructure. In this section, the study highlights the common challenges that were reported by the participants.

The main research question in this category was:

“What challenges have you faced in the past regarding the implementation of ICT in this school?”

4.6.2.1 ICT CHALLENGES

SMTs will undoubtedly encounter numerous challenges as they implement ICTs. The implementation of ICT has become fundamental in schools; however, Baskin and Williams (2016) report that technology is ever-changing and new versions of technology are being released every year; this therefore poses a major challenge to the education sector as school management teams need to constantly keep up with new versions and learn how to operate these in classes for teaching purposes. The participants had various responses and opinions to share regarding the ICT challenges faced in these schools, as listed below:

a. FINANCIAL CONSTRAINTS

Maintaining the most recent versions of hardware, software, and equipment can be challenging due to the high cost of technology (Butler and Sellbom 2002). Participants reported that financial restrictions were one of the key challenges that impede the implementation of ICTs in schools.

“I believe that a for a school of this size, financial constraints, are the most significant challenge” (SAP3).

If you want to make sure that every single instructor can use a visualiser in the classroom, you should know that it would be quite costly. On the other hand,

"Well, one of our major problems, which is not only in the past, is obviously financial problems" (SAP5).

"The things that you purchase this year will be completely out of date in three years' time" (SAP5).

In addition, participants indicated that because of financial constraints, they did not have sufficient equipment and were forced to borrow projectors and switch from one class to another.

"... then there are also two projectors that they also provided." As a result, they did try to assist, but I can think that it would be a significant amount of money to give it for each and every educator (SAP4).

"... look it's (technology equipment) quite expensive, so there was a time when we did not have a computer lab, for example, and we had to generate the funds to get an extra computer lab" (SAP2).

Financial constraints are another factor that prevents schools from implementing appropriate ICT infrastructure, such as computer labs.

In addition, participants indicated that teachers were dissatisfied with the fact that they had to share equipment and that it would be wonderful if each class had adequate resources.

"We would like to have more visualizers, but unfortunately they are a bit expensive" (SAP2).

"With a school that has 1,900 students and counting, we do not have the funds, and it is a public school," the participant reported, there is not enough money in our budget to get the most recent technology" (SAP1).

Participants also mentioned that the school's resources were limited due to financial constraints.

"... our school budget is not enough for the costs that were involved in the buying of all the visualizers and data projectors for the school" (SBP5).

b. PHONE USE IN THE CLASSROOM

According to Livingstone (2012:15), one other drawback of using ICTS is the possibility to create a minefield of unwanted distractions. Numerous things, including advertisements, pop-up windows, games, news, entertaining websites, social media, text messages, and more, are continuously vying for our attention.

The use of internet blocks is another method that may be used by parents and school districts to prevent children from accessing other websites when they are meant to be working. This was echoed by one participant who said:

"student's misuse of cell phone during class time" (SAP4).

Teachers send PowerPoint presentations and notes on WhatsApp groups for students to view during loadshedding so they can have access to the learning content; however, students tend to chat and use cell phones for other purposes during class time.

"Having phones is quite a big challenge for us. Because you do have a classroom that says no phones during teaching time. But you find a student playing on his phone under the table" (SAP3).

Li (2007) asserts that educators must consistently oversee the implementation of technology in educational settings since pupils may easily become distracted. Furthermore, teachers should vigilantly observe for indications of cyberbullying, which must be unequivocally condemned in schools.

c. UTILIZING ARTIFICIAL INTELLIGENCE (AI) FOR ACADEMIC TASKS

In addition, members of the SMT indicated that the biggest threat to education has been the recent technological development on artificial intelligence and CHAT GPT during assessments:

"I think a big challenge that will arise still is the AI, the chat GPT during assessments" (SAP3).

The above finding indicate that the advent of artificial intelligence may hinder the formation of fundamental skills, including critical thinking and creativity.

d. LOADSHEDDING

Loadshedding has been one of the worst nightmares in South Africa's economic history (Mashiyane, Masuku, and Maphumulo 2024:396). The participants argued:

"Sudden power outages can cause disruptions in classes, causing learners to fall behind the syllabus throughout the term" (SAP3)

Loadshedding has had a wide range of negative consequences for schools. Participants noted that every time loadshedding occurs, computers go down, and in those two or three hours, it becomes very difficult to teach students.

"... this (loadshedding) is a problem that affects the entire country, and I notice it mainly among the younger workers, teachers tend to rely too much on PowerPoint presentations, which makes it difficult for them to teach without slides" (SAP5).

"You know, like with loadshedding, when computers are not working. Therefore, if that is the case, we will simply wait for those two or three hours because there is nothing to do while it is dark" (SBP1).

Furthermore, the participants expressed that despite the school's efforts to provide a generator to maintain normal operations, the issue stemmed from the incompatibility of the school server with the generator they had purchased. Therefore, this was problematic

as teachers were unable to access the school server during loadshedding, thus disturbing the smooth administration of the entire school.

"The most significant challenge is loadshedding, there are a lot of processes that are being hindered by loadshedding at this stage... We were able to arrange for extremely costly generators; but, since the server is not compatible with the generator, we are currently investigating the possibility of using solar power" (SBP4).

e. POOR ACCESS TO TECHNOLOGY AT HOME

The fact that not all students have the same level of access to technology is one of the most significant drawbacks of incorporating it into the classroom. Depending on their socioeconomic status and living location, certain students may lack access to reliable Wi-Fi or the financial resources to buy dependable gadgets (Appiah-Otoo and Song 2021). According to Plowman *et al.* (2011), not all parents can afford to provide students with technological gadgets such as computers or laptops at home or even provide access to Wi-Fi connections. As a result, students who have less access to the information they need to further their studies become demotivated when their peers finish on time, and they always struggle or wait to be at school to access a computer lab to do research or assignments.

"Students must have access to Wi-Fi on school grounds in order to study and complete assignments" (SAP1),

Furthermore, SAP1 stated that another difficulty was that:

"Parents could not afford to purchase technological equipment for pupils, such as tablets, so children rely solely on textbooks and had no access to e-books and other online sources of information even though some schools provide tablets to all students, our parents cannot afford it, so our children must work old school with pen, paper, and a textbook, which is obviously problematic because it has restrictions like anything else" (SAP1).

f. TEACHERS UNWILLING TO LEARN NEW SKILLS

It has been discovered that the attitudes of teachers are the most significant predictors of the implementation of new technologies in educational settings. Teachers who are willing to learn how to use these technologies are beneficial to both their own teaching and the learning of their students (Chen 2008:67). The participants reported that teachers that were available were unwilling to learn new information and communication technology skills, and they continued to use old teaching methods. In addition, there was a demand for teachers who had received enough training to operate the information and communication technology apparatus in the classrooms. The SMTs also noted that there were some teachers who were averse to acquiring new skills to use technology for instructional objectives in education settings.

One of the participants stated,

"It is challenging for them to alter their behavior" (SAP4).

The fact that they are not making more use of technology, however, is not a concern because they continue to enjoy such a level of success.

g. TEACHERS LACKING ICT SKILLS

The participants also noted that another problem was that some teachers lacked the necessary skills to operate computers or connect projectors in classrooms. As a result, the teachers experienced feelings of embarrassment when they were obligated to use ICTs in class. It was claimed by Mashiyane *et al.* (2024:397) that teachers lacked the knowledge and abilities necessary to teach and that they were hesitant to incorporate the changes and additional learning related to computers into their teaching practices. This therefore caused divisions with the teaching methods in schools, as the older generation of teachers preferred the traditional teaching methods in comparison to the younger instructors, who were more inclined to use the learner-centred approach, which involved the use of technology.

The SMTs reported that the older generation of teachers was having a difficult time adapting to the use of technology in the classroom. One participant stated,

"My primary concern is that I do not possess a high level of technological expertise, even now, I belong to the older generation. so, I can perform the fundamental things, and I am not able to do much more than that, but I am knowledgeable enough to get by and complete my task" (SBP1).

h. COVID-19 PANDEMIC

According to Sabbah, Tarteer, and Mahmoud (2021), a contingency plan can save an organisation from going out of business should an incident or disaster occur. During the COVID-19 pandemic, technology was used around the world as a contingency plan for emergency teaching purposes, and teachers quickly adapted to teaching virtually by using any form of tech gadget that was readily available. Participants said:

"It was just basically with COVID when we had some problems. Because it was not easy to access the school premises and the school grounds" (SBP2).

"Most of the transition happened during the COVID period, when we actually were forced to use more technology in the classes with lots of groups and so on" (SBP5).

i. INADEQUATE TRAINING OF TEACHERS

Participants reported that another issue was that before the installation of information and communication technology (ICT) equipment, teachers should be taught and shown how to operate it. Despite this, most educational institutions buy and install apparatus with the understanding that teachers will be conversant with how it functions. According to Chen (2008), most educators do not possess the ability to utilise ICT in the teaching and learning process. This is because they did not receive sufficient opportunities for training, which caused them to be reluctant to employ ICT in the classroom. As a result, classrooms have a surplus of unused ICT equipment. After the teachers have been

trained and shown how to operate the equipment, the difficulty is typically resolved, as stated by participant SBP3, who reported that

“The problem typically occurs immediately at the very beginning of the implementation of ICT when teachers do not know how to use it (technology)” (SBP3).

If you want to make effective use of the technology, it is essential to have someone who can show you how to do so. Moreover, the participant mentioned:

“When you start doing something for the first time, you don't necessarily know how to do it immediately,” (SBP3).

It is therefore imperative that the SMT provide some form of training for teachers to help them understand how to operate technology in classrooms. It is therefore necessary for you to contact a person who is capable of demonstrating how to install specific software on your computer.

4.6.2.2 ICT CONTINGENCY PLANS

Sabbah *et al.* (2021) assert that a contingency plan can avert a company's insolvency in the event of an incident or disaster. Teachers were able to swiftly adjust to teaching virtually by using any sort of technological gadget that was easily available during the COVID-19 pandemic. During the pandemic, teachers worldwide utilised technology as a contingency plan for emergency teaching purposes.

a. WHATSAPP GROUPS

The most common technological gadget owned by both students and teachers is a smartphone that facilitates economical communication programs, such as WhatsApp. Participants reported that there were several contingency plans in place to back up the use of technology in the school. Munir *et al.* (2021:168) assert that WhatsApp groups facilitate immediate connection between teachers and students, enabling students to effortlessly contact their teachers with enquiries or issues, while teachers may swiftly offer guidance and criticism. Participant SAP1 stated that they established WhatsApp groups for each class to

disseminate learning materials, including PowerPoint presentations, for students to examine during periods of loadshedding.

"I maintain a WhatsApp group for each class. *"My contingency plans for my pupils are primarily communicated through that WhatsApp group. On Friday afternoon, I distribute the work schedule for the upcoming week, allowing students to review the slides over the weekend."* (SAP1).

b. GENERATORS

Shemy *et al.* (2021:6) assert that the installation of a generator in a school is crucial for SMTs, as it provides adequate power to schools during power outages, thereby ensuring a seamless and uninterrupted learning and teaching experience. During loadshedding, most of the participants noted that the school is equipped with generators to ensure that technology continues to function normally.

"... but the CAT Labs, if they have class or if they have practical exams, we do have a generator that keeps computers running at all times," (SAP3).

An additional piece of evidence that supported this assertion was provided by participant SAP5, who stated, *"... in our CAT labs, our offices, we do have generators as a contingency plan"* (SAP5).

"There is a backup generator that we were required to install, however, we were forced to purchase a new server the previous year, and they helped us with that" (SAP4).

In addition, SBP1 said:

"... and so, we've received the generator, on the other hand, while the generator is running, it may only be for the lights and other things, but it does not power the server or the Wi-Fi network".

c. PERSONAL LAPTOPS

In addition, participants mentioned that teachers bring their own personal laptops to school, which are always charged before they are brought in. This allows them to continue

functioning and access the learning information, which is beneficial during load shedding because it allows them to continue running. As noted by Awan (2012:257), educators equipped with laptops ought to utilise computer technology more extensively within the teaching-learning framework, as mobile computing facilitates enhanced organisation and efficiency, enabling the development of superior assignments tailored to address students' needs. SAP4 stated that,

"In situations where they are required to record grades for students and other similar matters." A significant many of the educators themselves purchased personal laptops with the intention of utilizing them in the classroom.

SAP2, provided support for this statement by stating,

"... fortunately, if we have to wait, we still have our old backup plans in place. For example, we keep laptops fully charged and we use them when our computers get technical problems".

d. BLACKBOARD

According to Alokuk (2018:133), as a course management system, the blackboard gives teachers the ability to offer students information in a centralised area and to interact with students in a timely manner. Participants noted that in the case of a technical breakdown, such as a malfunctioning projector, teachers are advised by the SMT to use the blackboard and chalk as a backup plan for writing purposes during class. This precaution is taken if the projector or computer fails to function due to technical issues or load shedding. SBP3, stated,

"What the teachers do is that they simply pull up the projector screen, and then they will write on the blackboard."

SOLAR PANELS

Despite the presence of generators, participants reported that they were expensive to maintain because of the high demand for their use during load curtailment. Solar energy

is both more sustainable and cost-effective. Solar energy is a form of renewable energy that is created from the sun to provide a sustainable electrical supply for the smooth functioning of the school (Kabir *et al.* 2018:894). Schools are researching the possibility of installing solar panels as a backup plan in the event of load shedding. The school was reportedly contemplating the installation of solar panels, particularly in the computer laboratories and administration block, according to participants. The participants also mentioned that when loadshedding occurs during the playback of YouTube videos in class, the teacher typically distributes printed physical copies of the poem or story being discussed to the students, and the class continues as usual. SBP4 said;

“... we are looking into installing solar panels, especially in the administration block and for the CAT labs. At least they can carry on with their normal tasks”.

4.6.2.3 FEEDBACK REGARDING ICT IMPLEMENTATION

To determine the necessary implementation, repair, and maintenance to ensure the effective operation of information and communication technology (ICT), SMTs must conduct internal surveys and solicit input from staff members about the ICT infrastructure (Baskin and Williams 2016).

The overall feedback recorded from participants was positive, as most SMT members reported that teachers were happy with the use of computers, data projectors, and visualisers in class for teaching purposes.

a. ICT MAKES TEACHING EASIER

According to Brosnan (2001:7), technology enhances the efficiency of the learning process. In contemporary times, the tracking of attendance, academic performance, and behavioural referrals is frequently conducted through online platforms, facilitating immediate communication among students, educators, and parents. Teachers can focus on developing course materials and providing tailored instruction to their students by strategically applying technology to streamline routine tasks (Bhattacharjee and Deb 2016:4). It was noted by the participants that most instructors were pleased with the implementation of technology in schools. This was because it reduced the number of

administrative duties that teachers had to perform and enabled teachers to display information on boards, which made the material more engaging for the students. Participant SAP3 gave the following statement: *"I believe that there are a few of us who use it to make our lives a little bit simpler for ourselves."*

As an example, SAP3 said,

"I would want to use Google forms for the registration of my students."

This was further corroborated by SAP5, who stated that

"It (technology) makes your workload easier; it's more work once to make all those, compile all the PowerPoint presentations, but once you have them after that, it makes your preparation less".

b. LATEST TECHNOLOGY

Chigona and Tunjera (2022) stated that the absence of ICT equipment has a detrimental influence on student learning because it restricts their access to technology that is necessary for educational progress. Despite the fact that schools are equipped with computers, the participants reported that the situation can be difficult due to the fact that these machines are both antiquated and slow. Consequently, members of the SMT must submit a request to the SGB to obtain modern computers. This is due to students regularly experiencing difficulties in keeping up with the pace of the lessons while waiting for the display of information on the machines that are currently in use and slow.

"... younger teachers are more accustomed to technology, and they will bring it under our attention every once in a while, when there is new technology, which we will then investigate and then see how we can incorporate it here at school," (SAP4).

As an additional point of interest, SAP4 stated that:

"The most recent thing that teachers request is interactive white boards, but the school does not have the money at the moment to purchase those things."

Similarly, SBP1 provided additional evidence in support of this assertion, stating, *"They*

love it (technology) because they are making use of new and innovative approaches."

The older generation of teachers, on the other hand, was still reluctant to learn new ICT skills, and they still chose to use traditional methods for marking registers or keeping an up-to-date record of the disciplinary system, according to some of the participants who provided unfavorable comments. Hennessy, Ruthven, and Brindley (2005:156) assert that school management must assume the role of providing training for teachers to promote the implementation of technology in the classroom, so enhancing their pedagogical techniques. In addition, the participants mentioned that it was a burden for teachers to enable students to use their cell phones for educational purposes in the classroom. They required teachers to make sure that students were not engaging in activities such as playing games or chatting during class time.

"If we are going to do just registers with the absentees obviously, with maybe the referral system, our discipline system, I think not everyone is that inclined to be able to work it and so it becomes a very big stressful situation for a lot of the older staff" (SAP3).

"I have to very strictly monitor that the children are engaged on their phone with the appropriate work and not going off on some website or checking in on a chat that they have with a friend during class time" (SAP1).

4.6.3 THEME: 3 TRAINING PROGRAMS

It is essential for SMTs to facilitate workshops and various professional development initiatives aimed at equipping educators with the skills necessary to utilise ICT resources effectively within educational institutions. Hafifah and Sulitstyo (2020) assert that these training programs hold significant value as they inspire educators to utilize computers with greater efficiency. In the implementation of ICT education, it is crucial for school management to encourage educators to utilise technology that captivates students and sustains their motivation within the classroom environment. As the field of ICT education progresses, the enhancement of informatisation will enable not only educators to gain proficiency in utilising these technological devices but will also necessitate the implementation of ICT literacy programs into the curriculum for students. This approach aims to cultivate critical thinking abilities and the effective use of such devices

(Pangrazio, Godhe, and Ledesma 2020).

The main research question that was asked in this category was:

“What type of ICT training programs have teachers and SMT members attended over the past 5 years?”

The participants provided feedback on the ICT training programs that SMT members and teachers attended, which we categorised into three categories: internal, external, and self-training.

a. INTERNAL TRAINING

Relates to the guidance provided within the academic environment, which may include CAT instructors illustrating the procedure for rebooting a computer or SMT members conveying the latest information concerning the documentation of marks on the SA-SAMS system (Oliveira *et al.* 2022:150).

In this section, the participants indicated that internally, SMT members engage in short training sessions to disseminate knowledge among colleagues regarding the typing of mathematics and accounting papers. Furthermore, the participants indicated that members of the SMT held the responsibility of instructing teachers within each department on the utilisation of the SA-SAMS system. Participants indicated that these internal trainings for SA-SAMS typically occur in the afternoons as a component of the teacher orientation package. Moreover, the participants also indicated that the educators specialising in computer applications were given the responsibility to share knowledge with their colleagues regarding the use of Microsoft Excel for the purposes of recording class lists and attendance. Additionally, they provided access to literature for further insights.

“I think three workshops where we could go and then they teach us how to do scientific stuff on the laptop. They gave us programs as well where we can make up molecules and show experiments and show us how to even type question papers and how to set up question papers” (SAP2).

“We could definitely get more training on different programs and maybe get more equipment so that we are able to be more creative and to make it nice for the learners as well. The learning, to enhance the learning experience” (SAP2).

“A long time ago, we did some Excel and Windows and all of those things” (SAP4).

b. IN-HOUSE TRAINING

Education should equip individuals with the necessary information, skills, and experiences pertinent to the realities of the world that they live in and engage with professionally. As digital technologies have become deeply integrated into most schools, an imbalance in technical literacy and skills presents a significant disadvantage for teachers in schools (Rusten 2003). It was noted by the participants that they typically participate in in-house trainings, which are brief courses in which instructors and members of the SMT share their skills with one another. SAP3 stated,

“We do a little short course on just typing the papers because, you know what? Especially with the math, physics, and accounting question papers, we train our teachers how to type the correct symbols and have the correct spacing”.

In addition, SBP4 that;

“CAT teachers train our staff members a bit on Excel”

SBP1 also mentioned that the

“CAT teachers share with us a booklet on how to use Excel”

Participants also indicated that it was normal practice to hold in-house trainings of this kind and to exchange information with colleagues.

SAP3 stated that;

“The training that we’re doing is we keep it sort of in-house.”

c. TEACHER INDUCTION PROGRAM

Kelly and Melograno (2004) noted that teachers who participated in the induction program reported significantly higher levels of satisfaction with the use of ICTs and a higher percentage of employee retention compared to teachers who did not participate. This was attributed to the high quality of mentoring that these teachers received from the SMT. Participants indicated that an additional form of internal training occurs during the teacher induction program. SAP1 said;

“In your new teacher orientation, the SA-SAMS administrative teacher will take you one afternoon as part of your orientation”.

This statement was also supported by SAP5 who said,

“We train as a new teacher comes, we have a staff member who’s in charge of SA-SAMS, so she will do the training and tell them this is how your print the class list”.

SAP1 gave an example of the SA-SAMS training that happens during the induction and said,

“... we have a general in-house program called SA-SAMS and basically, we show teachers how it’s used in the induction, because it’s the school administrative system, all school administration from school attendance to parent information to the timetable to record students marks of their results. Everything in every little detail of the school’s administration runs on this system”.

EXTERNAL TRAINING

This term refers to the professional development workshops that are held outside of the limits of the school environment and are organised by the SMT or the department of education for the members of the SMT (Oliveira *et al.* 2022:152). The participants are often provided with insights by a subject matter expert who has been called upon to provide them. In certain situations, SMT members and educators from various institutions within the circuit are brought together for external training sessions. The purpose of these meetings is to create an atmosphere conducive to conversation and the sharing of

strategies concerning the most effective way to integrate information and communication technology in educational settings. Participants reported that they would be pleased to attend more external training programs in the future.

“A long time ago, we did some Excel and Windows and all of those things” (SAP4).

“We could definitely get more training on different programs and maybe get more equipment so that we are able to be more creative and to make it nice for the learners as well. The learning, to enhance the learning experience” (SAP2).

d. END USER AND PASTEL TRAININGS

Participation in specialised computerised programs holds significant value for educators and administrative staff within educational institutions. Instructors within the accounting department might be obligated to participate in PASTEL training sessions to effectively impart knowledge to students, while school secretaries are similarly encouraged to engage in these courses to ensure the maintenance of accurate financial records within the institution (Chen 2008). In this section, participants indicated that the institution promotes the professional development of educators by facilitating their attendance at external training sessions focused on end-user computing and Pastel accounting courses.

SAP3 stated, *“you have to go and attend courses like an end-user computer course”*.

SAP5 further indicated that:

“... my admin staff, the person who uses Pastel or something, they go and attend trainings”.

e. SA-SAMS TRAINING

Participants indicated that in certain schools, the secretaries are motivated to pursue external training pertinent to the utilisation of the SA-SAMS system, as they hold the responsibility for recording student information. SAP4 said;

“... the secretaries at one stage went for a training session, two days, where they were taught how to work with SA-SAMS system”.

f. SELF-TRAINING

Self-training refers to the efforts made by an individual to assign specialised knowledge. One may embark on the quest for knowledge by delving into the information available online, following methodical guidelines to master a specific skill, or scrutinising instructional videos on platforms like YouTube to enhance understanding and expertise in diverse areas.

In this section, participants reported that they usually enrol in short ICT online courses, which are attended for a few hours per day to learn a new skill. Teachers can access courses and modules online and learn new information and communication technology skills, as stated by Plowman *et al.* (2011). This allows teachers to adjust the learning pace, review materials, and repeat crucial sections, ensuring a thorough understanding and successful implementation. One participant said that as part of her self-training, she relied on family members and younger teachers to take her through the steps and show her how to do something, and that is how she acquired most ICT skills and learnt how to effectively use a computer for teaching and administrative purposes. SBP2 said;

“You just enroll yourself online and then it is a short course for approximately two hours per day, and it helps to learn a new skill”.

In addition, SBP1 stated:

“... everything is self-taught, sometimes I’d ask my husband to show me something, or I’d ask the younger teachers to show me something and then I just write down the steps to do it for myself”

4.6.3.2 PROFESSIONAL DEVELOPMENT PROGRAMS

In this section, the participants indicated that a significant portion of the teaching staff possessed familiarity with fundamental computer applications, including Microsoft Word, Excel, and similar programs.

a. MICROSOFT OFFICE TRAININGS

Technology is constantly evolving, and new computerised programs are being developed

(Orey 2010). Participant SAP3 indicated that teachers possessed proficiency in computer usage and had received training in Microsoft Office applications.

“Everyone is able to work with the basics of Microsoft office” (SAP3).

In corroboration to the above quote, SAP4 said;

“A long time ago, we did some Excel and Windows trainings and all those things”.

The SMT should be constantly on the lookout for opportunities to outsource workshops that will train teachers on how to use the most recent Microsoft Office suite programs for administrative purposes. This will ensure that teachers are not only familiar with the fundamental features of the software but also with the most recent features of it (Brayda and Boyce 2014). Participants noted that mathematics and science teachers employed a range of software tools that facilitated the instruction of scientific experiments and similar activities using laptops. Additionally, the mathematics instructors required specialised software for the preparation of mathematics examination papers. This created a necessity for educators in this department to participate in additional professional development programs that would introduce them to the potential of utilising more sophisticated ICT equipment, thereby enriching the teaching and learning experiences. SAP2 said;

“I think three workshops where we could go and then they teach us how to do scientific stuff on the laptop. They gave us programs as well where we can make up molecules and show experiments and show us how to even type question papers and how to set up question papers”.

None of the SMT members participated in any external ICT training. SBP5 indicated that there remains a necessity in this school to provide instructors with professional development programs that equip them with the skills required to utilise the cloud for saving and generating class lists, capturing attendance records, and similar tasks.

“... especially on things like clouds and how to use the cloud, how to incorporate the SA-SAMS system with the cloud and so on” (SBP5).

b. CONTINUOUS PROFESSIONAL TEACHER DEVELOPMENT TRAINING

In this section, participants reported that the teacher unions advocated for teachers to attend the Continuous Professional Teacher Development (CPTD) programs, which had short courses that lasted for a few hours to equip teachers with ICT skills. Li (2007) asserts that CPTD training aids educators in cultivating new skills, gaining fresh perspectives, and staying up-to-date with the latest trends and advancements in their field. This can result in higher job satisfaction and chances for progress. This was reported by SBP2, who said,

“Our unions usually present courses for continuous professional teacher development, the CPTD program. On a regular basis, every third month, there is a short course for approximately two hours where you can enroll for ICT purposes in your class. You just enroll and then it is for approximately two hours”.

4.6.3.3 SMT PERCEPTIONS REGARDING THE IMPLEMENTATION OF ADVANCED ICTS

Digital tools have become a fundamental support for education for teachers because technology allows teachers to store, process, and share all their teaching material through multiple electronic devices and even create new content in an attractive way (Flanagan and Jacobsen 2003:124). The ability to save, process, and distribute all a teacher's teaching materials across various electronic devices, as well as to develop engaging new content, has led to digital technologies becoming an essential component of teacher education (Flanagan and Jacobsen 2003:124). In this section, participants reported that teachers in the science department were motivated and pleased with using technology daily for teaching purposes. The teachers prepared awesome PowerPoint presentations to share with students in class, which made the learning experience exciting for the learners. This was stated by SAP2,

“In my department with the physical science, I’m blessed to have teachers that can find their way with the technology, and they are quite good. I must say even the PowerPoint presentations are awesome”.

In addition, participants also reported that the SMT perceptions concerning the implementation of advanced ICT programs were centred around the budget, and with the

availability of funds, it would be wise to start implementing ICT equipment needed mostly by the physics teachers and the life sciences teachers. This was reported by SBP1, who said,

“I would say sure, you know if it’s in the budget, really, the principal must start, like, you know, maybe start with the physics teachers, and then the life sciences”.

4.6.4 THEME: 4 – ICT RESOURCES

Establishing a good information and communication technology system in schools is a difficult endeavour. It costs a lot of money to get ICT tools up and running and to buy them.

4.6.4.1 MAINTENANCE OF ICT RESOURCES

The main research question that was asked in this category was:

“What is the school’s SMT doing to ensure that this high school has adequate and up-to-date ICT resources?”

As part of their duty to keep the school's information and communication technology (ICT) resources up to date, the SMT is responsible for hiring a computer technician to assist with computer maintenance. Access to a computer technician trained in maintaining ICT resources is essential for every school. Higgins (2003) suggests that the maintenance of technology within schools is crucial, and neglecting this responsibility can lead to significant expenses. Regular check-ups by qualified professionals are necessary to guarantee that computers remain in optimal working order consistently. The school can either employ this technician internally or contract them to visit on specific days as required. SAP3 reported that her school has an internal technician who is always available to assist with technical issues and said,

“We do have a tech lady. She keeps everything updated, see that all programs are installed, and that all passwords are updated. She gives every teacher their own login detail, makes sure that everyone understands it, gives a little bit of assistance when staff members face technical challenges”.

However, a computer technician may also be outsourced externally to come and resolve technical issues. SBP4 reported that they normally book an external technician to come and service all computers in the school during school holidays and check whether everything is working, they said;

“... so, normally I book him for a day or the over the school holidays. Then he will run through the whole school and check if everything is still working well”.

In addition, SBP2 emphasised that it is important for schools to prioritise a continuous maintenance of technology, and said,

“... because that means maintenance is continually being done. And if you are continually doing maintenance, you won't experience any problems”.

a. IP ADDRESSES

The computer technician on site was primarily responsible for the maintenance of ICT resources. A computer technician may establish IP addresses for staff members to safeguard the school's information, thereby implementing an additional security measure to prevent hacking by students or external parties. The primary benefit of possessing IP addresses lies in their capacity to facilitate oversight of system access within schools, thereby enabling management to ascertain the identities of users and their intentions. This capability is instrumental in regulating the flow of information, safeguarding against unauthorised dissemination by students and potential intruders. Furthermore, IP addresses afford teachers the flexibility to engage in their duties remotely, permitting them to access the system and maintain productivity from home (Malik and Rana 2020:403). Every teacher is required to log in using a username and password. SAP3 mentioned that in order to maintain confidentiality of information, they each had unique IP addresses allocated to staff members with login details that prevented students from hacking in to the system, they said;

“You give her your IP and all of that, and then she logs it on the system so that the students cannot get on to it because we have 2000 students and it would be crazy if one hacks our system”.

Participants also reported that the computer technician is responsible for training teachers on how to use the SA-SAMS system and assigning login details and access codes to each teacher.

“Then we also have a teacher that is appointed for the specific program of the department, SA-SAMS. She runs SA-SAMS for us, checks and changes the passwords, makes sure everything works well” (SAP3).

4.6.4.2 ICT POLICY

The question that was asked to participants in this category was:

What are your thoughts regarding the current policy on the use of ICT resources in schools?

The solution to communication barriers in schools is ICT (Malik and Rana 2020:408). Consequently, it is crucial for SMTs to establish an ICT policy to guarantee the integrity, confidentiality, and availability of data within the school. The policy should delineate the responsibilities of SMT members, teachers, administrators, computer teachers, computer technicians, and students in safeguarding the organisation's technological infrastructure from threats and vulnerabilities (Rana, Greenwood, and Fox-Turnbull 2020:121). Participants from the schools claimed that there was no information and communication technology (ICT) policy in place. They claimed that the schools did not have an information and communication technology policy in place. Since the institution did not have an information and communication technology policy, the participants also advised that it would be advantageous to explore the implications of cell phone usage in classrooms. It is recommended that this matter be handled in a subsequent policy. When asked if the school had an ICT policy in place, SAP2 said;

“No, not at all, which is actually something that one can look at”.

Similarly, SBP4 said;

“We do not have a policy on this”.

This was further corroborated by SBP5 who said;

“I am not 100% sure that we need to go too deep into a policy with technology. There are so many other policies that we are implementing, but we can look at that in the future.”

4.6.4.3 ICT PROCUREMENT PROCESS

The question that was asked in this category was:

“Can you explain the process of purchasing ICT resources for this school?”

When it comes to the acquisition of resources, schools typically adhere to a specific approach known as a procurement process. Heckman (2020:367) asserts that effectively managing IT procurement processes in schools is essential, as well-timed purchase orders for bulk quantities can lead to cost savings; conversely, when time constraints exist, suppliers gain leverage, resulting in significantly increased costs.

In the next section, we will go over the responses that were received from members of the SMT about this process.

In this section, the participants indicated that the procurement processes commenced with the SMT convening to articulate the necessity for equipment as outlined in their annual strategic plan. Subsequently, the request is submitted to the school governing body, which then assesses the availability of funding. Should the necessary funds be accessible, the HR department would subsequently authorise a computer specialist to conduct a survey and obtain quotations, after which procurement would occur from an appropriate supplier. SAP5 said;

“So, that takes quite long, because for that you need a big amount of money. In the end, we did that through donations from our old learners, so that thing will take long. However, if we buy one computer, you get two quotations, three quotations, our governing body is very supportive, we think we have a chance”.

In addition, SAP4 mentioned that;

“When a teacher comes or somebody comes and say that we have this need, then the principal normally first, she goes to the bursar to see if there are any funds available, if it

will be possible. So, if it is possible, then we go through that process. If it's not possible, there's not money that we can use for that, then we will look at what we have and how we can work with that. But then the principal, there's what we call a requisition form that's filled in and the quotations or the cost involved. The principal requests if we can pay this, and then that paper goes to the bursar. And then we have fund, there are even here now, the auditor. So, they check the books every now and again, every year most. And then when we have our governing body meeting, they mention like big projects. We cannot buy a new server, for instance, if the governing body doesn't sign off on that".

Moreover, SAP2 explained;

"We take it to the SGB, then, okay, so it first goes, we'll have to see what are the funds, so the HR department then ask from SGB as well and then the technician lady, she orders it and ask quotes as well and see where we can maybe get it the cheapest and then we usually wait, I want to say at the most maybe two weeks, but I want to say usually the time then is a week".

According to SAP1, the procurement process is when;

"We allocate a specific section of our budget every year for ICT, and we go back to the SGB to communicate our needs and give reasons. We look at the budget and if there's enough funds, they approve the purchase request".

Participants indicated that the acquisition of computers and other ICT resources is typically recorded in their annual strategic plan, which is submitted annually to the school governing body for approval. Upon receiving approval from the SGB and building committee, the next step involves submitting this endorsement to the finance department. Once the finance team grants their signature, the procurement of resources from a reputable supplier can proceed. SBP5 reported;

"We identify the needs, and these needs will be taken to the governing body. The governing body will decide on the budget meeting, on their budget meeting. And then we will take it to the parents. And the parents will decide on the budget. So, we have an open

meeting where everybody can be involved. Look at the budget of the school and say why they put money there. And from there, that is approved. From there, we can continue”.

In addition, SBP4 said;

“There is a budget for it (the procurement of technology). Unfortunately, it is limited, we send a five-year plan and a three-year plan, and one of them is to upgrade technology. We have a governing and building committee. So, the governing and building committee, they get the quotes. They submit it to the finance, finance to the SGB. They sign it off and then there we go”.

In corroboration, SBP1 explained;

“We use the school governing money. So, if we get a sponsor or something like that, we make use of it. But we don't always get sponsors. And then, so from the school governing money, so we take a request to them. And they must obtain it. So, they're obviously not going to pay the whole school to get it all at once. So then, if we break it up into smaller groups and say, all right, I'm going to just buy it for the maths department now this year. Next year, I'm going to buy it for the physics department. So, it's more manageable. And then they will let that go through”.

4.6.4.4 NEEDED ICT RESOURCES

The purpose of the question asked in this section was to ascertain what kind of ICT equipment schools need.

The question asked in this section was:

What sort of ICT resources does the school need currently?

ICT in schools combines digital technologies to enhance learning and teaching processes. Its rise has had a significant impact on education, giving students access to large resources, interactive learning platforms, and personalised learning experiences. ICT tools like interactive whiteboards, educational apps, and online simulations let students actively participate in the learning process, which promotes greater

understanding and increases student motivation (Heckman 2020:368). Despite the fact that most schools possess some ICT equipment, many still lack these technological tools.

The participants indicated that the schools needed a reliable internet connection for the purpose of conducting research and teaching. Additionally, participants emphasised the necessity for schools to acquire additional computers, as teachers use personal laptops for instructional purposes. Additionally, the participants expressed their desire for the implementation of smart boards and the accompanying software. SAP3 reported;

“I don't think everyone needs to be equipped with it, but I think there is a use for it. I also think perhaps if there was internet in a classroom”.

In addition, SAP5 remarked;

“I would like for every teacher of mine to have a proper laptop and with proper internet connections in the classroom”.

This was corroborated by SAP4 who said;

“I always think about computers. But that is one big thing that I would request for the school”.

SAP2 recommended smart boards and said;

“I would definitely ask for smart boards and the programs that goes with it”.

Lastly, SBP4 mentioned that the school needs advanced computers;

“To upgrade the classroom computers from i3 to i5” (SBP4).

4.7 DOCUMENT ANALYSIS

According to Morgan (2022:64), document analysis is the process of studying or assessing documents in a systematic way, making use of both printed and electronic versions of the documents. The process of document analysis, much like the majority of other qualitative research methodologies, is analysing and interpreting material in order

to discover meaning, acquire comprehension, and arrive at a conclusion.

For the purposes of this study, the researcher perused two specific policies, namely, the White Paper on E-Education policy and the E-Learning policy, to discover the exact connotation of the narrations by participants. These policies aided in answering the research sub-question. *“What are your thoughts regarding the current policy on the implementation of ICT resources in schools?”*

It was presumed that analysis of these documents could assist in identifying the conditions, prerequisites, aim, and plan of this policy in the education system of South Africa and provide information on how teachers and schools have an obligation to turn the implementation of this policy into a successful reality.

Implementing the document analysis data collection method was suitable for this study as it enabled the researcher to thoroughly examine large amounts of data, including the White Paper on E-Education Policy (RSA DoE 2004 chapter 2:15) and the E-Learning Policy (RSA DoE 2003 chapter 3:22) issued by the Department of Basic Education. The data acquired from documents was used to establish a correlation and verify the conclusions drawn from interviews (Noble and Heale 2019).

As indicated in Chapter 3, the focal point of these policy documents is the policy for assessing the extent of the implementation of ICTs in high schools. The White Paper on e-Education Policy (RSA DoE 2004 chapter 2:15) set time frames for developing public schools as e- schools, with the primary objective of improving teaching and learning in schools. Although this policy was ambitious and aimed to achieve its key objectives, it did not find its way into schools until well after the implementation of technology. The policy appeared to be purely symbolic, as it was not an integral part of the many iterations of the curriculum policy, nor was it promoted at a systematic level as a policy that needed to be implemented.

The e-Learning Policy (RSA DoE 2003 chapter 3:22) aims to “transform learning and teaching through information and communication technologies,” to keep pace with

technological advances, and to promote economic growth and social development in South Africa.

It was hoped that the use of ICT would enable e-schools to change teachers' practices and improve learners' learning experiences. Unfortunately, as a researcher, I have discovered that the implementation of these policies has never been a priority.

4.8 CONCLUSION

This chapter addressed the processes of data capturing and data analysis. The techniques delineated how the researcher discerned themes from the manually transcribed semi-structured interviews. The topics derived from the interviews are presented and analysed in the subsequent chapter as findings, accompanied by suggestions and recommendations. The subsequent chapter provides a synopsis of the research, limitations, findings, and recommendations.

5

Findings and Discussion

5.1 INTRODUCTION

The previous chapter covered the data analysis and interpretation of the transcribed interviews. This chapter discusses the study's findings. The findings were organised according to study themes: SMT experiences, challenges, training programs, and ICT resources. This chapter provides a concise summary of the most important findings from the research study under consideration, followed by a discussion of the implications for school management teams in terms of adopting and maintaining pedagogical innovations in the implementation of ICT in high schools.

Following a brief discussion of the study findings, a study summary and conclusions regarding the important research concerns will be presented.

5.2 RESEARCH OBJECTIVES

This study ought to address the following overarching research objectives as outlined below:

1. To determine the challenges faced by SMT members when facilitating the implementation of ICTs in high schools.
2. To determine the type of training program needed by SMTs to enable them to facilitate the implementation of ICT in schools.
3. To understand the processes that the SMT undergo in order to ensure that schools have adequate and updated ICT resources.

The study took place in Mangaung municipality, within the Free State province, encompassing two schools with varying levels of ICT usage.

5.3 SUMMARY OF FINDINGS

The study's findings from the literature review were integrated into the data presentation and interpretation in Chapter 4. This summary of findings will be presented in a manner that addresses the research sub-questions.

The analysis of the semi-structured interviews and document analysis of the e-education policy and the e-learning policy revealed that the SMT is expected to play a key role in the process of implementing technology into schools (Xalmurzayevna *et al.* 2021). SMT members stated that they were inherently responsible for motivating teachers and non-teaching staff to use ICT in their practices. The SMT members also acknowledged their responsibility to provide continuous support through workshops.

Furthermore, SMT members stated that ICT implementation remains a challenge, despite the DBE mandating it through several policies (Winter *et al.* 2021). The reality is that in order to comply with the DBE's different policy reforms, specific conditions must be satisfied, such as infrastructure, resources, supplies, and ICT evaluation needs in schools. This greatly influences SMT experiences and commitment to implementation. Furthermore, in Botha's (2013) study, SMT members expressed worries regarding the implementation or non- application of ICTs due to a lack of resources and support for teachers. This concept is backed by Malik and Rana (2020:406), who claim that while there are issues such as those described, the lack of competence must also be addressed.

Furthermore, the study's findings show that only through thorough training will the dream of "ICT implementation" at the school level be realized. This will help in the ever-changing world of technology. These findings are reinforced by Kelly *et al.* (2004) confirms that there is a considerable association between formal ICT training and its implementation.

The findings show that teacher training is not happening as intended, Ananiadou (2010). Numerous elements influence teaching competency, including maturity, age, motivation, IQ, mental health, physical demands, attention and interest, and degree of ambition (Harris and Sass 2011:798). This occurs due to the reluctance of certain teachers to receive instruction. In some cases, the school may not have enough equipment to train all teachers in one session. A possible recommendation would be for the school to make arrangements with the education resource centre to provide training to all of the teachers during the school holiday period (Wong *et al.* 2022). This would enable teachers teaching all subjects in the schools to implement technology into their lessons and reap its benefits.

The school's ICT requirements cannot be met by the allocated budget. It is possible to conclude that schools are unable to expose learners to ICT from the early grades, which impacts the orientation of learners from the early grades. The suggestion is that schools should increase their efforts to secure sponsors in order to initiate exposure in the early grades.

5.3.1 Challenges SMTs face in the implementation of ICTs in schools

The main reason SMT members experience challenges is a lack of training or development on how to properly implement technology in schools (Yuting *et al.* 2022). Most SMT members indicated that they had bad experiences with teaching using technology because they were not knowledgeable on how to properly use computers to project lessons in classrooms. As corroborated by Tunjera and Chigona (2022), SMT members expressed that they did not feel confident with using technology in classes due to a lack of support from computer technicians who were not always readily available to resolve technical issues, and this consumed lesson time.

The poor access to technology was another challenge. Little or lack of parental involvement in the implementation of ICTs in schools was also a major source of frustration for the SMT (Tong 2001). A majority of parents could not afford to provide technological devices for students to practice with at home; hence, it made it almost impossible for learners to do homework and research assignments at home. Parents also lacked the necessary educational background to guide their children in using technology at home.

The SMT also faced challenges in motivating adamant teachers who were reluctant to learn new teaching skills using technology. These teachers preferred utilising traditional teaching methods, which they were most familiar with, to achieve the desired pass rates. Therefore, as corroborated by Tsitsia and Kabbah (2020) the SMTs found it hard to influence teachers to change their teaching approach as long as students were performing as expected.

Another challenge was financial constraints. SMT members had difficulty financing the purchase of ICT resources for the schools (Tigere 2020). SMT members have to collaborate with the SGB to ensure that schools had adequate ICT resources.

The majority of the SMT members who were interviewed in the study from both schools stated that the implementation of ICT in schools has resulted in improvements to the teaching and learning processes. According to Tompkins (2013) the utilisation of ICT for teaching purposes in classrooms resulted in a significant improvement in the students' ability to maintain their attentiveness. The SMT members disclosed that teachers can now maintain flexible work time as a result since they can now have the freedom to take laptops and continue working even outside the classroom and offices. This is because teachers can bring their laptops home with them and continue working or preparing classes during their free time.

5.3.2 Strategies employed by the SMT to convince teachers to implement the use of ICT in the teaching and learning process and eliminate challenges

Upon recognising the aforementioned challenges, members of the SMT had to employ numerous strategies to ensure that teachers were motivated to implement the use of technology during the teaching and learning process.

The type of training programs that SMTs provide to enable teachers to facilitate the implementation of ICTs in schools.

One of the strategies SMTs used was to ensure that they provide teachers with opportunities for internal and external training (Thomas 2010). The internal trainings were reportedly conducted by the computer teachers who shared about the basic use of Microsoft Word and excel which was essential for typing class registers and tests. These computer teachers were also hands-on and shared information with fellow teachers on how to use the visualisers and/or projectors (Tigere and Moyo 2022). Externally, the SMT would organise trainings for teachers to attend specific trainings that will equip them to teach effectively; for example, the PASTEL training was meant for the accounting

teachers.

The process that SMTs undergo to ensure that schools have adequate and updated ICT resources

SMT members worked tirelessly to prioritise acquiring more technological equipment for teachers to use in schools to avoid them having to bring their own laptops and sharing projectors (Spiteri and Chang 2020). The SMT did this by sending forth requests to the SGB using the annual strategic plan that is submitted yearly for approval. This greatly motivated teachers and equipped them with the necessary ICT tools to deliver lessons effectively.

5.3.3 Theoretical framework

This research is based on the diffusion of innovations theory. Dearing and Cox (2018) described this concept as "the process by which an innovation is disseminated through a system." Consequently, diffusion is a social phenomenon that transpires among individuals in reaction to acquiring knowledge about an invention for the purpose of its execution. In an educational environment, the SMT is pivotal in disseminating innovations from the Department of Education. Pashaeypoor *et al.* (2016) said that the dissemination of innovations is relevant when the School Management Team engages with its stakeholders, including teachers, parents, SGBs, etc., for a particular amount of time to persuade them to participate in the implementation of technology in educational institutions. This study's results unequivocally illustrate the significance of the SMT's involvement in the implementation of technology in schools and how this position has influenced the SMT's experiences.

Moreover, the findings indicated that the implementation of ICT in schools provided a necessary remedy for students facing learning obstacles, as they gained access to computer classes that enabled them to conduct online research to improve their understanding of various subjects. SMT members disclosed that the videos utilised by teachers have vibrant pictures that facilitate learners' comprehension of the educational concepts presented.

The findings of the study indicate that SMTs may find the implementation of technology in schools to be an overwhelming task (Flanagan and Jacobsen 2003:124). The results of this research study suggest that SMT members had a variety of experiences, which led to both positive and negative opinions regarding their views, experiences, utilisation of ICT resources, and interactions with computer technicians.

In addition, the study findings also indicate that SMT members from both schools mostly had positive experiences regarding the implementation of ICTs within the schools. The SMT members discussed the positive impact of technology in these high schools and emphasised how it has improved teaching methods by incorporating tools like projectors, visualisers, and Wi-Fi in classrooms, leading to better preparation, teaching efficiency, and the ability to incorporate multimedia resources like videos. This was echoed by Fernandez, Gimenez, and Calero (2020). The interview also investigated technical support, and one of the school's SMT members stated that they had a computer technician on-site as well as backup systems for load-shedding. However, the SMT members at the second school reported that they hired a computer specialist from an outside company who only comes by appointment to handle specific problems and is not always available.

To ensure a seamless teaching and learning process and avoid ICT disruptions, Fu (2013:112) recommended that schools have at least one computer technician on-site.

The findings are corroborated by SMT perspectives that pupils advancing through high school should gain the necessary ICT abilities to prepare for the future (Oliveira *et al.* 2022). In addition to these viewpoints, there are several barriers to the implementation of ICT, such as a lack of infrastructure, insufficient resources, a lack of funds, and instructors' reluctance to learn ICT skills. Literature and findings confirm that SMT members' perceptions of ICT shape their perspective on their role in the implementation of ICT in high schools (Fu 2013).

In conclusion, it is evident that SMT's experiences regarding the implementation of ICT in schools could significantly influence the extent to which they implement ICTs in the schools. This is due to the possibility that the implementation of ICT could be influenced by necessary provisions and the establishment of an environment that involves all school

stakeholders.

5.4 SUMMARY OF THE STUDY

The introduction and background of the investigation were addressed in chapter one. This discussion articulated the research problem, formulated the research question, and identified the purposes and objectives of the study. Furthermore, we briefly reviewed the research design and methodology, and subsequently defined the primary concepts employed in the investigation. The research study's outline was the conclusion of the first chapter.

In chapter two of the study, the literature review was discussed. To address the research questions, a comprehensive examination of the experiences of SMTs and their involvement in the implementation of ICT in educational institutions had to be considered. Literature from several different countries was examined concerning the experiences of SMTs regarding the implementation of ICT in secondary schools.

Chapter three covered the research methodology of the study. Qualitative research was undertaken. Data were gathered via semi-structured interviews and document analysis. The data were submitted by ten SMT members from the two selected schools. The SMT consisted of two principals, two deputy principals, and six department heads.

Chapter four entailed data analysis and interpretation. The data covered the following study areas: SMT members' experiences with ICT implementation, challenges faced by the SMT during ICT implementation, training programs provided by the SMT to teachers to equip them to use ICTs efficiently, and ICT resources used in the school for teaching and learning purposes.

Chapter five entailed a presentation of the study findings, a summary of the study, and recommendations for further research.

5.5 STUDY RECOMMENDATIONS:

To assist SMT members in carrying out their role in facilitating the implementation of ICT in high schools, the following recommendations driven by data are provided:

- SMT members must exhibit their commitment and dedication to the implementation of ICT in high school institutions.
- Initiating the formation of a steering group committee that would be responsible for assisting the implementation of all information and communication technology resources in the school should be the responsibility of the school principal and the SMT.
- The SMT should identify areas of need regarding the use of ICTs without disregarding the efficacy of the school or the satisfaction of stakeholders.
- The SMT should create more chances to provide teachers and students with the necessary skills for the effective use of ICT in their professional activities, hence improving the efficient use of ICTs in schools.

5.6 STUDY LIMITATIONS

Every research project has limits (Price and Murnan 2004:66). This research was limited to the Mangaung municipality; consequently, the findings of the study are only pertinent to the Mangaung municipality and will reflect SMT members in the schools in the region. This review excluded the experiences of school instructors and students, as the study's purpose was solely to examine the experiences of SMT members. The research exclusively pertains to SMT members.

5.7 RECOMMENDATIONS FOR FUTURE RESEARCH

The study achieved its goal, which was to investigate the SMT's experiences with the implementation of ICT in high schools. The analysis revealed the following future research opportunities:

The implementation of technology in educational settings has underscored the critical necessity for ICT literacy and the skills required by all participants within the educational framework Baskin and Williams (2006). As a result, the implementation of ICT in schools has emerged as a pivotal element in the 21st century. Nonetheless, the effective implementation of ICT in practical applications remains an area that warrants further investigation. It is essential to recognise that SMTs play a significant role in the implementation of ICT by exemplifying leadership in this area and actively initiating, promoting, and implementing ICT within the curriculum. As a result, the articulated beliefs, attitudes, visions, and perceived essential provisions may serve to shape the ethos within an educational institution (Botha 2013).

5.8 CONCLUSION

This chapter presented the findings of data collection and documented SMT's experiences with ICT implementation from two schools in the Mangaung Municipality. The study's purpose was attained since the results indicated the necessity of addressing SMTs' experiences throughout ICT implementation in schools. Future research recommendations should incorporate the perspectives of key stakeholders, including the Department of Education and School Governing Bodies, to enhance understanding of their influence on the implementation processes of information and communication technologies in schools.

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Annexures

APPENDIX A - INTERVIEW SCHEDULE

Interview schedule:

Interviewer: Hlengiwe Malinga

University of the Free State: Department of Education

Welcome to today's interview. Thank you so much for your time. The interview will take approximately 15 minutes. Information shared during this session is strictly confidential. Your identity will be protected and you will remain anonymous throughout the study. The recording is meant for transcription purposes only and will only be used by the researcher.

Questions:

Theme 1: EXPERIENCES

- a. As a member of the SMT, what are your views regarding the use of ICT in this high school?
- b. How you describe your personal experience regarding the implementation of ICT in this high school?
- c. What are your experiences regarding the use of technology within the school's administration area and also in teaching and learning? Please expound.
- d. Can you share a little bit about your experience working with a computer technician?
 1. Is the technician able to resolve ICT related problems efficiently?
 2. When a technical problem occurs are computer technicians allowed to resolve issues during class time? Why / why not?
 3. How many computer technicians do you have on site? Do you think you need more technicians? Why/Why not?

Theme 2: CHALLENGES

- a. What challenges have you faced in the past regarding the implementation of ICT this school?
- b. What contingency plans do you have in place within the school to resolve ICT related issues effectively?
- c. What feedback have you received from teachers on the educational use of technology in classrooms?

Theme 3: TRAINING PROGRAMS

- a. What type of ICT training programs have teachers and SMT members attended over the past 5 years?
 1. On average how long do such trainings or workshops last?
 2. Do you conduct the trainings over school holidays or during open school days?
- b. Does the type of training that SMT's receive empower them to facilitate the implementation of ICTs in this high school? Please expound.
- c. What can you say about the teacher's professional development programs on the use of educational technology?
 1. Are the teachers adequately trained to use ICT resources effectively?
- d. What are your perceptions regarding the implementation of advanced educational technology in this high school?
 1. Is it enough to attend training programs?
 2. Do you need IT technicians on site daily?

Theme 4: ICT RESOURCES

- a. What is the schools SMT doing to ensure that this high school has adequate and up-to-date ICT resources?
- b. What are your thoughts regarding the current policy on the implementation of ICT resources in schools?
 1. Does it need to be reviewed? In what way? If not, why not?
- c. Can you explain the process of purchasing ICT resources for this high school? How long does it take?
- d. How do you oversee and manage the maintenance of ICT resources?
- e. What sort of resources does the SMT require from the department of education in order to successfully implement the usage of ICT resources in this high school?
 1. Has the department of education and or sponsors provided these resources?

The end, thank you for your time.

APPENDIX B – PERMISSION TO CONDUCT RESEARCH FROM GHREC COMMITTEE



GENERAL/HUMAN RESEARCH ETHICS COMMITTEE (GHREC)

23-Nov-2023

Dear Ms Hlengiwe Malinga

Application Approved

Research Project Title:

**EXPERIENCES OF SCHOOL MANAGEMENT TEAMS TOWARDS IMPLEMENTING
INFORMATION AND COMMUNICATION TECHNOLOGY IN HIGH SCHOOLS**

Ethical Clearance number:

UFS-HSD2023/1857

We are pleased to inform you that your application for ethical clearance has been approved. Your ethical clearance is valid for twelve (12) months from the date of issue. We request that any changes that may take place during the course of your study/research project be submitted to the ethics office to ensure ethical transparency. Furthermore, you are requested to submit the final report of your study/research project to the ethics office. Should you require more time to complete this research, please apply for an extension. Thank you for submitting your proposal for ethical clearance; we wish you the best of luck and success with your research.

Yours sincerely

Dr Adri Du Plessis

Chairperson: General/Human Research Ethics Committee

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APPENDIX C – PERMISSION TO CONDUCT RESEARCH FROM Fs DoE

Enquiries: M.Z. Thango
Ref: Research Permission: H. Malinga
Tel: 051 404 8808
Email: MZ.Thango@education.gov.za



106a Waverly Road
Unit 5, Waverly Park
Bayswater
Bloemfontein
9301

Dear Ms. H. Malinga

PERMISSION TO CONDUCT RESEARCH IN THE FREE STATE DEPARTMENT OF EDUCATION: MOTHEO DISTRICT

This letter serves to inform you that you have been granted permission to conduct research in the Free State Department of Education within the Mofheo Education District. The details in relation to your research project with the University of the Free State are as follows:

Topic: Experiences of School Management Teams Towards Implementing Information and Communication Technology in High Schools.

1. **List of schools involved:** Brebner High School and Bloemfontein High School.
2. **Target Population:** Two Principals, two Deputy Principals and six Departmental Heads at the selected schools.
3. **Period of research:** From the second week of February 2024 until 30 September 2024. Please note that the department does not allow any research to be conducted during the fourth term (quarter) of the academic year. Should you fall behind your schedule by three months to complete your research project in the approved period, you will need to apply for an extension. The researcher is expected to request permission from the school principals to conduct research at schools.
4. The approval is subject to the following conditions:
 - 4.1 The collection of data should not interfere with the normal tuition time or teaching process.
 - 4.2 A bound copy of the research document should be submitted to the Free State Department of Education, Room 101, 1st Floor, Thuto House, St. Andrew Street, Bloemfontein or can be emailed to the above-mentioned email address.
 - 4.3 You will be expected, on completion of your research study to make a presentation to the relevant stakeholders in the Department.
 - 4.4 The ethics documents must be adhered to in the discourse of your study in our department.
5. Please note that costs relating to all the conditions mentioned above are your own responsibility.

Yours Sincerely,

Mr. MZAMOW JACOBS
DIRECTOR: QUALITY ASSURANCE, M&E AND STRATEGIC PLANNING

DATE: 07/09/2023

RESEARCH APPLICATION BY H. MALINGA, PERMISSION LETTER 20 SEPTEMBER 2023, MOTHEO DISTRICT
QUALITY ASSURANCE AND Strategic Planning Directorate Private Bag 10200, Bloemfontein, 9300 - Thuto House, Room 101, 1st Floor, St Andrew Street, Bloemfontein

APPENDIX D: CONFIRMATION LETTER: SCHOOL A

[Redacted]

To whom it may concern:

This serves to confirm that Miss Malinga, was allowed to do interviews at our school, concerning technology in the school. She could also visit some classes to see how we work with technology. We allowed her to take pictures.

She was at our school on 12 and 13 March 2024.

[Redacted]

(Acting Deputy Principal)

[Redacted]

APPENDIX E: CONFIRMATION LETTER: SCHOOL B

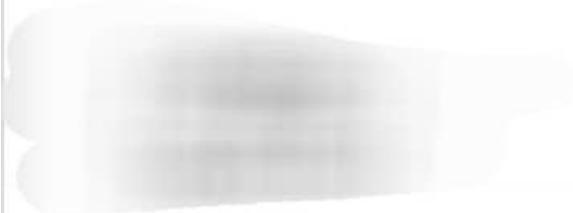
To whom it may concern

This serves to confirm that Miss Malinga, was allowed to do interviews at our school, concerning technology in the school. She could also visit some classes to see how we work with technology, with departmental heads, the deputy and principal of the school.

She was at our school 14 March 2024



Deputy Principal



APPENDIX F: LETTER TO SCHOOL PRINCIPAL TO CONDUCT RESEARCH

REQUEST FOR PERMISSION TO CONDUCT RESEARCH

Dear *Principal*

I am conducting research for my Master's thesis and would like to request permission to conduct research at your school.

DATE:

The research will be conducted from 15 February 2024 to 30 May 2024.

TITLE OF THE RESEARCH PROJECT

EXPERIENCES OF SCHOOL MANAGEMENT TEAMS TOWARDS IMPLEMENTING INFORMATION AND COMMUNICATION TECHNOLOGY IN HIGH SCHOOLS.

PRINCIPLE INVESTIGATOR / RESEARCHER(S) NAME(S) AND CONTACT NUMBER(S):

Hlengiwe Malinga

2020469645

065 878 8827

FACULTY AND DEPARTMENT:

Name of Faculty: Faculty of Education

Name of Department: Education Management and Leadership School of Education

STUDYLEADER(S) NAME AND CONTACT NUMBER:

Name of Study Leader: Dr J. S. Kabi

Contact number: 083 7693 977

WHAT IS THE AIM / PURPOSE OF THE STUDY?

The aim of the study is to explore experiences faced by school management teams towards implementing information and communication technology in high schools. The focus of the study is to investigate the experiences of school management teams regarding the implementation of ICTs in schools. The study seeks to explore ways in which school management teams overcome challenges that they encounter when facilitating the implementation of ICTs, determine the type of training programs that SMT members need to enable them to facilitate the implementation successfully, and to reveal the processes that SMTs undergo to ensure that schools have adequate and updated ICT resources.

WHO IS DOING THE RESEARCH?

I, Hlengiwe Malinga, am a registered student at the University of the Free State. I am studying towards a master's degree in education management at the University of Free State. I am conducting my study on exploring the Experiences of School Management Teams towards implementing ICTs in high schools. My study seeks to explore the experiences of SMT members when facilitating the implementation of ICTs in high schools.

HAS THE STUDY RECEIVED ETHICAL APPROVAL?

An ethical clearance certificate has been applied for by the researcher and it is still on process.

Approval number: *UFS-HSD2023/1857*

WHY ARE YOUR INSTITUTION/ORGANISATION/COMPANY INVITED TO TAKE PART IN THIS RESEARCH PROJECT?

The specific group of School Management Team members is invaluable to this study. As a stakeholder, you will provide information about the experiences of SMT members towards the implementation of ICTs in high schools. The knowledge and experience of school management team members regarding the implementation of ICTs will contribute to the study by providing insight into effective strategies for managing the processes of implementing technology in schools.

WHAT IS THE NATURE OF PARTICIPATION IN THIS STUDY?

The data collection instruments that will be used in this study is in the form of semi-structured interviews and document analysis. The interviews, as a data collection instrument will allow me as the researcher to investigate and probe the responses of various participants to acquire information regarding their thoughts, feelings, ideas, attitudes, values as well as concerns. The expected time for the completion of interviews is approximately 30 minutes per participant. The document analysis instrument will allow me as the researcher to analyse documents such as previous minutes of the SMT related to ICT, school policies about the use of ICTs, etc.

WHAT ARE THE POTENTIAL BENEFITS OF TAKING PART IN THIS STUDY?

The outcomes of the study will add to the wide range of literature that is available on ICT and education issues in South Africa. The study will enlighten those in SMT positions about the barriers limiting ICT implementation in high schools. The study anticipates providing insight into the future direction of the implementation of ICTs in schools and the responsibilities of management in doing so. Lastly, the study hopes to build a strong foundation for future research beyond the current role of SMT members in the implementation of ICTs in schools.

WHAT ARE THE POTENTIAL RISKS TAKING PART IN THIS STUDY?

There are currently no anticipated risks to the study. However, if such a risk may arise during the course of the study, I will make the necessary referrals.

WILL THE INFORMATION BE KEPT CONFIDENTIAL?

All information will be kept entirely confidential and will not be disclosed at any time. All participants will receive full anonymity. All necessary measures will be taken by the researcher.

HOW WILL THE INFORMATION BE STORED AND ULTIMATELY DESTROYED?

For future research or academic purposes, electronic information will be stored on a password protected computer. Future use of the stored data will be subject to further Research Ethics Review and approval, if applicable. All copies of interviews will be destroyed after the project has been completed. This information may be used in the future for Research Ethics Review and or approval from the committee. No persons will have access to the information that you will present in the interviews, and when presented to my supervisor, pseudonyms will be used rather than actual names of participants. The interviews will be conducted at times convenient to you, probing through pre-set questions, but allowing them the share their perspectives freely.

WILL THERE BE PAYMENT OR ANY INCENTIVES FOR PARTICIPATING IN THIS STUDY?

Participants will not benefit financially from participating in the study. No financial gain, cash no kind will be rewarded to any participant.

HOW WILL THE INSTITUTION / ORGANISATION / COMPANY BE INFORMED OF THE FINDINGS / RESULTS OF THE STUDY?

If you would like to be informed of the final research findings, please contact Hlengiwe Malinga on 065 878 8827 or via email at khozahpf@gmail.com. The findings are accessible for a year. Departmental and/or mobile phone numbers are acceptable. Should you require any further information or want to contact the researcher about any aspect of this study, please contact Hlengiwe Malinga on 065 878 8827 or via email at khozahpf@gmail.com. Should you have concerns about the way in which the research has been conducted, you may contact Dr J.S Kabi on 083 769 3977 or via email at KabiJS@ufs.ac.za. There are currently no anticipated risks to the study. However, if such a risk may arise during the course of the study, I will make the necessary referrals

Yours sincerely



Hlengiwe Malinga

ANNEXURE G: INFORMED CONSENT

Consent to participate in this study

I, the undersigned,

(participant's full names to be included), (the "Participant")

confirm that I voluntarily agree to participate in the research study referred to as the

_____ (the "Study") in relation to

Experiences of SMTs towards the implementation of ICTs in high schools

and which Study is being conducted by

Hlengiwe Malinga

I, the undersigned Participant, further confirm that—

1. the Researcher has explained the nature, procedure, potential benefits and anticipated inconvenience of my participation in the Study;
2. I have read (or had explained to me) and understood the Study as explained in the attached information sheet;
3. I have had sufficient opportunity to ask questions and am prepared to participate in the Study;
4. I understand that my participation in the Study is entirely voluntary and that I am free to withdraw at any time without penalty (if applicable);
5. I voluntarily provide the UFS and the Researcher with my personal information and consent to the UFS and the Researcher collecting, disclosing and processing my personal information in order to conduct the Study and any related activities in relation thereto;
6. I hereby acknowledge and confirm that I understand the purpose for which the UFS and the Researcher may collect, store, use, delete, destroy, outsource, transfer or otherwise process, as the context and circumstances may require and as contemplated in terms of POPIA, my personal information as set out herein;
7. I am aware that the findings of the Study will be anonymously processed into a research report, journal publications and/or conference proceedings and that my personal information will be aggregated and deidentified at such stage;
8. I also give the UFS permission to share, without notification, the collected data with other researchers at the UFS or other Higher Education Institutions. This permission is dependent on the same principles of ethical research practices, anonymity/confidentiality, safekeeping of information, and other issues listed above applying.

I, the Participant, agree to the recording of the interview.

Full Name of Participant: _____

Signature of Participant: _____ Date: _____

Full Name(s) of Researcher(s): Hlengiwe Malinga _____

Signature of Researcher:  _____ Date: / / 2024 _____

APPENDIX H: TURN IT IN (PLAGIARISM REPORT)

FINAL DISSERTATION_MALINGA

HLENGIWE.docx

by Hlengiwe Malinga

Submission date: 28-Nov-2024 10:06PM (UTC+0200)

Submission ID: 2319817352

File name: FINAL_DISSERTATION_MALINGA_HLENGIWE.docx (170.45K)

Word count: 32363

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FINAL DISSERTATION_MALINGA HLENGIWE.docx

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APPENDIX I: SAMPLE TRANSCRIPT (SCHOOL A)

SAP1

Interviewer: Hello Ma'am, how are you?

Participant: I'm well, how are you?

Interviewer: I'm also well, thank you. Thank you so much for your time, I really appreciate this. We're going to start off with our first theme, which is about your experiences as part of the School Management Team.

As a member of the SMT, what are your views regarding the implementation of technology in this high school?

Participant: I think that you can't work in the modern era without using modern technology. It's a big part of our everyday life, everywhere we go. So, you can't let teach children in a classroom or engage with parents on the various stakeholders of any school without using any form of technology, not just our school in most learning institutions.

For each class, we have WhatsApp groups. So, it has become a primary tool of communication which we use for gathering information, distributing information, whether it's from the parents or the learners themselves.

Interviewer: *How would you describe your personal experience regarding the implementation of technology?*

Participant: For me personally, as an individual, it was a very easy transition from using traditional teaching methods to using technology in the class because I'm a teacher who likes to work with technology. I am the SMT member who's responsible for the school's website.

I'm responsible for the school's Facebook page. So, for me personally, it was as easy as gliding into water. Other teachers have been catching up where I have been for years.

I was using media and things like that, YouTube videos and that type of thing in my class long before any of my other colleagues were. So, very easy. I actually didn't feel it was a transition.

I saw everybody else starting to do things that I've been doing for a long while.

Interviewer: *Can you describe what sort of technological equipment do you current use in class for the purposes of teaching and learning?*

Participant: At the moment, my technology approach is dictated by the fact that we have no cheating. I have to bear in mind that no cheating is a huge issue as students tend to use their mobile phones to google answers.

So, most of my lessons were prepared for use on the data projector with PowerPoint slides. And then I would integrate YouTube videos into the PowerPoint slides and things like that. But that has become problematic, obviously, when you think of the fact that, for example, we have a day where you have two hours of loadshedding.

And then there are seven periods a day. And then out of the seven periods a day, there might be two or three periods with classes that you can't have a PowerPoint presentation because of loadshedding. So, what I did is I integrated WhatsApp into the process.

So, now I send PowerPoint presentations on WhatsApp. So, that's how I've integrated my technology use in class. And also, for example, because I'm an English teacher, I do look up new apps for dictionary use.

I do ask learners to go and look at podcasts and I give them URLs for certain podcasts. For example, I know we are going to be discussing a certain theme in our comprehension and reading programs. That sort of thing, just to give an example.

Interviewer: That's very creative. So, since you are highlighting the issue of load shedding.

Do you have a computer technician on site?

Participant: Yes, we do have a computer technician person who deals with these things on site. But there's not much a computer technician can do regarding load shedding. Because the problem with load shedding is not only do you lose power and you can't literally use the equipment that needs power in your classroom.

You also, if you work on the school server and the internet of the school, then you are also limited. Because I don't know how familiar you are with websites and servers and those things. But load shedding affects servers quite badly.

Because if you have load shedding for two hours, afterwards it's about, give or take 20 minutes, 30 minutes that it takes for a server to upload again.

Interviewer: *How many of these computer technicians do you have on site? And do you think you need more technicians to assist with technical problems?*

Participant: Okay, we've got one person that deals with it at the school. Because that is what our budget allocates.

I don't think at this stage our school has the budget for an additional person. But obviously, in any situation at a school, more is merrier. It would always be great if we can have another person.

Because here at the school we are 82 staff members.

Interviewer: 82, that's a big number...

Participant: Yes, this is a school of 1,928 students

Last time I checked, we were, and I'm talking under correction now, but last time we checked, we were actually the second largest school in the Free State. And we are 82 staff members.

So, if we are 82 teachers, you can imagine that one person that works with technological things for the whole, not just the teaching staff, but everywhere. Admin staff, all of that. Then it becomes obviously very constrained.

Interviewer: *Could you explain what happens when a technical problem occurs during class time, is the computer technician allowed to resolve the problem promptly?*

Participant: Well, usually you can't really allow technicians to go to the classrooms, for classroom management purposes, because we have to maintain discipline in your class, to maintain the learner's concentration and focus on the actual content that you're going to teach them, you can't solve that technical issue in that moment.

Remember, we're dealing with teenagers, we're not dealing with students. Okay, a student is much more aware of the high stakes, there's a lot of money involved, your career is involved, you're much more aware of what is on stake here. Whereas a teenager is not there yet, if you know what I mean.

So, if you have a technician in your class, we could ask if it's really a serious issue, but by the time that she gets to your class to solve the PowerPoint problem, whatever it is, you have lost your learner's attention. And then our periods are 50 minutes, so it's not really a lot of time to deal with a problem like that and maintain discipline.

Interviewer: I understand. I would like us to move on to our second theme on challenges.

As part of the SMT in this school, what challenges have you faced in the past regarding the implementation and maintenance of technology?

Participant: Money is an issue because obviously you don't have the type of funding to have the latest technology. We would love to be one of those schools where you have whiteboards in every class, where every child has access to Wi-Fi on premises.

But with a school of 1,900 students and counting, we do not have the funds, and it's a public school. We do not have the funds to have the latest technology. We have good technology for what we need to do, but obviously it would have been nice, for example, if you have a Wi-Fi spot in every class or at least in every section of the school.

But you're talking about astronomical funds in order to do such a project. So that is a challenge, the fact that we don't have the money for the latest technology. And from the parents' side, our learners, for example, I know certain schools, each child has a tablet.

Our parents can't afford, our kids have to work old school with pen and paper and a textbook, which obviously in itself is problematic because it's got its limitations like everything else. But once again, our parents can't afford to buy, we do have, our demographic does have, we do have parents from all walks of life. But it's not as though we can say every child must have a tablet, like I know certain schools in the city does.

Interviewer: Absolutely. You're mentioning the high number of learners in this school.

Do you have enough computers to expose each student to computer technology?

Participant: We have CAT as a subject, which is basically a computer applied technology.

And that is a subject that deals with computers. I don't know the specifics about that subject, but there are two computer labs for that. And learners who take those subjects will then obviously use the labs.

Interviewer: Indeed.

What contingency plans do you have in place when things go wrong?

Participant: Okay, most of the time, day to day, when things go wrong, it's when we have, for example, load shedding or an unplanned load shedding. So, with me, on a personal level, with my own classes, I teach three grade 11 classes, I teach two grade 12 classes.

I have a WhatsApp group for each class. And my learners, basically my contingency plans are on that WhatsApp group. So, what I do is, on a Friday afternoon, I send the work schedule for next week.

And I send all PDFs, all PowerPoint presentations. And I send things as PDFs, even the PowerPoint presentation, because as you know, a PDF takes less data than a normal PowerPoint presentation does. And then my learners all have this.

Smartphones. So, they can basically then, on a Friday afternoon, they know the arrangement in my classes, you download the schedule for next week. You download any documentation that will be used next week.

And that, therefore, let's say Tuesday next week we have low chatting when I teach my grade 12s. I simply tell my grade 12s, right, let's take out our phones. And I work from the phone.

So that is my way of dealing, for example, with the challenge of load shedding.

Interviewer: I understand.

What feedback have you received from teachers in your department, you know, regarding the use of technology?

Participant: Yeah, in my English department, I'm also the grade 11 combiner for English.

Okay, let me just tell you what I do so that you know. I'm the grade 11 English combiner, which basically means I run grade 11 English. I'm the grade 12 combiner grade head.

Okay. And then I run the school website and Facebook, as you already know. Well, in the English department, and I think most departments, most teachers are very comfortable with using WhatsApp groups as a form of communication.

We were forced because of COVID. Yes. So how much an individual teacher uses their WhatsApp group and to what degree, that depends on the teacher.

I am very high impact WhatsApp. You can't be alone in my class and not know how to use WhatsApp and know how to stream from YouTube and be able to listen to podcasts and things because that is where I teach from. But, for example, two of my other colleagues are not that comfortable with that.

They will just send the work schedule through on their groups, but they use primarily their boards in class, the traditional chalk. Okay. So, it depends on the individual approach on how comfortable a teacher is.

I can tell you that, of course, technology does come with its limitations because the moment, for example, in my class where I use a cell phone to do a PowerPoint presentation, for example. Wonderful, too, because now I can't use my data projector, there's load shedding. But at the same time, I've got to very strictly monitor that the kids are engaged on their phone with the proper work and not going off on some website or checking in on a chat that they have with a friend or Instagram.

Yeah, I like that. But you do check. Well, what I do is I walk when I because it's a mobile phone, the name says it all.

I walk through the class with my phone and I teach while I'm walking through the class. So, in that way, if I see a learner is the rule is you put your phone on the desk and your screen must be visible so that I can see you're actually on the PowerPoint presentation. You're not on Instagram or wherever else.

Interviewer: I understand.

What type of training programs have teachers and members of the school management have attended over the past five years?

Participant: We have a general in-house program called SA-SAMS. And basically, it's the school administrative system, all school administration from school attendance to parent information to the timetable to marks of the results of the learners. Everything in every little detail of the school's administration is run on this system.

And we at this school, many other schools have admin staff who are employed to do that on behalf of the teachers. At Brebner, we have the approach that we want to train teachers

as much as possible. So instead of having a dedicated admin people who works on the system, all teachers are allowed to work on the system.

So that teachers learn how to use the interface of a program on the server and know how to enter marks. An individual teacher is basically as new orientation. If you arrived here, you were hired at Brebner.

You will, in your new teacher orientation, the SAMS administrative teacher will take you one afternoon as part of your orientation. And she will show you, okay, this is where you enter marks. This is how marks are entered.

This is where parents' information is. This is where whatever it is of administrative purposes that you need, you are taught how to get to it. Wow, that's really amazing.

You know, with most schools, teachers are not trained on how to use such systems. I really admire the fact that Brebner High School gives such an opportunity for the teachers.

Interviewer: *Do you think the trainings that teachers in your department have attended in the past are sufficient for them to efficiently deliver lessons and do their administration tasks using technology?*

Participant: Yes, I think it is sufficient, of course, with technology, as I'm sure you know, this being your field of research, it's always developing, innovating. So because it's always developing, there's always room for more training, always room for more progress in how things are used and what to do and so forth. But unfortunately, apart from money being an issue, time is also an issue.

The constraint, because the 82 teaching members, the teaching staff here, all have their classes that they teach. And they have to, apart from the classes that they have to teach, they have to also maintain responsibilities on the sports field or on cultural levels. So a teacher never has time, time is very limited.

So, we have to work within those constraints as well. Absolutely, absolutely, totally understand. I'd like us to move on to our last section and that is on ICT resources.

Interviewer: What is the school's management team doing to ensure that Bretton High has adequate and up-to-date technological resources in classes and also in the offices?

Participant: We allocate a specific section of our budget every year for ICT. And of course, every year it's updated as things get more expensive. And then we obviously have the on-site software or IT specialist who keeps us up to speed with these things.

We have a set amount of data projectors that teachers have to look after and maintain. And then obviously apart from that, teachers use their own personal laptops. We used to have; I think we are actually phasing them out now because they're just too outdated.

You know those huge computer boxes and huge screens, but they're becoming a bit archaic and so we are starting to phase them out. Believe it or not, there are some teachers, old school teachers, who still like to use not a data projector but an overhead projector even though you can't get the little bulbs anymore. Because that's just their preferred method and ironically in some subjects it seems to work very well.

But at Brebner, if a teacher has a special request for a data projector, it is reviewed by the financial board and if the funds are available, it will be bought.

Interviewer: Can you just explain the process of purchasing these technological resources?

Participant: All such things, all such decisions regarding to funds and the management of school have to be done in liaison with the parent committee.

We can't as a SMT just sit and we are not an island. We are functioning on behest of the parents. So, everything we decide is always half of the decision, if I can put it like that.

We go back to the SGB, the school governing body, and we communicate this was the need and we give the reasons. We look at the budget within the budget and it's a very fine thing. I don't know whether you are aware how much it costs, the millions and millions of rands, a month it costs just to run a school.

So, it's never a fact that we can do everything all at once. We have to unfortunately work within our means. I understand.

Interviewer: My last question for today. If you had to request for technological equipment from the Department of Education, what is the most important piece of equipment that you would instantly request?

Participant: Technologically speaking, I don't think there's something we would really request because the fact of the matter is with the school being as large as it is, the

education department, with all due respect, they can't help us. They can't work on the number. I mean, if you look at donations and things that they attribute, it's usually at a smaller number, so a smaller school.

But I mean, if you look at most of our grades, we're running about between 330 to 400 in a grade. Okay, so I can give you an example. We have 356 grade twelves this year.

We are 412 grade 11s. So, for example, you can't just decide, okay, I'm just going to give the grade 9Ds laptops or I'm just going to give the grade 9Cs tablets because you have to be fair. You understand? So, it's a bit, the department can come and say they want to give us a computer lab and get a sponsorship, but I mean, if you think about that, then it's sponsorship.

I don't think the department has the funds available, you know, because as you know, these things are expensive, laptops, tablets.

Interviewer: Yes, absolutely. Ma'am, thank you so much for your time.

Participant: You're very welcome.

APPENDIX J: SAMPLE TRANSCRIPT (SCHOOL B)

SBP1

Interviewer: Hello Ma'am, how are you?

Participant: I'm well thank you

Interviewer: I'm very well, thank you, thank you so much for your time, ma'am and for allowing me to have this interview with you. We're going to first talk a little bit about your experiences regarding the use of technology in this school.

Interviewer: As a member of the school management team, what are your views regarding the implementation of technology?

Participant: So, this has made our lives so much easier. We have access to Wi-Fi and we also have access to SA-SAMS. So, from SA-SAMS we can change marks and we can do things like that and print reports and at the end of the year we are responsible for promotions so that also comes from SSMS.

So, we are continuously busy on SA-SAMS at the end of the year mostly and then as HODs we also need to have access to learners, so for instance a learner has no motive. I need to have access to these points on the demerit system so that I can take action, I can call the parents or they can call the disability unit. So, this is very important that we need this in our schools.

In my classroom I'm using a projector with a visualiser and I need it on my laptop. This has made my teaching so much easier. I can take last year's notes and you just again show me if there's an experiment or something like that.

I can just show them the colour changes or anything like that from the visualiser and it's really been life-saving for us.

Interviewer: Can you tell me what is SASMs? Is this a technological system?

Participant: It's a government system where everyone's marks are recorded and our learning facilitators have access to it as well.

The learning facilitators can pick up and see what's happening in Bloemfontein High School. So, they type in our name on the system and then they can see for instance the

number of failures, so many distinctions. It's a nationwide government website that we go on to SA-SAMs and all the schools are using the same thing.

Interviewer: Okay, so government is also contributing something positive. I would like to know just a little bit about your experience regarding the use of technology in your administration area. So, in my administration I've got this, I'm not doing a lot, I mostly work with the great class, so everyone knows whatever I need to do with the great class I use my computer for it.

Whether it is now sorting out the classes on the class list here, whether it is now arranging a special event for them, I'm using the computer for those purposes.

And I also use WhatsApp so I can communicate with my great class. And so, they are all in a group, the prefects are all in a group. I'm on the group of the prefects. So, you know the communication is going on with them. So, we're really fortunate that we can use the WhatsApp groups and everything like that.

And I encourage the learners also, especially with the prefects, we need to quickly do something, use the technology that's available to us.

Interviewer: Absolutely. Do you have a computer technician on site?

Participant: No, we do not have a technician on-site, but he comes in like maybe three times a week or once a week or when needed.

Interviewer: In your opinion would it be beneficial to have a computer technician on site every day?

Participant: I don't think there would be enough work for him to do, to be quite honest.

Interviewer: Oh okay. And are the computer technicians able to resolve IT-related issues effectively?

Participant: Absolutely, yes, he is able to fix problems immediately.

Interviewer: Okay, all right. Is it only one technician?

Participant: It's only one technician. And then we have two computer teachers. So, if it's like something small, they will quickly do it for us. But if it's like something bigger, for example going through the servers, then we call the technician.

Interviewer: I understand. Let us now move on to our second theme. We're going to talk about challenges that you have faced in the past.

What challenges have you faced in the past regarding the implementation of ICT in this school?

Participant: My main thing is I'm not so technologically skilled. I'm still of the old generation. So, I can do the basic stuff, and I can't do much to get the teachers and the younger teachers. I could do so much more, but I know enough to get by and do my work.

So, with designing posters, or sending emails to specific addresses and stuff, I'm not there yet.

Interviewer: I understand. So, what contingency plans do you have in place within the school, to resolve those challenges immediately?

Participant: You know, like with load shedding, when computers are not working. So in that case we just wait for those two, three hours, because there's nothing to do. It's in darkness.

And so, we've got the generator going. But sometimes when the generator's on, it might just be for the lights and that. But then it starts to plug into the internet.

So, we just have to be patient. And then in my class, when I'm teaching, I have to resort to talking to everybody. Yeah.

And so, what I sometimes also do is, if it's like a big mathematics sum that I want to be on the board with, I'll take a picture of it using my phone, and I'll send it on the WhatsApp group chat. And after that, ask the learners to have a look at the group chat, we can then proceed and discuss the question just like that. And they've got their phones open.

I walk up and down the desks to see that they're not on social media. So, they have their phones open on the desk, and then they are looking at question one, and we do it together.

Interviewer: That's very creative. That's very, very creative.

As an HOD in your department, what feedback have you received from teachers regarding the use of ICTs?

Participant: They all love the fact that we now have Wi-Fi availability, and we have our laptops and our visualizers in the classrooms. They are so happy about this.

Interviewer: I understand. Let us move on to our next theme on training programs.

Over the past five years, what type of computer training programs have you attended?

Participant: None. Everything is self-taught, sometimes I'd ask my husband to show me something, or I'd ask the younger teachers to show me something. And then I just write down the steps to do it for myself.

Interviewer: I understand.

Do you think having any sort of training, computer-related training, would be beneficial for you?

Participant: I think that long ago, they just did the basics.

I was taught the basics. I have to use Word. I have to use email.

So, I know the basics. I can send a document. I can give a PowerPoint.

I can at least capture information on Excel. I feel like some of the tasks are not from a designer, or something like that. I won't be able to go into detail like that.

But I can do basic office things, like sending an email, and doing graphs, or doing the tables, and things like that. There are those basic stuff I can do.

Interviewer:

What are your perceptions regarding the implementation of advanced educational technology in this high school? For example, smartboards, etc.

Participant: I would say, sure. You know, if it's in the budget, really, the principal must start, like, you know, maybe start with the physics teachers, and the life sciences.

Because there, you can use it the most. And then afterwards, when the budget allows make provision for all the teachers in the school. But basically, it's needed the most in the math field, physics field, and the biology field.

Interviewer: So let us talk a little bit about your ICT resources. What is the school's management team doing to ensure that this high school has adequate and up-to-date technological resources?

Participant: So, for such resources, as the SMT I think we put it in our budget every year.

So, we actually, like, we have these objectives that we've worked out, and the visualizers and that. It doesn't just happen overnight. It started first with the maths department.

And afterwards, after the maths department, we went up to the physics and the life sciences. And eventually, like, now, after maybe four or five years, all the departments have technological resources.

Interviewer: I understand. Tell me about the process of budgeting and requesting the financial resources. Does the principal request this directly to the department? Or do you use your school governing body?

Participant: We use the school governing money. So, if we get a sponsor or something like that, we make use of it. But we don't always get sponsors. And then, so from the school governing money, so we take a request to them.

And they must obtain it. So, they're obviously not going to pay the whole school to get it all at once. So then, if we break it up into smaller groups and say, all right, I'm going to just buy it for the maths department now this year.

Next year, I'm going to buy it for the physics department. So, it's more manageable. And then they will let that go through.

Interviewer:

What are your thoughts regarding the current policy on the use of ICT resources in this school?

Participant: The only problem is when we are in the schools, because we allow some of our learners to use it for study purposes. And when it's rights out, I now use it in my class.

We as teachers have to make a bigger effort to make sure that they are not using it for the wrong purposes.

So, we have to make sure that the teacher is deleted because it's going to damage the image of the school. So, you know, it's like there's its advantages and there's its disadvantages. And then, you know, like with the Wi-Fi password, some children will actually figure out the Wi-Fi password.

And then they, you know, they'll actually be changing the Wi-Fi password. Our kids are so advanced technologically, more than what the teachers are, I think. Because they can figure out the Wi-Fi password before we even figure it out.

So, we have to be on top of the game. That we have to continuously keep, you know, change our Wi-Fi password and stuff like that. So, I think our kids are very advanced.

They are indeed. Well, as the HOD in your department, how do you oversee and manage the maintenance of the ICT resources within your department? I'm actually responsible for that. So, each teacher is responsible for their own department.

And so, if anything goes wrong, we report to the office and we tell them, please call the IT guy and tell him that my visualizer is not working. And then the phone, and the next day, or speaking, his place will come in the same day. And it needs to be fixed.

So, it's not like the HODs do it daily. And so, we just refer it to the IT guy every time.

Interviewer: Do you have any documents such as the school's ICT policy, or minutes of previous meetings where you discussed about ICT? If you have that, would you be comfortable to share with us?

Participant: Yeah, but I'm going to have to really search for it. But we do have policies. I would just have to search for it. If I do find it, I'll share it with you.

Interviewer: Thank you so much, Ma'am.

This brings us to the end of our interview.

Participant: Thank you.

APPENDIX K - LANGUAGE EDITING



(2015/375453/07)

Date: 25/11/2024

Dear Sir/Madam

This letter is to certify that I, Sarah Louise Cornelius, of Regcor Enterprises Pty Ltd, have completed the initial editing of a dissertation titled *EXPERIENCES OF SCHOOL MANAGEMENT TEAMS TOWARDS IMPLEMENTING INFORMATION AND COMMUNICATION TECHNOLOGY IN HIGH SCHOOLS* by Hlengiwe Fortunate Malinga.

I have ten years of experience in the field, having worked on multiple doctorates. Any changes done to the document after the editing process does not reflect the editing services provided. The onus is on the student to ensure the document is fully corrected before final submission, even if that requires multiple edits.

Kind Regards

Sarah Louise Cornelius

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