Utilising Information and Communication Technology in classroom management practices in Gauteng Independent Primary Schools

by

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Submitted in partial fulfilment of the requirements for the degree

MAGISTER EDUCATIONIS (Leadership)

in the

Faculty of Education

of the

University of Pretoria

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PRETORIA

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DEDICATION

I dedicate this research to all working mothers who work tirelessly to set an example for their children. My children, Layla-Anne and Dennis are my source of inspiration.

DECLARATION

I, Pascale Bakos, hereby declare that this dissertation **"Utilising Information and Communication Technology in classroom management practices in Gauteng Independent Primary Schools"** submitted in partial fulfilment of the requirements for the Master of Education at the faculty of Education of the University of Pretoria, is my own original work This is the first time that I am submitting this work at an institution of higher education. All of the sources have been properly referenced in the reference list.

Pascale Bakos
October 2024

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INVESTIGATOR	Mrs Pascale Bakos
DEPARTMENT	Education Management and Policy Studies
APPROVAL TO COMMENCE STUDY	07 May 2024
DATE OF CLEARANCE CERTIFICATE	25 October 2024

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This Ethics Clearance Certificate should be read in conjunction with the Integrated Declaration Form (DOB) which specifies details regarding:

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ETHICAL STATEMENT

I, Pascale Bakos, obtained ethical approval for the investigation **"Utilising Information and Communication Technology in classroom management practices in Gauteng Independent Primary Schools".** I declare that I observed the ethical standards and policy guidelines for responsible research in the code of ethics for researchers prescribed by the University of Pretoria.

The study complied with the aforementioned ethical guidelines. In Chapter 3 section 3.10 these ethical considerations are further discussed in depth.

LANGUAGE EDITOR CERTIFICATE

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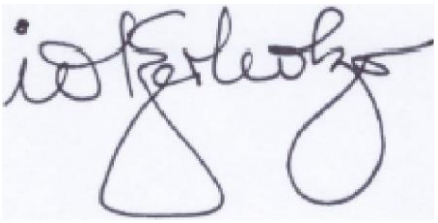

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2 October 2024

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ABSTRACT

The global significance of ICT integration in education has been widely acknowledged, prompting nations across the world to prioritise equipping educators with the requisite skills for the seamless integration of technology into their pedagogical practices. Consequently, a comprehensive examination of ICT's impact on the management skills of educators promises to provide profound insights into the enhancement of teaching practices and the improvement of learner outcomes. However, many educators still lack the necessary competencies to use technology for teaching and learning and this poses a problem in the context of the technological advancement of the education landscape. This study examines the role of Information and Communication Technology (ICT) in classroom management practices among educators at independent primary schools in Gauteng. The research seeks to answer the main question: How do educators in Gauteng independent primary schools use ICT to manage their classrooms? The chosen theoretical frameworks for this study are the Technology Acceptance Model (TAM) and Actor-Network Theory (ANT), each offering unique perspectives on the integration of Information and Communication Technology (ICT) in classroom management practices. A qualitative research methodology was employed, utilising semi-structured interviews and classroom observations to gather rich, detailed data. Thematic analysis was conducted on the collected data. Findings indicate that educators are increasingly reliant on ICT tools to facilitate various aspects of classroom management. It was also revealed that ICT integration has significantly transformed classroom management practices, with educators reporting its time-saving benefits in administrative tasks, improved learner engagement, and more effective monitoring of learner behaviour. However, the study highlights challenges, such as the need for ongoing professional development, and the digital divide among learners and educators.

Keywords: ICT; classroom management practices; independent schools; ICT tools.

LIST OF ABBREVIATIONS

ICT	Information and Communication Technology
ANT	Actor-Network Theory
TAM	Technology Acceptance Model
SASA	South African Schools Act
LMS	Learning Management Systems
SIS	Student Information Systems
ALP	Adaptive Learning Platforms
WCED	Western Cape Education Department
PU	Perceived Usefulness
PEOU	Perceived ease of use
UTAUT	United Theory of Acceptance and use of Technology
ISASA	Independent Schools Association of Southern Africa

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CHAPTER 1: INTRODUCTION TO THE STUDY

1.1 INTRODUCTION

The focus of this research centered on the optimal use of Information and Communication Technology (hereafter referred to as ICT) as a classroom management tool. Before delving into the specifics of technology in the classroom, it is crucial to develop a comprehension of classroom management practices. According to Bush (2019), educational management is a multifaceted process that involves meticulous planning, efficient organisation, adept direction, and rigorous control of educational activities. Classroom management is not a singular practice but rather a combination of several intricate processes. It starts with planning, where educators carefully design their lessons, considering the objectives, resources, and learners' needs. Organisation follows as educators arrange the classroom layout and learning materials to create an optimal learning environment (Vasallo & Warren, 2017). Effective direction involves guiding learners' behaviour, engagement, and participation, while rigorous control ensures that the classroom runs smoothly and distractions are minimised (Bush, 2019). Establishing this foundational understanding of classroom management is essential because it lays the groundwork for examining how technology can be integrated effectively into these various aspects of management to enhance teaching and learning (Bush, 2019).

ICT encompasses a broad array of technologies and applications utilised for communication and information processing, including computer hardware, software, the internet, and mobile devices (Yumnam, 2021). Significantly, technology, alongside artificial intelligence, has become increasingly integral to the realm of classroom management, as emphasised by Vasallo and Warren (2017). The global significance of ICT integration in education has been widely acknowledged, prompting nations across the world to prioritise equipping educators with the requisite skills for the seamless integration of technology into their pedagogical practices (Tondeur, Van Braak & Valcke, 2017). Consequently, a comprehensive examination of ICT's impact on the management skills of educators promises to provide profound insights into the enhancement of teaching practices and the improvement of learner outcomes (Tondeur *et al*., 2017).

This study was situated within the broader landscape of education and technology integration. Globally, using technology as a classroom management instrument has gained prominence, driven by the increasing importance of digital literacy and the need

to adapt to changing educational paradigms (Bush, 2019). Across various countries, educators are exploring innovative ways to leverage technology for more effective teaching and learning experiences. Schools in Manipur state in India have increased the usage of ICT in the classroom and a study by Yumnam (2021) found that educators and students have a positive attitude towards ICT in the classroom. Moreover, the study found that ICT enhances critical thinking. Furthermore, educators in Pakistan regularly make use of ICT in the classrooms but their attitudes towards ICT are directly related to their knowledge of ICT (Sattar, Javed, & Zamir, 2023). Thus, educators lacking ICT knowledge have a more negative attitude towards ICT usage in the classroom in Pakistan (Sattar *et al*, 2023).

When observing the African continent, there has been progress in Nigeria and Morocco in terms of ICT usage in schools. In Nigeria, the integration of ICT in education has been steadily growing, albeit with various challenges. Access to ICT infrastructure, including reliable internet connectivity and access to computers or tablets, remains uneven, leading to a digital divide (Eniekebi, 2021). Notwithstanding the challenges, efforts have been made to provide educators with the necessary ICT skills and training for effective classroom management (Eniekebi, 2021). Morocco has also made strides in integrating ICT into education to enhance classroom management practices (Sabbar, 2022). The country has a National ICT Strategy for Education, focusing on providing schools with ICT equipment and promoting digital content development (Sabbar, 2022). This international perspective underscores the relevance of the study in a rapidly evolving educational landscape. However, it is important to acknowledge that the South African context adds a unique layer to this narrative, given the country's distinct socio-economic and educational challenges (Mavengere *et al*, 2021). The integration of ICT in education has advanced slowly, especially in disadvantaged schools (Mavengere *et al*, 2021). While the potential advantages of ICT in education are widely recognised, the practical implementation of these technologies faces several challenges (Bakir, 2016). In South Africa, disadvantaged schools often lack the necessary infrastructure, resources, and connectivity required for effective ICT integration for classroom management practices. The digital divide is a significant issue as it hinders learners in underserved communities from harnessing the benefits of technology for their learning (Bakir, 2016). Without addressing this issue, these learners are at a considerable disadvantage in an increasingly digital world. Furthermore, there is a need to align ICT integration with

effective classroom management practices to ensure that technology is utilised optimally to support classroom management practices (Mavengere *et al*, 2021). Consequently, this study seeks to address critical issues around the use of ICT for classroom management practices and how a digital divide could affect classroom management practice.

However, most independent schools frequently benefit from superior access to ICT resources, rendering them an ideal focus for this study (Van Wyk *et al*, 2017). South African independent schools, often referred to as private schools, are educational institutions that operate outside of the state-funded public education system. These schools are independently managed and funded, typically by private individuals, organisations, religious groups, or other non-government entities (Van Wyk *et al*, 2017). This research is fundamentally oriented towards a meticulous investigation of the utilisation of ICT as a tool for classroom management within South African independent primary schools. By scrutinising the measured pace of ICT integration and its potential implications for classroom management practices and learner outcomes, this study is poised to offer invaluable recommendations for the advancement of educational practices. It is important to underscore that while the study's scope is confined to independent primary schools with robust technology access, it also explored broader classroom management strategies that hold relevance for all South African schools grappling with similar access challenges (Bush, 2019).

The term 'educators' generally include educators who are at the forefront of classroom instruction, departmental heads responsible for subject-specific leadership and curriculum development, as well as school administrators such as deputy principals and principals who oversee the overall management and leadership of educational institutions (Jakšić, Poščić & Čandrlić, 2020). However, in this study, the term will refer to classroom educators who play pivotal roles in the South African educational landscape. These individuals collectively shape the teaching and learning experiences, classroom management practices, and the broader school environment. Therefore, a comprehensive understanding of 'educators' is integral to exploring the effective integration of technology as a management tool within the South African educational context (Jakšić et al, 2020).

1.2 PROBLEM STATEMENT

Modern education systems have become increasingly reliant on ICT. A study conducted in Australia found that ICT has been used more in the classroom because educators and students need to be able to participate in the digital world (Vassallo & Warren, 2018). Therefore, it goes without saying that educators need to possess adequate ICT skills to manage their classrooms effectively. However, many educators still lack the necessary competencies to use technology for teaching and learning and this poses a problem in the context of the technologically developed education climate of today (Howell & McMaster, 2022). Strom (2021) stresses that the use of ICT in schools is often hindered by a lack of educator training or inadequate resources. It is important to note that there are also studies conducted in Africa which show reliance on ICT. In Nigeria, for example, the integration of ICT in education has been steadily growing. Access to ICT infrastructure, including reliable internet connectivity and access to computers or tablets, remains uneven, leading to a digital divide. Efforts have been made to provide educators with the necessary ICT skills and training for effective classroom management (Eniekebi, 2021).

In terms of the challenges and barriers to using ICT to improve educators' management abilities, there are also significant challenges that need to be overcome. For example, educators may lack the necessary skills or access to technology, or they may face resistance from colleagues or school administrators (Selwyn, 2011). Educators who plan on using new technologies require training and there is limited research on the types of professional development that are most effective in promoting educators' use of ICT for classroom management practices (Tikam, 2015). In the South African context, there is often a lack of necessary resources and funding for ICT to be properly used in the classroom and there is also limited information available to educators who wish to implement ICT (Hussain *et al*., 2017). Furthermore, many educators lack the necessary skills and education to manage and utilise ICT (Mestry, 2020). Also, Hannaway (2019) states that the availability of technology-based teaching and learning (TBTL) resources is often heavily influenced by the financial resources of educational institutions which might not be always available. As a result, the problem that this study examined originates from the mentioned issues in the above studies regarding the use of ICT in managing classrooms. The aforementioned problems require urgent investigation; hence, the essence of this study on the use of, and utilisation of ICT in classroom management practices is necessary.

1.3 RATIONALE OF THE STUDY

An essential driving force behind this research were the notable gaps in existing knowledge regarding the integration of ICT (Information and Communication Technology) into classroom management. The current literature often fails to delve into the intricate

relationship between educators' proficiency in ICT and their ability to effectively manage classrooms (Emmer, Evertson & Poole, 2022). Despite the widespread recognition of the potential benefits of incorporating technology, there remains a noticeable absence of a comprehensive understanding of how educators' digital competencies intersect with their classroom management skills (Emmer, *et al*., 2022). To shed light on this gap, it is imperative to explore the barriers and challenges educators face when implementing ICT in their classroom management practices, particularly within the South African context.

Furthermore, the study was inspired by my personal experiences as an educator. As an educator, I have observed first-hand the pivotal role educators play as managers within the classroom environment. I make use of ICT on a regular basis and believe that it can be used as a tool to enhance classroom management practices. Over recent years, there has been a significant surge in the use of technology by educators to augment their teaching methods. It has been evident that technology offers educators time-saving benefits and serves as an efficient and effective tool for managing classrooms (Mestry, 2020). This has prompted me to question whether ICT has the potential to enhance classroom management practices for educators. The study's primary objective is to ascertain how technology can be optimally harnessed to empower educators within their classrooms in terms of classroom management practices.

To support this perspective, it was crucial to conduct an in-depth exploration of the utilisation of ICT in classroom management. The study's findings and recommendations provided valuable insights into the most effective ways to leverage ICT as a management tool. Additionally, it offered potential solutions to the challenges associated with ICT adoption in the South African educational context. By addressing these research gaps, researchers can make a substantial contribution to the more successful implementation of technology in educational management, as well as to provide valuable insights into ICT's potential that would enhance classroom management, with practical recommendations for its use in educational settings.

1.4 PURPOSE AND OBJECTIVES OF THE STUDY

The purpose of this study was to explore and investigate how educators use ICT in classroom management practices in Gauteng independent primary schools.

The objectives of this study were as follows:

a. To identify the ICT tools and practices used by the Gauteng independent primary schools' educators in managing their classrooms.
b. To describe how the Gauteng independent primary school educators' perceptions, attitudes, and actual usage patterns of ICT affect their classroom management practices.
c. To explain how the Gauteng independent primary school educators use technology to support themselves as managers of the classroom.
d. To explore the challenges of using ICT in classroom management.

1.5 RESEARCH QUESTIONS

The main research question for this study is:

How do educators in Gauteng independent primary schools utilise information communication technology to manage their classrooms?

The secondary research questions are:

a. What are the technology tools and practices used by the Gauteng independent primary schools' educators in managing their classrooms?
b. How do Gauteng independent primary school educators' perceptions, attitudes, and actual usage patterns of ICT affect their classroom management practices?
c. How are Gauteng independent primary school educators using technology to support themselves as managers of the classroom?
d. What are the challenges of using technology in classroom management from an educator's perspective?

1.6 CLARIFICATION OF CONCEPTS

The following key concepts were explored in the study:

1.6.1 Information Communication Technology (ICT)

A term used to describe the technology, which is used to send, receive and to manage online information. ICT covers a variety of platforms which include, but are not limited to social media, telecommunications and broadcast media (Howell & McMaster, 2022). In

this particular study, ICT is referred to as a collection of tools to communicate, create, disseminate, store, and manage information in learning environments.

1.6.2 Information Communication Technology tools

Information Communication Technology tools refer to the digital infrastructure used such as computers and laptops (Howell & McMaster, 2022). In terms of this study, these tools refer to those specifically used in the classroom such as computers and interactive whiteboards.

1.6.3 Classroom management practices

Classroom management refers to the actions of both educators and learners to create a classroom environment which is conducive to learning (Egeberg, McConney & Price, 2021). In this study, classroom management refers to the organisation, planning and management conducted by an educator within the classroom space with the use of ICT.

1.6.4 Educator

An educator can be defined as a person who educates others in a classroom. Furthermore, an educator plans and instructs learners (Kapur, 2019). In the context of this study, educators refer to those who educate primary school learners at independent schools in the Northern Johannesburg region. These educators have access to ICT in the context of classroom management practices.

1.6.5 Independent Schools

The South African Schools Act (SASA) of 1996 differentiates between two types of schools, namely public schools and independent schools. Independent schools are privately owned and governed. All private schools are included in the independent school's category (SASA, 1996).

1.7 THEORETICAL FRAMEWORK

The chosen theoretical frameworks for this study were the Technology Acceptance Model (TAM) and the Actor-Nnetwork Theory (ANT), each offered unique perspectives on the integration of Information and Communication Technology (ICT) in classroom management practices. The TAM is a well-established theoretical framework designed to comprehend individuals' acceptance and use of technology, including ICT tools, in various contexts (Magsamen-Conrad et al., 2022). Actor-Network Theory (ANT), developed by Latour (2005), highlighted the role of networks and relationships in shapinglearning and knowledge

production. Further discussion on how the chosen theoretical framework supported the study is presented in chapter two.

1.8 RESEARCH DESIGN AND APPROACH

1.8.1 Research paradigm

The research paradigm for this study was aligned with an interpretivist approach. This paradigm prioritised understanding the subjective meanings and interpretations that individuals assign to their experiences (Yin, 2017). Thus, the interpretivist approach allowed the researcher to delve into the unique experiences and opinions of educators who had first-hand experience with managing their own classrooms while using ICT.

1.8.2 Research approach

The research approach for this study involved qualitative research. Qualitative research methods are exceedingly well-suited to investigate the intricate landscape of educators' experiences, perceptions, and practices regarding the integration of Information and Communication Technology (ICT) management within the realm of education. It offered detailed research which delved into the perceptions of educators who work with ICT. Through qualitative research, the study sought to unravel how educators navigate this ever-evolving landscape, shedding light on their experiences, perceptions, and practices on the use of ICT for classroom management practices. This depth of understanding was imperative to capture the rich tapestry of challenges faced and strategies employed in employing ICT for leadership and management in educational institutions.

1.8.3 Research design

The research design chosen for this study was an interpretative case study design. This approach enabled an in-depth exploration of how educators utilise ICT for management in specific school settings (Harrison, 2018). Case studies offered a comprehensive understanding of the subject, taking into account various factors such as socio-cultural, historical, and environmental influences. They stand out for their ability to provide a rich and contextual view of the matter at hand. The cases included five independent primary schools in Gauteng Province. Further details about research design were provided in the chapter three of the study.

1.8.4 Purposive sampling technique

In this study, purposive sampling, a non-probability sampling technique commonly employed in qualitative research (Creswell & Creswell, 2017), was used to intentionally select schools that meet specific criteria. This deliberate selection ensures that the chosen schools possess the necessary information and context relevant to our research questions. This approach offered valuable insights into the integration of technology as a management tool in South African independent primary schools, specifically within the Gauteng Province context.

1.8.5 Research participants

The participants in this study were a diverse group of educators from different disciplines and levels within the school hierarchy. This included fifteen educators who teach grade four to grade seven, educators who teach an array of subjects, and school management members. The selection of participants aimed to ensure representation across various subject areas, grade levels, and leadership positions. By including participants with diverse backgrounds and experiences, the research can capture a range of perspectives and insights related to ICT utilisation for leadership and management (Creswell, 2018; Morling, 2021).

1.8.6 Data gathering instruments

The data-gathering instruments that were used are semi-structured interviews and observation.

1.8.6.1 Semi-structured interview

In the realm of qualitative research, particularly when dealing with complex and multifaceted subjects such as management and education, the semi-structured interview is a valuable tool (Harrison, 2018). It offers the best of both worlds: a structured foundation that ensures key areas of inquiry are addressed, while also granting interviewers the latitude to pursue unscripted lines of questioning when participants introduce novel perspectives or share unexpected experiences (Morling, 2021). These interview sessions took place at the schools where the educators work.

1.8.6.2 Observation

Systematic, non-participant observations are essential as they provide a rich and contextual understanding of the multifaceted challenges and opportunities related to integrating

Information and Communication Technology (ICT) into classroom management in South African independent primary schools. This comprehensive data collection approach allowed the research to delve into the nuances and complexities of the educational landscape. It offered an opportunity to explore how technology is currently employed by educators and students, addressing challenges such as the digital divide, cost-related issues, and pedagogical implications. By systematically observing these aspects, the study aimed to build a solid foundation for in-depth analysis and to provide insights into the potential improvements required in ICT integration in this specific educational context.

1.9 DATA ANALYSIS

The qualitative data which was gathered from this research, as a result of interviews and observation was analysed using thematic analysis (thematic analysis utilising open or substantive coding), a widely used qualitative data analysis method (Creswell, 2018). The thematic analysis involves observing and analysing patterns and themes within the collected data to develop a rich and comprehensive understanding of the impact of ICT on an educator's management capabilities (Braun & Clarke, 2019). Thus, the researchers analysed the relationships and connections between these themes, exploring how they interact and influence each other within the context.

1.10 MEASURES TO ENSURE TRUSTWORTHINESS

Measures to ensure the trustworthiness of the research included the credibility, transferability, dependability and confirmability of the research that is being conducted. These aspects all ensured that the conclusions drawn from the research are trustworthy and credible for future researchers (Creswell, 2018). The trustworthiness of the research was thoroughly discussed in Chapter 3 of the study.

1.11 ETHICAL CONSIDERATIONS

Ethical principles provide guidelines to researchers on how they ought to conduct themselves with their participants (Eaton, 2019). Ethical research entails informed consent, privacy, confidentiality, transparency, and valid measures (Eaton, 2019; Creswell, 2018). Informed consent implies that the participants are aware of the research that is being conducted and consent to being interviewed by the researcher (Creswell, 2018). The participants were given all the details of the research before the interview

and participants could agree or disagree to take part in the research. Consent upheld participants' autonomy and ensured that the participant had the right to refuse to take part in the research (Creswell, 2018). Steps taken to ensure ethical considerations are enumerated in Chapter 3.

1.12 OVERVIEW OF THE STUDY

The investigation adhered to a predetermined structure, where each chapter fulfilled a distinct purpose. In **Chapter 1** an introduction was crafted to provide readers with a comprehensive overview of the study's expectations.

Chapter 2 initiated the literature review by concentrating on the assimilation of Information and Communication Technology (ICT) for the enhancement of classroom management practices. This chapter also delved into the underlying purposes of employing ICT for classroom management, delineated the roles of educators, and examined the broader educational landscape concerning technology integration, as well as the theoretical frameworks.

In **Chapter 3** the research methodology was examined along with the research design, data collection and analysis techniques, and the safeguards implemented to guarantee the study's validity and reliability. There is also discussion of the ethical measures that were used during data gathering.

Chapter 4 delineated and summarised the findings of the data collected and explored the comments made by participants in a thematic manner. Data was analysed and interpreted using a thematic approach.

In **Chapter 5** the research findings were deliberated and recommendations were proffered for the development of efficacious ICT-centered classroom management strategies. This chapter also addressed any encountered limitations, reflected on the intrinsic value of the research, proposed future studies germane to ICT in classroom management, and brought the overarching research to a conclusive closure.

1.13 CHAPTER SUMMARY

Chapter 1 introduced the study, highlighting the significance of investigating the past use of Information and Communication Technology (ICT) in classroom management. It outlined the problem statement, addressing the gap in existing literature concerning the

integration of ICT tools for effective classroom management. The rationale emphasised the importance of exploring how ICT can enhance classroom management practices. The chapter then stated the purpose and objectives, providing a clear direction for the research. Research questions were formulated, focusing on understanding the past role of ICT in classroom management. The next chapter reviews the literature relating to ICT and classroom management practices.

CHAPTER 2: LITERATURE REVIEW

2.1 INTRODUCTION

In the context of a qualitative study, the purpose of a literature review is to position the research findings within the broader context of what is already known about the subject matter. This literature review embarks on a detailed exploration of classroom management practices, scrutinising the intricate link between ICT and effective management within educational settings. The actor-network theory (ANT) and the technology acceptance model (TAM), the theoretical frameworks that guided this investigation, are also covered in this chapter.

2.2 INFORMATION COMMUNICATION TECHNOLOGY IN SCHOOL CONTEXT

The rise of the Fourth Industrial Revolution is introducing developments in technologies in different sectors of our society, including education (Paniagua & Istance, 2018). The evolving landscape of technology in education necessitates individuals to acquire fresh digital competencies and adjust to novel circumstances (Zulkarnaen *et al*., 2019). The transformation in learning organisations inherently demands a shift in the roles of educators. Teaching, viewed as the process of instigating, facilitating, and nurturing self-directed learning, self-exploration, and self-realisation among students, underscores the pivotal role educators must assume as adept facilitators or mentors capable of leveraging technology to support student learning (Paniagua & Istance, 2018). Educators are required to employ inventive teaching methods in conjunction with the revamping of learning environments (Paniagua & Istance, 2018) to usher in a change in management dynamics. The available resources in schools are a determining factor in terms of how ICT can be used in the school context. The following sub-headings delineate the various methods of integrating ICT resources within the teaching and learning environment.

2.2.1 ICT resources in the teaching and learning environment

ICT resources play a crucial role in enhancing teaching and learning environments by providing tools and platforms that facilitate interaction, engagement, and access to information (Baako & Abroampa, 2023). There are several examples of ICT resources used in educational settings which are described below.

2.2.1.1 Computers and laptops

Computers and laptops are fundamental ICT resources in teaching and learning environments. They enable access to digital content, educational software, and online resources (Baako & Abroampa, 2023). Computers and laptops are pivotal ICT resources in modern classrooms, significantly enhancing educators' ability to manage and facilitate learning. These devices streamline administrative tasks by allowing educators to efficiently handle attendance, grading, lesson planning, and communication with students, parents, and colleagues (Baako & Abroampa, 2023). As instructional tools, they enhance lessons with multimedia presentations and provide access to a variety of educational software tailored to different subjects. Student engagement is boosted through the use of videos, animations, and simulations directly on the devices, making learning more dynamic and enjoyable (Baako & Abroampa, 2023). Computers and laptops also support differentiated instruction by enabling personalised learning through adaptive software installed on the devices, offering assistive technologies for students with disabilities, and providing varied digital resources stored locally to cater to different learning styles (Shi & Yang, 2021).

2.2.1.2 Internet access

Internet connectivity is also a vital resource and high-speed internet access allows learners and educators to explore vast amounts of information, communicate with peers and experts globally, and access online courses and educational materials (Baako & Abroampa, 2023). For educators, the internet aids in lesson planning, classroom management, and professional development through access to academic journals, lesson plans, and teaching forums. It also enhances communication and collaboration within the school community, enabling efficient sharing of information through email, school portals, and messaging apps, and facilitating teamwork through shared documents and online project spaces (Baako & Abroampa, 2023).

2.2.1.3 Interactive whiteboards

Interactive whiteboards (IWB) are another example of an ICT tool. Interactive whiteboards combine traditional whiteboard functionality with digital capabilities, allowing educators to display multimedia content, annotate lessons, and engage students interactively (Shi & Yang, 2021). Additionally, IWBs aid in differentiated instruction by catering to different learning styles, such as visual, auditory, and kinesthetic. They

streamline classroom management by displaying schedules and announcements, and they help maintain lesson flow. IWBs also provide built-in training and support materials for educators, enhancing professional development (Shi & Yang, 2021).

2.2.1.4 Software and apps

Various educational software and apps cater to different subjects and learning styles. These include interactive simulations, multimedia presentations, virtual labs, and educational games (Baako & Abroampa, 2023). Software such as ClassDojo or EducatorKit allows educators to track learner behaviour, attendance, and grades digitally, streamlining administrative tasks and providing valuable insights into student performance. These tools facilitate communication with parents and enable educators to establish and maintain a positive classroom environment (Baako & Abroampa, 2023).

2.2.1.5 Learning management system (LMS) platforms

LMS platforms such as Moodle, Canvas, and Blackboard facilitate online course management, content delivery, assessment, and communication among students and instructors (Mlotshwa, Tunjera & Chigona, 2020). Video conferencing tools like Zoom, Microsoft Teams, and Google Meet enable virtual classrooms, online lectures, and remote collaboration, connecting students (Lovita, 2022). According to Van Eck and Waltz (2018), the use of ICT programs such as Learning Management Systems (LMS), Student Information Systems (SIS), and Adaptive Learning Platforms (ALP) has been shown to enhance learner achievement and participation, thus enhancing effective teaching and learning. According to education and technology experts, LMS, ALP and SIS are three commonly used tools in the field of education and technology (Azeroual, 2021).

2.2.1.6 Digital Libraries

In addition to educational software and apps, digital libraries are vital resources for educators (Roblyer, 2019). Digital libraries offer access to e-books, scholarly articles, research databases, and multimedia resources, supporting research and inquiry-based learning. Educators can use digital libraries to access a wide range of materials to supplement their curriculum, tailor instruction to meet diverse student needs, and promote critical thinking. For example, they can access e-books for individualised reading materials and scholarly articles for current research findings (Roblyer, 2019). Digital libraries also offer multimedia resources, such as videos and interactive

simulations, to enhance instructional delivery and engage students in active learning (Roblyer, 2019).

2.2.1.7 Simulation Software (SIS)

Simulation software is another example of an ICT resource, allowing learners to explore complex concepts in science, engineering, and mathematics through interactive simulations and virtual experiments (Hidayat *et al*., 2022). This technology transforms traditional learning by providing immersive, hands-on experiences that deepen understanding and engagement. Through simulation software, learners can experiment in a safe and controlled virtual environment, making abstract concepts more tangible and accessible. This approach not only enhances comprehension but also supports personalised learning, catering to the diverse needs and abilities of all learners. Simulation software is software used for the reporting and recording of data, such as learner results. In the context of education, SIS can be used to analyse learner test scores or provide feedback on learner performance and behaviour, which can help educators provide objective feedback on learner abilities to educators, senior staff, parents and other stakeholders (Martinez-Alvarez, Coronado & Vicente, 2021).

2.3 BENEFITS OF USING ICT IN SCHOOL CONTEXT

There are several benefits when it comes to the use of ICT in the school context. ICT resources provide interactive and multimedia-rich content that can make learning more engaging and enjoyable for students (Ghavifekr & Rosdy, 2015). Visualisations, simulations, and educational games can help clarify complex concepts and cater to different learning styles (Ghavifekr & Rosdy, 2015). Furthermore, the internet and digital libraries provide educators with access to a vast amount of information beyond traditional textbooks. This fosters independent research skills and encourages curiosity and exploration for both educators and learners (Ghavifekr & Rosdy, 2015). Integrating these ICT resources effectively into teaching and learning environments requires thoughtful planning, professional development for educators, and consideration of learners' diverse needs and preferences. When used strategically, ICT resources can enhance engagement, promote active learning, and foster critical thinking skills among students. The subsequent subheadings categorise and discuss the benefits of incorporating ICT in educational settings.

2.3.1 Enhancing collaboration among educators

ICT tools such as online forums, collaborative documents, and video conferencing platforms enable educators to work together on projects, share ideas, and engage in peer learning. These tools enable communication to take place effortlessly - even if the educators are not at school (Haydar, 2020). This promotes teamwork because it becomes easier for the necessary stakeholders to work together at any time. Thus, communication skills are promoted and this communication is essential for the modern workplace (Ghavifekr & Rosdy, 2015).

2.3.2 Customising learning experiences

Educational software and adaptive learning platforms can customise learning experiences based on individual educators' classroom management needs. This allows for differentiated instruction depending on the needs of each individual educator, supporting a more tailored and effective teaching approach (Haydar, 2020).Different educators will have different classroom needs depending on the school in which they work (Odum, Meaney, Knudson, 2021). For example, some educators may work with a large group of learners and are less able to individually manage each learner. ICT assists these educators in keeping a register, recording results and keeping in touch with all of the parents.

2.3.3 Facilitating communication

ICT facilitates communication between educators, learners, and parents through email, messaging apps, and online portals. This fosters timely feedback, parental involvement, and a supportive learning community, ensuring that all stakeholders are engaged and informed (Haydar, 2020). There are an array of communication tools at the educator's disposal because of ICT. These tools include cell phones, computers, laptops, video conferencing and an array of other tools (Martinez-Alvarez *et al*., 2021). Thus, the multitude of communication options makes it easier for stakeholders to communicate regularly.

2.3.4 Streamlining administrative tasks

ICT streamlines administrative tasks by making it easier to store and record the necessary data. Administrative tasks include attendance tracking, grading, and lesson planning (Blokdyk, 2019). These tasks are time consuming and the use of ICT tools to

streamline these processes thus saves the educator's time. Freeing up educators' time allows them to focus on instruction, learner support and other aspects of classroom management. This efficiency allows teachers to dedicate more time to educational activities and student engagement.

2.3.5 Supporting professional development

ICT provides opportunities for educators to participate in online courses, webinars, and collaborative professional networks, allowing them to stay updated with the latest pedagogical practices and technology trends. Educators can take advantage of this skills development at any time because ICT makes this training and information easily accessible at any time of day. This is vital because technology is constantly evolving and changing, and educators need to stay up to date with these changes in order to make use of all ICT tools at their disposal (König *et al*., 2022). Continuous professional development through ICT ensures that educators can implement the most effective and innovative teaching strategies (Haydar, 2020).

2.3.6 Facilitating collaboration and communication

Educators leverage ICT tools to facilitate collaboration and communication among learners, parents, and colleagues. They use platforms such as email, messaging apps, and online forums to share information, collaborate on projects, and communicate with stakeholders (König *et al*., 2022). Thus, educators are able to work together, share lesson plans and help one another because ICT makes the sharing of data easier. Data can also be saved onto school clouds which can be accessed by all educators. Thus, information is readily available for all who have access to the school cloud and information is therefore easily and safely stored.

2.3.7 Assessing learner progress

Educators use ICT tools for assessing learner progress, providing feedback, and tracking performance. They may utilise online quizzes, digital portfolios, and learning management systems to monitor the learners' learning and tailor instruction accordingly (Hughes & Roblyer, 2019). This information can also be used to communicate learner progress with their parents, ensuring transparency and ongoing support (Hughes & Roblyer, 2019). Thus, learner's progress is tracked using ICT tools (König *et al*., 2022). This also helps save the educators time as the learners can be assessed using ICT tools.

Instead of focusing on grading and assessing, the educators have more time for other tasks such as lesson plan creation.

2.3.8 Challenges to ICT integration

Despite its potential advantages, several challenges can impede the successful integration of ICT in education. Limited access to technology is an issue because not all educators have access to the same technology. Whilst some educators may have access to an array of advanced resources, other may only have limited out-of-date resources (Eniekebi, 2021). A further issue is the inadequate training for educators. Technology is complex and ever-changing, and it is thus imperative that educators be granted access to ICT training so that they can use the resources for classroom management practices more efficiently (Eniekebi, 2021). There are also concerns about privacy as confidential learner information is stored and recorded using ICT resources (Huh & Reigeluth, 2018). These challenges can hinder the adoption of ICT and affect its implementation in classrooms. Addressing these issues requires targeted strategies to improve access to resources, provide professional development opportunities, and ensure that digital tools are used in a manner that respects student privacy and promotes equity (Huh & Reigeluth, 2018).

2.4 CLASSROOM MANAGEMENT PRACTICES

Classroom management practices refer to the strategies and techniques that educators use to create and maintain an orderly and productive learning environment. Effective classroom management involves organising the physical space, establishing clear rules and expectations, and implementing routines that facilitate smooth day-to-day operations (Mitchell, Hirn & Lewis, 2017). This includes setting up the classroom layout to support various teaching activities, such as group work or individual tasks, and ensuring that resources are accessible and organised. Equally important are the behavioural expectations set for learners, which should be communicated clearly and reinforced consistently. Educators employ a range of methods to manage behaviour, including positive reinforcement, clear consequences for misbehaviour, and strategies to foster a respectful and inclusive classroom climate (Mitchell *et. al*., 2017).

In addition to these foundational practices, modern classroom management increasingly incorporates technology to enhance learning and engagement. For instance, digital tools

like learning management systems (LMS), educational apps, and interactive whiteboards can support classroom management by streamlining administrative tasks, facilitating communication, and providing real-time feedback. These technologies can help educators monitor student progress, organise and distribute materials efficiently, and engage learners with interactive content. By integrating technology thoughtfully, educators can create a more dynamic and responsive learning environment that not only addresses individual student needs but also supports effective classroom management and fosters a positive and productive educational experience.

To provide a comprehensive understanding of classroom management practices, it is useful to explore various sub-topics that contribute to creating an effective and engaging learning environment. The following sub-headings will delve into key aspects of classroom management, including setting up the physical space, establishing rules and routines, and integrating technology. Each sub-heading addresses a specific component of effective classroom management practices.

2.4.1 Engaging instructions in stipulating what is expected of the learners

Engaging instructions are a crucial component of effective classroom management, helping to maintain learners' interest and attention and foster a positive, productive learning environment (Mitchell *et al*., 2017). When providing an engaging instruction, the educator needs to be both clear and concise. Stating what learners are expected to learn and do helps them understand the purpose of the activity and stay focused. Step-by-step directions and presenting them in a logical order minimise confusion and ensure all students know what is expected at each stage (Mitchell *et al*, 2017).

Visual and multimedia aids are effective tools to supplement verbal instructions. Diagrams, charts, and images make abstract concepts more concrete, while videos, animations, and interactive digital tools cater to different learning styles and keep students engaged (Odum *et al*., 2021). Differentiated instruction, using a mix of instructional methods, ensures all students have access to content in a way that works best for them. Scaffolding provides additional support for those who need it, gradually reducing assistance as proficiency increases (Odum *et. al*, 2021).

Learner-centred approaches, such as giving learners choices in how they complete tasks or demonstrate understanding, increase motivation and investment in learning. Active learning techniques, including group work and discussions, make learning dynamic.

2.4.2 Positive reinforcement and positive feedback on learners' performance

Positive reinforcement, through encouragement and constructive feedback, boosts confidence and motivation. Implementing reward systems can incentivize positive behaviours and engagement (Mitchell *et al.*, 2017). Routine and consistency are fundamental to classroom management (Chandra, 2015). Established procedures for common activities provide structure and reduce uncertainty when giving an instruction, helping students stay focused. Consistent expectations for behaviour and participation create a stable learning environment (Chandra, 2015).

Positive reinforcement focuses on using incentives and positive feedback to encourage learners to do well (Ghafar, 2023). It is thus a behaviour management technique aimed at encouraging good behaviour in the classroom (Ghafar, 2023). Positive reinforcement includes verbal compliment which encourage or congratulate learners or material rewards such as stickers on a sticker chart (Ghafar, 2023). Positive reinforcement adds a positive element in an attempt to manage the classroom and create a classroom environment that is conducive to learning by promoting good behaviour (Ghafar, 2023). Learners who are the recipients of such positive feedback have been found to perform better and behave better in the classroom environment, which in turn benefits the educators (Ghafar, 2023).

2.4.3 Consistent discipline in the classroom

Consistent classroom discipline is essential for establishing a positive and effective learning environment (Welsh, 2022). This consistency involves setting clear, specific rules and applying them uniformly to all students. When students understand the expectations and know that consequences will be predictable and fair, they are more likely to adhere to the rules. Consistent discipline fosters a sense of security and respect, as students recognise that their educator is reliable and just. This uniform approach helps prevent perceptions of favouritism and ensures that all students are held to the same standards (Welsh, 2022).

Effective classroom management also relies on the consistent application of both positive reinforcement and logical consequences (Welsh, 2022). Regularly acknowledging and rewarding appropriate behaviour reinforces the desired conduct and motivates students to follow the rules. Similarly, consistently enforcing consequences for misbehaviour helps students understand the implications of their actions and learn from their mistakes (Welsh, 2022). By maintaining this consistency in discipline, educators create a stable

and orderly classroom environment, where students feel respected and are more likely to engage positively in their learning activities (Welsh, 2022)

2.4.4 Improving classroom layout as a key component of classroom management

The layout of a classroom significantly impacts classroom management practices and overall learning experiences. A well-organised and thoughtfully designed classroom can enhance student engagement, reduce disruptive behaviour, and promote a conducive learning environment. By strategically arranging furniture, materials, and resources, educators can create a space that supports various teaching methods and accommodates different learning styles (Rogers, 2020). A carefully planned classroom layout facilitates effective supervision and movement, allowing educators to monitor student activity easily and address issues promptly. For instance, arranging desks in a way that minimises obstructions and promotes clear sightlines enables the educator to maintain eye contact with students, fostering a sense of accountability and focus (Rogers, 2019). Additionally, creating designated areas for specific activities, such as reading corners, group work zones, and individual study spaces, helps manage transitions smoothly and keeps students on task. An organised and flexible layout not only supports classroom management but also creates an inviting and inclusive atmosphere that encourages students to participate actively and feel comfortable in their learning environment (Rogers, 2019).

2.5 EDUCATORS ICT PROFICIENCY AND CLASSROOM MANAGEMENT

Despite the extensive literature on classroom management, a noticeable gap in understanding emerges regarding the incorporation of Information and Communication Technology (ICT) in these practices (Emmer *et al*., 2022). The contemporary educational landscape demands an exploration of the intricate interplay between educators' proficiency in ICT and their ability to effectively manage classrooms. This research imperative arises from the recognition that educators are navigating a technological era, and their adeptness with ICT may significantly influence classroom dynamics and student outcomes. The discussion that follows will focus on current gaps in the research available on classroom management.

2.5.1 The current gap in classroom management research

Despite a wealth of research on classroom management, there is a significant gap in understanding how ICT is integrated into these practices (Emmer *et al*., 2022). This gap

highlights the need for further investigation into how technology impacts classroom management and how it can be leveraged to enhance teaching effectiveness. Current research predominantly focuses on traditional management techniques, leaving a void in exploring the role of digital tools and platforms. Addressing this gap is crucial for developing a comprehensive understanding of modern classroom management practices. This research will expand on the information available on classroom management and ICT and add pertinent information on exactly how ICT tools can be used for classroom management practices by educators.

2.5.2 The role of educators' ICT proficiency

The contemporary educational landscape underscores the importance of educators' proficiency in ICT. As educators navigate a technologically advanced environment, their ability to effectively utilise digital tools can impact classroom dynamics profoundly. Proficiency in ICT not only aids in managing classroom activities but also enhances instructional delivery and student engagement. Understanding how educators' technological skills influence their classroom management strategies is essential for optimising teaching and learning outcomes (Emmer *et al*., 2022). It is vital to note that the abilities of an educator to use ICT tools is directly dependent on the skills that they possess. Educators who do not have the necessary skills to use a particular tool, will not be able to use it.

2.5.3 Exploring the interplay between ICT and classroom management

Research into the interplay between ICT and classroom management reveals its potential to transform traditional practices. Integrating ICT tools such as learning management systems, educational apps, and interactive technologies can support educators in creating more dynamic and responsive learning environments. By examining how these tools affect classroom management, researchers can provide insights into how technology can be harnessed to improve organisational efficiency, student engagement, and overall learning experiences (Emmer *et al*., 2022). There is thus a direct link between ICT and classroom management practices in that ICT can be used to enhance and improve on the classroom management practices of educators. It is important to note that various tools can be used for classroom management.

In conclusion, classroom management practices form the foundation for effective teaching and learning environments. While established principles such as clear expectations, effective communication, and time management remain crucial,

incorporating ICT into these practices offers new opportunities for enhancement. Insights from research on ICT integration can empower educators to navigate the complexities of contemporary education, ensuring optimal learning experiences for students. As the educational landscape continues to evolve, understanding the role of technology in classroom management will be vital for developing innovative and effective teaching strategies.

2.6 EDUCATORS' PERCEPTION, ATTITUDE AND FURTHER ASPECTS ON THE USE OF ICT AND CLASSROOM MANAGEMENT PRACTICES

Understanding educators' perceptions and attitudes towards the integration of Information and Communication Technology (ICT) into education is paramount for its successful implementation (Eikelmann & Vennemann, 2017). While many educators acknowledge the potential benefits of ICT, including enhanced student engagement, personalised learning, and access to a wealth of resources, several challenges and attitudes can impact its effective adoption. Exploring these aspects can provide a deeper insight into how to facilitate the integration of ICT in educational settings. The next section will explore the benefits of ICT.

2.6.1 The role of pedagogical beliefs

Scherer, Siddiq and Tondeur (2020) explored how an educator's individual beliefs influence technology usage in their classroom spaces. According to the study, an educators pedagogical beliefs can serve as a barrier or enabler of technological usage. Thus, educators who perceive technology negatively, will be less likely to use it as a classroom management tool. Educators who favour learner-centred approaches and collaborative learning are more likely to view ICT as a valuable enhancement to their teaching practices by using ICT resources that promote innovation and group working tasks in the classroom. These educators see technology as a tool that can complement and enrich traditional methods, rather than replace them. Understanding how pedagogical beliefs shape attitudes towards ICT can help in tailoring professional development and support to align with educators' teaching philosophies (Eikelmann & Vennemann, 2017).

2.6.2 Influence of school culture and leadership

The broader school culture, including leadership support and infrastructure, plays a critical role in shaping educators' attitudes towards ICT (Alnosiaan, 2019). Schools that

foster an environment of innovation and experimentation generally see more positive perceptions of ICT integration (Alnosiaan, 2019). Thus, schools who wish to innovate their curriculum and come up with new ways of learning, are more likely to foster a culture of new-age ICT implementation. Effective leadership and a supportive culture can encourage educators to embrace new technologies, experiment with different approaches, and integrate ICT in ways that enhance teaching and learning (Eikelmann & Vennemann, 2017).

2.6.3 Addressing concerns and balancing approaches

Huh and Reigeluth (2018) explored the shift from more traditional teaching methods to an ICT-centred modern approach to education. This shift is as a result of the technological era in which we live. It is further highlighted that it is important for schools to make all stakeholders aware of the benefits of ICT for classroom management because of its academic benefits (Huh & Reigeluth, 2018). Some educators express concerns about overreliance on technology and its potential to replace traditional teaching methods. These teachers have a more negative, perhaps fearful, attitude towards ICT integration because they wish to cling to more traditional teaching methods. To address these concerns, it is essential to maintain a balance between ICT and other instructional strategies by using both ICT and more traditional methods. Emphasising meaningful learning experiences that combine technology with traditional methods can help alleviate fears about technology overshadowing conventional teaching practices. Educators should be encouraged to use ICT as a complement to, rather than a replacement for, established teaching methods (Huh & Reigeluth, 2018).

2.6.4 Embracing a growth mindset

Educators who demonstrate a growth mindset and a willingness to adapt to evolving technologies are more likely to have a positive outlook on ICT integration. Continuous learning and experimentation with new tools and methods enable educators to discover innovative ways to leverage technology in their teaching (Alessa & Hussein, 2023). By using a vast array of ICT tools, educators not only become more aware of its benefits but also become more confident in using these technologies. By fostering a mindset that values adaptability and ongoing professional development, educators can ensure that ICT remains a valuable asset in the educational landscape, enhancing rather than hindering the learning experience (Huh & Reigeluth, 2018). This goes hand-in-hand with educator training and development in terms of ICT because when educators become

more familiar with the ICT tools at their disposal, they are more likely to use them with confidence.

2.7 INTERNATIONAL TRENDS IN THE USE OF ICT IN CLASSROOM MANAGEMENT PRACTICES

Across the globe, several countries have taken advantage of the use of ICT in education. This section will take a closer look at how Estonia, South Korea, Nigeria and Morocco have taken strides to implement ICT in the classroom.

2.7.1 ICT and classroom management in Estonia

Estonia, a small country in Northern Europe, is often considered one of the most technologically advanced countries in the world (Sukles, 2021). In Estonian schools, students learners and educators have access to all sorts of advanced technology such as tablets, laptops, and interactive whiteboards, and educators are trained to use these ICT tools in the classroom (Republic of Estonia, 2021). Additionally, Estonian learners have access to digital learning platforms, such as the e-Kool system, which allows them to submit tests online and send messages to educators directly (Republic of Estonia, 2021). Estonia is widely acknowledged for its outstanding achievement in establishing one of the most sophisticated digital societies globally. An impressive 46.7% of Estonians actively engage in internet voting, and an astounding 99% of public services are accessible online (e-GA, 2019). This pervasive digitalisation is deeply ingrained in Estonia's education system governance, where "e-school solutions" (e-Estonia, 2024) are utilised across all schools. These solutions encompass digital learning materials and web-based school management software, contributing to the seamless integration of technology in the educational landscape (OECD, 2020).

2.7.2 ICT and classroom management in South Korea

South Korea has made large investments in ICT to support digital learning in the classroom (Park, 2019). In South Korean schools, learners use tablets and laptops to access learning materials and tests (Republic of South Korea, 2020). Moreover, South Korean schools offer coding classes to learners as young as five years old, reflecting the country's strong emphasis on ICT and digital advancements (Kim & Lee, 2020). To support digital learning, South Korea has a comprehensive e-learning platform, called the Smart Learning System, which provides learners with a range of educational resources, including pre-recorded lessons, interactive assessments, and virtual science

experiments (Republic of South Korea, 2020).

In South Korea, the government has been a steadfast driver and supporter of Educational Technology (EdTech) initiatives for an extended period. The journey began with the introduction of "E-learning," forming a crucial component of the government's strategy to revolutionise the education system by placing a greater emphasis on cultivating students' learning skills through cutting-edge technology. However, the government-led sector has experienced slow progress, hindering the growth of private EdTech companies (Kim & Lee 2020). The use of ICT in South Korean classrooms has the potential to significantly impact educators' approach to classroom management by providing advanced tools for organisation, communication, and personalised learning. South Korean schools' integration of technologies such as smart boards, educational apps, and learning management systems can enhance educators' ability to monitor student progress, facilitate real-time feedback, and manage classroom dynamics more efficiently. These tools enable more precise tracking of student behaviour and performance, allowing educators to implement targeted interventions and create a more responsive learning environment. However, the effective use of these technologies also requires adequate training and support for educators to overcome challenges related to technology adoption and ensure that ICT tools are leveraged to complement and enhance traditional classroom management practices.

2.7.3 ICT and classroom management in Nigeria

In Nigeria, the integration of ICT in education has been steadily growing, albeit with various challenges. Access to ICT infrastructure, including reliable internet connectivity and access to computers or tablets, remains uneven, leading to a digital divide. Efforts have been made to provide educators with the necessary ICT skills and training for effective classroom management (Eniekebi, 2021). E-learning platforms and learning management systems have gained popularity, particularly during the COVID-19 pandemic, facilitating tasks like attendance tracking and communication between educators and learners. The availability of digital educational resources, such as e-books and interactive learning materials, has enhanced classroom management practices, improving engagement and content delivery. Additionally, ICT tools are used for monitoring student progress, conducting assessments, and managing grades (John, 2017). The notable gap in literature is that there is limited information on the use of ICT as a classroom management tool for educators in particular. Thus, the study is relevant in addressing the classroom management and the use of ICT by educators in particular.

2.7.4 ICT and classroom management in Morocco

Morocco has also made strides in integrating ICT into education to enhance classroom management practices (Sabbar, 2022). The country has a National ICT Strategy for Education, focusing on providing schools with ICT equipment and promoting digital content development (Sabbar, 2022). Morocco emphasises digital literacy and educator training, ensuring educators are proficient in using ICT tools effectively for classroom management. E-learning initiatives and online platforms support various aspects of classroom management, including lesson planning, attendance tracking, and learner-educator communication. Smart classrooms equipped with interactive whiteboards and multimedia resources are becoming more common in urban schools, enhancing interactive teaching and classroom management (Nejjari & Bakkali, 2017). Additionally, ICT is leveraged for language learning in Morocco, with language learning apps and software benefiting language educators and classroom management practices (Sabbar, 2022).

In both Nigeria and Morocco, being developing countries, ICT adoption for classroom management is ongoing, with efforts to address infrastructure challenges, provide educator training, and develop digital resources. As technology continues to advance, these countries are likely to see further improvements in how ICT is used to enhance classroom management and overall educational outcomes. It is important to discuss ICT integration and classroom management practices in South Africa where this study will be conducted. The heading below is used to discuss the South African school system and how ICT integration impacts classroom management practices.

2.8 THE SOUTH AFRICAN SCHOOL SYSTEM AND ICT INTEGRATION

ICT has been integrated into the South African schooling system in numerous ways. This integration has been done at varying degrees depending on the nature of the school. Government schools tend to have less access to the necessary ICT tools as a result of a lack of resources (Ostrowick, 2016) whereas independent schools have more ICT tools and funding available (Van Wyk *et al*.,2017).

The South African School system is complex as it is divided into both independent and state-run schools.

2.8.1 The South African school system

In South Africa independent schools, often referred to as private schools, and public

schools differ significantly in various aspects, including funding, governance, and educational outcomes. Independent schools are funded primarily through tuition fees paid by parents, along with donations and sponsorships (Van Wyk *et al*., 2017). These schools have greater autonomy in terms of curriculum design, hiring practices, and overall governance. The independent schools' financial independence often allows them to offer better facilities, smaller class sizes, and a wider range of extracurricular activities. As a result, independent schools often provide a more personalised and enriched educational experience, which can contribute to higher academic performance and a broader skill set among students (Meyer & Gent, 2016).

Public schools, on the other hand, are primarily funded by the government and are subject to the regulations and policies set by the Department of Basic Education. This means they have less flexibility in terms of curriculum and administrative decisions. Public schools typically serve a larger and more diverse student population, including many from low-income families (Van Wyk *et al*., 2017). Consequently, these schools may face challenges such as overcrowded classrooms, limited resources, and varying levels of academic achievement among students (Van Wyk *et al*., 2017). Despite these challenges, public schools play a crucial role in providing education to the majority of South African children and often have dedicated educators and staff committed to improving educational outcomes within the constraints they face. Public schools are also more accessible to the general population, ensuring that education is available to all children, regardless of their socio-economic status (Van Wyk *et al*., 2017).

2.8.2 Independence schools and ICT integration in classrooms

It is noteworthy that most independent schools frequently benefit from superior access to ICT resources, rendering them an ideal focus for this study (Van Wyk et al., 2017). South African independent schools, often referred to as private schools, are educational institutions that operate outside of the state-funded public education system. These schools are independently managed and funded, typically by private individuals, organisations, religious groups, or other non-government entities (Van Wyk *et al*., 2017).

This research is fundamentally oriented towards a meticulous investigation of the utilisation of ICT as a tool for classroom management in South African independent primary schools. By scrutinising the measured pace of ICT integration and its potential implications for classroom management practices and learner outcomes, this study is poised to offer invaluable recommendations for the advancement of educational

practices. It is important to underscore that while the study's scope is confined to independent primary schools with robust technology access, it also explored broader educators' classroom management strategies that hold relevance for all South African schools grappling with similar access challenges (Bush, 2019).

2.9 SOUTH AFRICAN EDUCATORS AND ICT IN CLASSROOM MANAGEMENT PRACTICES

There are promising initiatives aimed at elevating educator professional development through ICT adoption. Notable examples include the government's Educator Laptop Initiative and the Intel Teach Program (Kopcha, 2012). These initiatives aim to equip educators with digital skills and resources, enabling them to leverage technology effectively in their teaching practices. By focusing on educator development, these programmes align with the broader goal of fostering a technologically adept teaching workforce (Van Wyk *et al*., 2017).

Nonetheless, despite the South African government's commendable efforts in advancing ICT integration in schools, a spectrum of challenges persists. These challenges encompass issues such as infrastructure disparities, digital literacy gaps, and concerns related to data privacy and security. Investigating these challenges and their implications for classroom management represents a crucial aspect of understanding the complex dynamics surrounding ICT in South African education (Van Wyk *et al*., 2017).

In a recent investigation conducted by Mahlo and Waghid (2022) a noteworthy discovery emerged, shedding light on the multifaceted capabilities exhibited by educators in the context of information and communication technologies (ICTs). Despite facing limitations in access and usage of ICTs, educators demonstrated proficiency in four pivotal areas: efficiency, creativity, pedagogical flexibility, and a heightened sense of agency during their utilisation of ICT tools. This noteworthy achievement can be attributed to personal conversion factors, particularly the acquisition of ICT skills. Although these skills were obtained to a limited extent, they were facilitated through participation in a community of practice and previous training received at the university level. The implications drawn from this study extend beyond the immediate findings, offering practical insights for the Western Cape Education Department's (WCED) provincial policies regarding educator ICT training. The shift proposed is from a predominant focus on the sheer quantity of resource materials aimed at enhancing ICT skills to a more nuanced emphasis on the

pedagogical significance of utilising these resources.

2.10 CHALLENGES IN THE USE OF ICT TOOLS IN CLASSROOM MANAGEMENT PRACTICES

Utilising information and communication technology (ICT) tools in the classroom presents several challenges that are relevant in the context of this study. These challenges are specific to classroom management practices in schools and include a lack of resources, the digital divide, a lack of technological skills, security and privacy concerns, pedagogical implications, the attitude of educators, ICT policy issues, and gaps in research.

2.10.1 Lack of ICT resources

One prevalent hurdle is technical issues, ranging from unreliable internet connections to the lack of necessary technical skills among educators and learners (Bakir, 2016; Hew & Brush, 2007). The absence of a reliable internet infrastructure can impede the effective use of online resources. Additionally, the financial burden of acquiring and maintaining ICT tools, such as computers and interactive whiteboards poses a considerable challenge for schools and educators (Bingimlas, 2009). The need for ongoing training and support further adds to the cost, as ICT tools continually evolve (Bakir, 2016). Meyer and Gent (2016) found that specific to ICT in education, general concerns are that the implementation in South Africa is inefficient, and specific resources and capacity are inadequate to ensure successful implementation of ICT in schools. The study further concluded that the access to this technology is unequal as some schools have more access to resources than others. The study highlights a need for change in terms of resource availability in schools in South Africa.

2.10.2 Lack of technological skill

Meyer and Gent (2016) stress that it is vital for educators to possess the necessary technological skills for ICT implementation. Their study stresses that skills development of educators is imperative in order to successfully utilise ICT in South African schools. Insufficient technical proficiency among educators and learners may hinder the seamless integration of technology into teaching and learning activities (Bakir, 2016; Hew & Brush, 2007). The importance of educators' preparedness and proficiency in utilising ICT cannot be overstated (Ghavifekr & Rosdy, 2015). Adequate skills and confidence in application, coupled with a deep understanding of the pedagogical implications of ICT, are crucial for meaningful integration into the instructional process.

However, within the South African landscape there is a lack of skills in terms of ICT. Educators often lack the necessary skills to properly use ICT in the classroom environment (Meyer & Gent, 2016). Munje and Jita, (2020) established a need for educator training in the ICT space and their study found that educators often do not use ICT because they do not possess the necessary skills to use ICT tools properly. The study further purports that the implementation of ICT is inequitable because only certain schools have access to the necessary training and skills development necessary for ICT proficiency.

2.10.3 Pedagogical implications

The pedagogical implications of integrating technology into education add another layer of complexity.

Strom (2021) cautions against an overreliance on technology, highlighting that an excessive focus on digital tools can lead to a passive learning experience. In such scenarios, learners might become more inclined to consume information passively rather than actively engaging with the content, educators, or their peers. This passive consumption can undermine critical thinking and analytical skills, which are often better developed through active participation and discourse (Strom, 2021). Moreover, the interpersonal skills that students build through face-to-face interactions and collaborative efforts may be diminished if technology becomes the predominant medium of instruction.

Additionally, the potential for technology to be a distraction in the teaching and learning process raises significant concerns (Strom, 2021). The ubiquitous nature of digital devices and the internet means that students can easily divert their attention to non-educational activities, such as social media, gaming, or other online content (Strom, 2021). This distraction not only disrupts the learning environment but also poses a challenge for educators in maintaining students' focus and engagement. The constant presence of potential distractions requires the development of new classroom management strategies and digital literacy skills to help students navigate their online and offline worlds effectively.

2.10.4 Educators' negative attitudes

Educators' attitudes towards technology play a crucial role in its effective use. Negative experiences and discomfort with technology correlate with decreased utilisation of ICT in

the classroom as a management and leadership tool (Ertmer et al., 2012; Teo, 2011). Educators who have a negative attitude towards ICT are also less likely to develop their skills in this area. Furthermore, educators who wish to adopt more traditional teaching methods are also more likely to have a negative attitude towards ICT usage for classroom management practices.

2.10.5 Gaps in research

Despite the extensive discourse on these challenges, notable gaps exist in the literature such as literature relating specifically to ICT usage in independent schools in South Africa and how this ICT can specifically assist classroom management practices. The dynamic nature of technology demands more research on specific programmes, and there is limited understanding of how technology can assist educators in underprivileged schools due to a lack of resources in these areas (Van Wyk *et al*., 2017). Moreover, the voice of educators, particularly those without managerial positions, is often overlooked, despite their role as managers of their own classrooms (Emmer *et al*., 2022).

This study is guided by two pivotal theoretical frameworks: the technology acceptance model (TAM) and the actor-network theory (ANT) that are discussed in the section below.

2.11 THEORETICAL FRAMEWORK

A theoretical framework provides the essential foundation for research by offering a structured approach to understanding and interpreting data (Creswell, 2019). It situates the study within the context of existing literature, defining the scope, guiding data collection and analysis, and ensuring that the research contributes to broader academic knowledge. By establishing a clear theoretical foundation, researchers can systematically explore their research questions and produce coherent and meaningful insights (Creswell, 2019).

In this study, two key theoretical frameworks are used to understand the integration of ICT in classroom management: the technology acceptance model (TAM) and the actor-network theory (ANT). The technology acceptance model, developed by Davis in 1989, is instrumental in examining how educators' perceptions of ICT tools influence their adoption and usage. TAM posits that perceived ease of use and perceived usefulness are critical factors in technology acceptance, making it a valuable lens for exploring how

educators' attitudes toward technology impact its integration into classroom management practices (Latour, 2005).

On the other hand, the actor-network theory provides a different perspective by focusing on the relationships and interactions between human and non-human actors within a network. ANT views technology not just as a passive tool but as an active participant that shapes social processes and interactions. Applying ANT allows for an in-depth analysis of how various elements—such as educators, students, ICT tools, and institutional policies—interact and influence one another. This framework helps to uncover the complex dynamics of technology adoption, providing insights into how these interactions contribute to the success or challenges of ICT integration in educational settings. Together, TAM and ANT offer a comprehensive understanding of both the acceptance and the relational dynamics of technology in classroom management.

2.11.1 Technology acceptance model (TAM)

2.11.1.1 Overview

The technology acceptance model (TAM), developed by Davis in 1989, has been extensively used to explain how individuals come to accept and use new technologies. TAM posits that two primary factors - perceived usefulness (PU) and perceived ease of use (PEOU) - influence an individual's decision to adopt new technology (Davis, 1989). Perceived usefulness refers to the degree to which a person believes that using technology will enhance their job performance, while perceived ease of use relates to the extent to which they find the technology to be user-friendly and straightforward. TAM has been applied in various contexts, including education, where it has helped researchers understand how educators' perceptions of ICT tools affect their adoption and use in classroom settings. For example, studies have shown that educators who perceive ICT tools as both useful and easy to use are more likely to integrate these technologies into their teaching practices (Venkatesh & Davis, 2000).

However, TAM has faced several criticisms over the years. One major critique is that the model's simplicity may overlook other critical factors influencing technology adoption, such as social influence, organisational support, and broader contextual elements (Bagozzi, 2007). Critics argue that TAM primarily focuses on individual perceptions and may not fully account for the complex interactions between technology, users, and the organisational environment (Benbasat & Barki, 2007). Despite these limitations, TAM

remains a foundational framework for understanding technology acceptance, often used in conjunction with other models like the unified theory of acceptance and use of technology (UTAUT) to provide a more comprehensive analysis of technology adoption (Venkatesh *et al*., 2003).

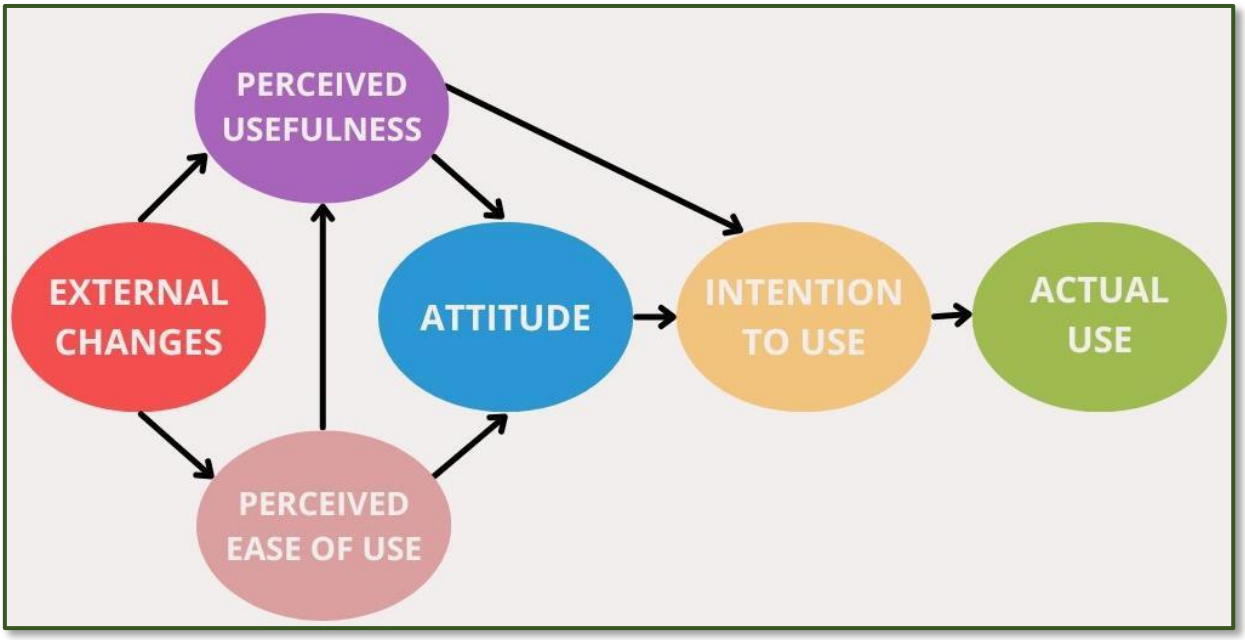
2.11.1.2 Application and relevancy of technology acceptance model to study

In the context of this study, the technology acceptance model (TAM) is utilised to deepen the understanding of educators' acceptance of ICT tools for classroom management. TAM's core elements - perceived usefulness (PU) and perceived ease of use (PEOU) - provide a framework for exploring how educators view the practical benefits and user-friendliness of ICT tools in their teaching environments. By examining these elements, alongside external factors such as institutional policies and infrastructure, the study aims to uncover how these perceptions influence educators' willingness to adopt and integrate technology into their classroom management practices (Magsamen-Conrad et al., 2022).

The framework has significantly guided the research process, from formulating research questions to collecting and analysing data. TAM helped in defining the research questions by focusing on how educators perceive the utility and ease of ICT tools. This focus allowed for the development of survey instruments and interview questions that specifically addressed these aspects, ensuring that data collection was targeted and relevant. During data analysis, TAM provided a structured approach to interpreting responses, enabling the identification of patterns related to PU and PEOU. This approach facilitated a nuanced understanding of how educators' perceptions of ICT influence their classroom management practices.

Moreover, TAM guided the interpretation and discussion of findings by framing the analysis around the model's constructs. This framework helped in linking educators' perceptions to their actual use of ICT tools and provided insights into the external factors that may affect technology adoption. By situating the findings within TAM, the study offers a coherent discussion on how perceived usefulness and ease of use contribute to the successful integration of ICT in classroom management. This theoretical grounding not only enhances the validity of the research but also provides practical implications for improving ICT adoption strategies in educational settings.

Figure 2.1: Technology acceptance model (Davis, 1989)



2.11.1.3 Perceived usefulness

Perceived usefulness (PU) refers to the degree to which an individual believes that using a specific technology will enhance their performance or effectiveness in a given task. In the context of classroom management, PU relates to how educators perceive ICT tools as beneficial for improving their teaching practices, managing classroom dynamics, and achieving better student outcomes (Davis, 1989).

2.11.1.4 External changes

External changes refer to factors outside the individual that can influence their perceptions and use of technology. These include institutional policies, technological infrastructure, and training opportunities. For example, changes in school policies regarding technology use or the availability of technical support can impact educators' perceptions of ICT tools and their subsequent adoption (Davis, 1989).

2.11.1.5 Perceived ease of use

Perceived ease of use (PEOU) is the degree to which an individual believes that using a technology will be free of effort. In classroom management, PEOU reflects how educators view the usability of ICT tools. If tools are perceived as user-friendly and easy to integrate into existing practices, educators are more likely to adopt and use them effectively (Davis, 1989).

2.11.1.6 Attitude

Attitude towards technology encompasses an individual's overall evaluation of using the technology, which can be influenced by both PU and PEOU. An educator's attitude towards ICT tools is shaped by their experiences and perceptions of how these tools impact their teaching effectiveness and ease of use (Davis, 1989).

2.11.1.7 Intention to use

Intention to use represents the individual's readiness to engage with a technology based on their perceptions and attitude. For educators, this means their willingness to incorporate ICT tools into their classroom management practices. Intention is a strong predictor of actual usage, reflecting the likelihood that educators will adopt the technology (Davis, 1989).

2.11.1.8 Actual use

Actual use is the extent to which an individual engages with and employs the technology in their daily activities. In classroom management, it measures how frequently and effectively educators utilise ICT tools in their teaching practices. The gap between intention and actual use can provide insights into barriers or challenges that may affect technology adoption (Davis, 1989).

Table 2.1: Key TAM terms and linkages

TAM Concept	Definition	Relevance to Research Questions
Perceived usefulness (PU)	The degree to which a person believes that using a particular system enhances job performance.	How do educators perceive the usefulness of ICT in classroom management? Educators are more likely to embrace technologies they believe will enhance their effectiveness in managing classrooms and improving student outcomes.
Perceived ease of use (PEOU)	The degree to which a person believes that using a particular system would be free of effort.	How do educators assess the ease of use of ICT tools? Educators assess the ease of use of ICT tools by evaluating how user-friendly and intuitive the technology is, considering factors such as the simplicity of its interface.

TAM Concept	Definition	Relevance to Research Questions
External variables	Factors such as institutional support, training, and infrastructure that can influence PU and PEOU.	What external factors affect educators' adoption of ICT in schools? External factors influencing educators' adoption of ICT include institutional policies, infrastructure quality, access to training and technical support, and available funding. These elements affect how easily educators can integrate and effectively use technology in their classrooms.

2.11.2 The actor-network theory (ANT)

The second theoretical framework used in this study is the actor-network theory (ANT). While the technology acceptance model (TAM) provides valuable insights into individual perceptions of technology, it may not fully capture the complex interactions and relationships between various elements involved in technology adoption. TAM focuses primarily on perceived usefulness and ease of use from an individual perspective, which can overlook how technology integrates into broader contexts in terms of classroom management practices.

2.11.2.1 Overview

The actor-network theory (ANT), developed by Bruno Latour and Michel Callon, focuses on the roles and relationships within networks of both human and non-human actors. This framework is particularly useful for examining how technological artefacts, such as ICT tools, influence and are influenced by the social contexts in which they are embedded (Latour, 2005). ANT highlights that technology is not merely a passive tool but an active participant in shaping and being shaped by various social and organisational factors. It has been applied in educational research to explore how technologies are adopted and integrated into teaching practices, and how these technologies interact with existing educational frameworks and stakeholders (McLean & Hogg, 2008).

However, ANT has faced criticism for its complexity and sometimes ambiguous application. Critics argue that its broad approach can make it difficult to pinpoint clear causal relationships and outcomes (Cressman, 2009). The theory's emphasis on describing interactions among various actors may overlook broader socio-political and

economic contexts. Additionally, some scholars believe that ANT's focus on relational dynamics can neglect important issues of power and agency within these networks (Bloor, 1999). Despite these critiques, ANT remains a valuable tool for understanding the intricate dynamics of technology adoption and integration, providing insights into how ICT tools are embedded in educational settings and their impact on social interactions and organisational practices.

2.11.2.2 Application in study

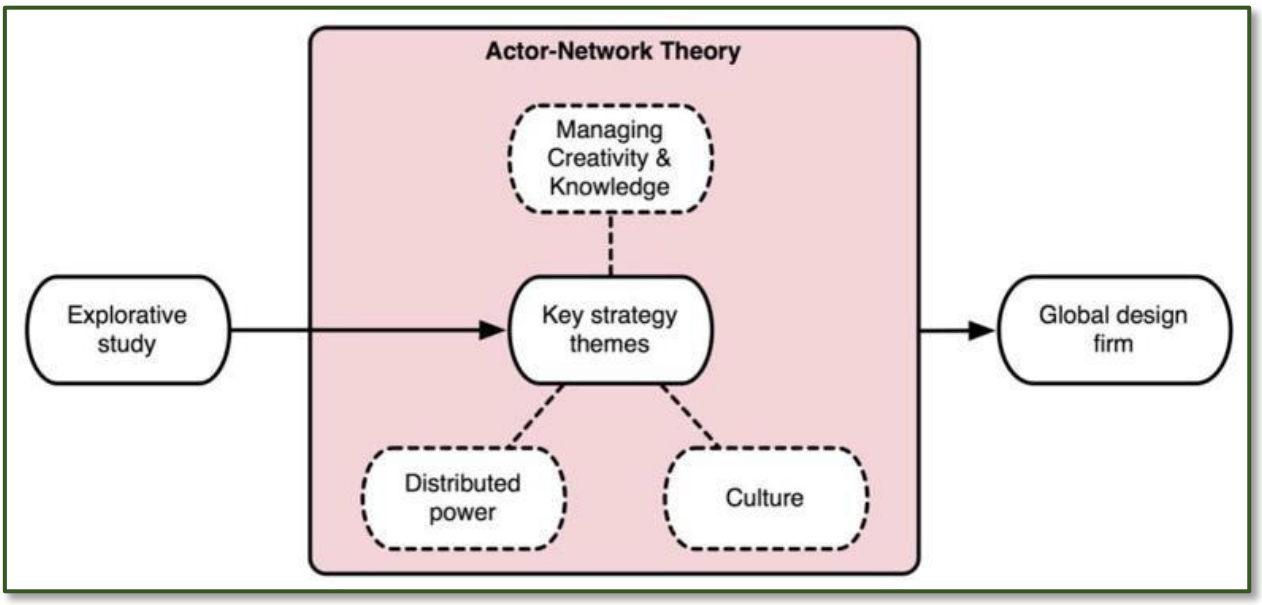
The actor-network Theory (ANT) provides a comprehensive framework for analysing the intricate interactions between educators, learners, and technology within the classroom. By focusing on how these elements interact within a network, ANT helps to uncover the processes through which ICT adoption is negotiated and stabilised in educational settings (Latour, 2005). This framework is instrumental in addressing research questions related to the integration of ICT tools by revealing how various actors - such as teachers, students, and the technology itself - collaborate, influence each other, and contribute to the overall adoption process.

ANT guided the study by offering a lens through which to examine the dynamic relationships and interactions within the classroom. During data collection, ANT encouraged the exploration of how educators and learners engage with ICT tools, how these tools fit into the existing educational environment, and how external factors like institutional policies and support structures impact these interactions. This approach involved gathering qualitative data through interviews, observations, and document analysis to capture the nuanced ways in which technology is embedded in classroom practices.

In data analysis, ANT facilitated a detailed examination of the interactions among actors and the processes through which ICT adoption is negotiated. It enabled the identification of key moments of influence, such as how educators' perceptions of technology shape their use and how students' responses affect the implementation of ICT tools. For interpretation and discussion, ANT provided a framework for understanding how technology, educators, and learners collectively shape and are shaped by the adoption process. This comprehensive perspective highlighted the importance of considering both the technological artefacts and the social dynamics at play, offering insights into how ICT

can be effectively integrated into educational settings and addressing any challenges or barriers encountered.

Figure 2.2: Actor-network theory diagram (Latour, 2005)



2.11.2.3 Explorative study

The actor-network theory (ANT) facilitates an explorative study of ICT integration in classroom management by examining the complex web of interactions among educators, learners, their parents and technology. By focusing on how these elements interact within a network, ANT allows for an in-depth exploration of how ICT tools are adopted, adapted, and stabilised particularly for classroom management practices. This approach uncovers how various stakeholders in the school environment, particularly educators, use ICT, revealing the underlying processes and dynamics that influence ICT adoption and classroom management practices (Wiard, 2019).

2.11.2.4 Creativity and knowledge

ANT highlights the role of creativity and knowledge in the adoption and use of ICT tools within the classroom. It emphasises that educators and learners contribute to the creation and modification of technology use through their interactions (Wiard, 2019). For instance, educators may creatively adapt ICT tools to meet specific classroom management needs or integrate them in innovative ways to enhance classroom management practices. Similarly, learners' feedback and usage patterns can shape how technology is

implemented and utilised, thus contributing to the evolving knowledge about effective ICT use in education.

2.11.2.5 Key strategy themes

ANT helps identify key strategy themes in ICT adoption by examining how different strategies and practices emerge from the interactions between actors in the network. For classroom management, these themes might include the development of personalised learning approaches, the use of technology to streamline administrative tasks, or the creation of interactive and engaging learning environments. ANT provides insights into how these strategies are negotiated and stabilised within the educational context, revealing the factors that drive successful ICT integration (Bencherki, 2017).

2.11.2.6 Distributed power

ANT underscores the concept of distributed power within the network of actors involved in ICT adoption. In the context of classroom management, power is not concentrated in one individual or institution but is spread across educators, learners, technology providers, and institutional policies. This distributed nature of power affects how ICT tools are perceived, adopted, and used. Educators might have influence over how technology is integrated, while learners' experiences and feedback can also shape its implementation and effectiveness (Bencherki, 2017).

2.11.2.7 Culture

ANT considers the role of culture in shaping how ICT tools are adopted and used in educational settings. The cultural context within a school or educational institution influences how technology is perceived and integrated into classroom management practices. Cultural factors include the attitudes towards technology, the existing educational practices, and the institutional support for ICT use. By examining these cultural dimensions, ANT helps to understand how they impact the negotiation and stabilisation of ICT tools within the classroom (Wiard, 2019).

2.11.2.8 Global design firm

While ANT traditionally focuses on the interaction of actors within a specific context, its principles can also be applied to understand how global trends and design practices influence local ICT adoption. For example, global design firms that develop educational technologies might shape the tools available to educators and influence their classroom

management practices (Wiard, 2019). ANT allows for the exploration of how these global influences interact with local contexts, revealing how international design trends are adapted and integrated into specific educational environments.

Table 2.2: Key ANT terms and linkages

ANT concept	Definition	Relevance to research questions
Actors	Both human (educators, students) and non-human (ICT tools) entities involved in the network.	Who are the key actors in ICT integration in classrooms? (This includes identifying educators, students, ICT tools, and other relevant stakeholders.)
Networks	The relationships and interactions between actors.	How do relationships between actors influence ICT adoption? (This examines how interactions among educators, students, and technology affect the integration and use of ICT tools.)
Translation	The process by which actors negotiate and stabilise their roles and relationships.	How is the role of ICT in classroom management negotiated among actors? (This explores how educators and students negotiate the use of ICT tools, adapt their roles, and stabilise their integration into classroom practices.)

2.11.3 Linking TAM and ANT to research focus

By integrating TAM and ANT, the study provides a comprehensive framework for analysing the multifaceted process of ICT integration in education. The combined insights from both frameworks enable a deeper understanding of the technological, social, and contextual factors influencing educators' adoption and use of ICT in classroom management. The below table links TAM and ANT contributions.

Table 2.3: Linking TAM and ANT contributions

Research focus	TAM contribution	ANT contribution
Educators' acceptance of ICT	Explores PU and PEOU among educators.	Analyses interactions between educators and ICT tools.
Institutional support	Examines external variables influencing ICT adoption.	Investigates how institutional policies shape networks.
Classroom management practices	Assesses perceived improvements in efficiency.	Studies the stabilisation of ICT roles in management.

2.12 CHAPTER SUMMARY

The imperative for further research in the realm of information and communication technology (ICT) within the classroom is evident, considering the significant gaps in our understanding of how ICT can optimally contribute to classroom management practices. The multifaceted challenges within the South African context primarily revolve around resource constraints and insufficient training for educators, underscoring the need for targeted interventions.

An extensive and nuanced exploration is imperative to unlock the full potential of ICT, ensuring its equitable integration and efficacy in diverse educational settings, especially those facing resource constraints.

CHAPTER 3: RESEARCH METHODOLOGY

3.1 INTRODUCTION

Chapter 3 presents the research approach, design, and methodology adopted for the study. It outlines the research, site, population and sample technique, data collection methods and data analysis. The chapter concludes with an overview of the rigorous standards utilised to ensure the study's quality, as well as a detailed examination of the ethical considerations addressed during the data collection process.

3.2 RESEARCH PARADIGM

A research paradigm is a framework that guides how research is conducted by the researcher, encompassing the underlying principles, assumptions, and methodologies that shape the research process (Creswell, 2018). The research paradigm defines the nature of reality, known as ontology, the relationship between the researcher and what is being studied (epistemology), and the methods used for gathering and analysing data, known as the methodology. These paradigms influence how researchers formulate questions, design studies, and interpret findings, ensuring coherence and consistency throughout the research process (Kivunja & Kuyini, 2017).

The research paradigm for this study was aligned with an interpretivist approach. This paradigm prioritised understanding the subjective meanings and interpretations that individuals assigned to their experiences (Yin, 2017). Interpretivism focused on exploring the social and contextual factors that shaped the use of ICT for educator leadership and management, as well as the perspectives, beliefs, and interactions of the participants involved (Yin, 2017). Thus, the interpretivist approach allows the researcher to delve into the unique experiences and opinions of educators who had first-hand experience managing their classrooms while using ICT.

In terms of ontological assumptions in the interpretivist paradigm, there is a belief that reality was not objective but rather a subjective and socially constructed phenomenon (Yin, 2017). This means that the way individuals perceive and interpret the world around them is deeply influenced by their own subjective belief systems and experiences (Harrison, 2018). The ontological assumptions of this study on the use of ICT by teachers for classroom management practices involve the belief that reality is constructed through the interactions and experiences of educators with ICT tools. This perspective

acknowledges that the effectiveness and adoption of ICT in classroom management are influenced by teachers' perceptions and the contextual factors within their educational environments.

In terms of epistemological assumptions, the acquisition of knowledge is seen as a complex, context-dependent process. Researchers operating within this paradigm emphasise the importance of qualitative and context-specific knowledge. Creswell and Creswell (2017) assert that researchers must immerse themselves in the participant's context to fully understand what is being discussed. Interpretivists employ methods that allow participants to express their perspectives and narratives in their own words. In the study, the epistemological assumptions involve understanding how knowledge about ICT's effectiveness and acceptance is constructed and validated. This approach is rooted in the technology acceptance model (TAM) which posits that educators' perceived ease of use and perceived usefulness of ICT tools significantly influence their acceptance and integration into classroom management. To explore these assumptions, data was collected through interviews with educators and non-participant observation, focusing on their subjective experiences, beliefs, and attitudes towards ICT.

3.3 RESEARCH APPROACH

In this study a qualitative research approach was employed to explore educators' subjective experiences and perceptions regarding the use of ICT for classroom management. This approach involved collecting and analysing non-numeric data, such as interviews, to gain in-depth insights into the contextual and nuanced factors influencing ICT adoption and its impact on classroom management practices (Creswell & Creswell, 2017).

3.3.1 Benefits of a qualitative approach

In the educational context, where the utilisation of ICT is rapidly evolving and context-specific, qualitative research emerged as the preferred avenue for inquiry. The dynamic nature of ICT implementation requires a research approach capable of delving into the nuanced, context-dependent intricacies that educators encounter (Creswell, 2018). Through qualitative research, the study sought to unravel how educators navigate this ever-evolving landscape, shedding light on their experiences, perceptions, and practices on the use of ICT for classroom management practices. This depth of understanding is imperative to capture the rich tapestry of challenges faced and strategies employed in employing ICT for leadership and management in educational institutions.

Furthermore, qualitative research methods inherently offer the flexibility needed to probe deeply into specific areas of interest (Morling, 2021). This adaptability ensured that the study could explore emergent themes and unanticipated insights that arose during the research process. Such flexibility aligns perfectly with the evolving and context-sensitive nature of ICT integration within educational leadership and management. It empowers the researcher to pivot and investigate these developments comprehensively, ultimately enriching the depth and breadth of knowledge generated from the study.

3.3.2 Weaknesses of a qualitative approach

Three common weaknesses of a qualitative research approach include subjectivity, limited generalisability, and time-consuming data analysis. These qualitative weaknesses and how they were addressed in this study are discussed below.

3.3.2.1 Subjectivity

Qualitative research is often criticised for its potential bias, as findings are influenced by the researcher's interpretations of the data collected. Subjectivity refers to the bias which comes into play during the research process as the researchers use their own individual views or perceptions to interpret the data collected (Galdas, 2017). In this study, I addressed this by using triangulation - employing multiple data sources, such as interviews, and non-participant observations, to cross-verify the findings and reduce individual bias (Creswell & Creswell, 2018).

3.3.2.2 Limited generalisability

The findings from qualitative research are typically specific to the particular context and sample studied, making it difficult to generalise them to a broader population. The results can only be applied to a limited group of schools and educators - particularly those in independent schools in Gauteng - and this is referred to as limited generalisability (Carminati, 2018). To mitigate this, I provided rich, detailed descriptions of the study context and participants, allowing readers to determine the transferability of the findings to similar settings (Creswell & Creswell, 2018). It is also important to note that the findings of this study are not to be generalised.

3.3.2.3 Time-consuming data analysis

Qualitative data analysis can be lengthy and labour-intensive due to the need for detailed thematic analysis. To manage this, I focused on specific themes and managed my time efficiently between these specific themes. (Creswell & Creswell, 2018).

3.4 RESEARCH DESIGN

The research design chosen for this study was an interpretative case study. An exploratory case study can be defined as a thorough study on a specific topic, in this case ICT usage for classroom management practices. This study makes use of data collection to gain a deeper understanding into a particular case (Creswell & Creswell, 2017). This approach allows researchers to explore and understand the intricacies of the case in depth, offering valuable insights that can inform theory and practice. This approach enables an in-depth exploration of how educators utilised ICT for management in specific school settings (Harrison, 2018). Case studies offer a comprehensive understanding of the subject, taking into account various factors such as socio-cultural, historical, and environmental influences. They stand out for their ability to provide a rich and contextual view of the matter at hand.

In this study, the selected cases acted as microcosms, allowing for a closer examination of how ICT was integrated into classroom management practices within South African independent primary schools. The cases included five independent primary schools in Gauteng province. Factors such as resource availability, technological infrastructure, and the digital readiness of educators and learners were scrutinised in detail. This thorough analysis helped to uncover the complexities and nuances involved in adopting ICT for classroom management in this specific educational context (Harrison, 2018).

3.5 RESEARCH SITE AND PARTICIPANTS

The research site comprised various independent private schools located in Gauteng, South Africa’s most economically developed province. Gauteng includes major urban centres such as Johannesburg, Pretoria, and Ekurhuleni, providing a diverse educational landscape. The independent private schools in this region are situated in both urban and suburban areas, offering a range of educational facilities and resources (De Clerq, 2020).

The schools generally cater to families from higher socio-economic backgrounds. Parents of learners at these institutions often have access to substantial financial

resources, which allow them to invest in private education for their children. This socio-economic status typically translates into smaller class sizes, advanced educational technologies, and a wide range of extracurricular activities. The schools in Gauteng often have well-developed infrastructure, including modern classrooms, sports facilities, and libraries, reflecting the financial capability of the families they serve (De Clerq, 2020).

3.6 POPULATION AND SAMPLING TECHNIQUE

A population within the context of this research referred to a collection of shared elements that possess predetermined characteristics related to a specific research topic (Creswell & Creswell, 2017). The target population in this study was the independent primary schools in Gauteng Province. Gauteng Province in South Africa has a significant number of independent private schools. According to the Independent Schools Association of Southern Africa (ISASA), there are approximately 175 independent schools in Gauteng (De Clerq, 2020). Due to time and financial constraints, a purposive sampling technique was used to sample five schools.

3.6.1 Purposive sampling techniques

In this study, purposive sampling, a non-probability sampling technique commonly employed in qualitative research (Creswell & Creswell, 2017), was used to intentionally select schools that met specific criteria. This deliberate selection ensured that the chosen schools possess the necessary information and context relevant to the research questions. Purposive sampling was particularly well-suited to the research design, as it allowed the researcher to target and select schools that aligned with the research objectives. It was highly appropriate for this study, given its focus on the integration of technology and classroom management within South African independent primary schools, specifically in Gauteng province. This technique also ensured that the chosen schools have readily available ICT tools, a critical aspect of the investigation.

Moreover, purposive sampling allowed for the selection of a diverse range of schools, considering factors such as size, socio-economic status, and technology integration practices. This diversity enhanced the richness and depth of the data collected. To identify schools that were highly relevant to the research questions, specific criteria were applied during the purposive sampling process which are discussed below. Purposive sampling offers several advantages, particularly in studies that require in-depth understanding of specific groups or phenomena. One key advantage is its ability to provide detailed and

relevant data from participants who possess specific characteristics or experiences pertinent to the research question (Mason, 2018).

Five independent primary schools were purposively selected. The chosen schools operated as independent institutions outside of the public education system and were located within Gauteng Province, a region known for its educational diversity and significant technological infrastructure. Additionally, the selected schools had ICT tools, such as computers, tablets, and interactive whiteboards, actively integrated into their educational practices.

3.7 DATA GENERATION TECHNIQUES

The data-gathering instruments used in this research were semi-structured interviews and observations. A one-on-one interview is a primary method for collecting qualitative data. Interviews allow researchers to explore participants' thoughts and feelings in depth through open-ended questions. Interviews can be structured, semi-structured, or unstructured, depending on the level of flexibility required. Semi-structured interviews are particularly useful, as they provide a balance between guided questioning and the freedom for participants to elaborate on their responses (Creswell & Creswell, 2017).

Observational methods involve systematically watching and recording participants' behaviour and interactions in their natural setting. This technique provides direct insights into how participants engage with their environment and can reveal contextual factors influencing their behaviour (Creswell & Creswell, 2017). Observations can be either overt or covert, depending on whether the participants are aware of being observed.

3.7.1 Semi-structured interviews

Individual semi-structured interviews were conducted as a method of data collection. A semi-structured interview is a qualitative data collection method where the interviewer follows a flexible set of predefined questions while allowing room for open-ended responses and spontaneous discussion (Creswell & Creswell, 2017). This approach combines the consistency of structured questions with the flexibility to probe deeper into participants' experiences, beliefs, and perspectives, offering richer and more nuanced data (Creswell, 2018).

The interview experience in this study involved face-to-face interviews providing distinct advantages. Interviews were conducted in person, which allowed for direct interaction

with participants. This face-to-face format enabled me to gauge non-verbal cues such as body language and facial expressions, which enriched the understanding of responses. Additionally, the interviews offered the opportunity to ask follow-up questions and probe deeper into specific areas based on the participants' responses, leading to more detailed and nuanced information Interviews occurred at the schools and were transcribed and information was typed out, written and recorded. There was an interview guide to guide the questioning. The interviews took approximately 45 minutes to one hour. Non-participant observations

Non-participant observation is a research method where the researcher observes and records the activities, behaviours, and interactions of participants without becoming directly involved in the setting or influencing the participants. This method allows for the collection of data on natural behaviours and interactions in their authentic context, providing a clear and unobtrusive view of the phenomenon being studied (Smit & Onwuegbuzie, 2020).

In this study, non-participant observation was deemed more appropriate due to the need to understand the genuine classroom dynamics and the use of ICT tools by teachers without influencing their behaviours or interactions. By remaining an observer rather than an active participant, I aimed to capture a more accurate representation of how ICT tools were integrated into classroom management practices and how they affected the teaching and learning environment.

The observation was carried out by attending various classroom sessions where ICT tools were being used, taking detailed notes on teachers' interactions with students, the use of technology, and the overall classroom environment. I focused on documenting specific instances of ICT integration, including how the tools were used to manage classroom activities and engage students.

3.8 DATA ANALYSIS

Thematic analysis is a method for identifying, analysing, and reporting patterns (themes) within data. It is a widely used approach in qualitative research because it provides a systematic way to interpret rich and detailed data (Creswell & Creswell, 2017). I chose thematic analysis for this study because it allowed for flexibility in identifying the various dimensions of the data, and it facilitated a detailed and nuanced understanding of teachers' experiences and perceptions regarding the use of ICT tools in classroom management (Creswell & Creswell, 2017).

Thematic analysis involves several distinct steps that ensure a thorough and robust analysis. Thematic analysis procedure aims to establish themes and patterns in qualitative research and it involves the close examination of the data collected (Creswell & Creswell, 2017). The first step is familiarisation with the data, which involves immersing oneself in the data by reading and re-reading the observational notes and transcriptions (Creswell & Creswell, 2017). This step is crucial for gaining a deep understanding of the content and context of the data. In this study, I spent considerable time reviewing the notes and transcripts through the process of coding and categorising to themes that capture significant patterns in the data. Producing a report involves weaving together the thematic analysis to tell a coherent story about the data. This step includes contextualising the findings within the broader literature and research questions (Nowell *et al*., 2017).

3.9 QUALITY CRITERIA OF THE STUDY

In qualitative research, ensuring the quality and trustworthiness of the study is paramount. The key quality criteria include credibility, dependability, and transferability. These criteria help to ensure that the research findings are accurate, consistent, and applicable to other contexts, thereby enhancing the overall trustworthiness of the study.

3.9.1 Credibility

Credibility refers to the confidence in the truthfulness and believability of the research findings (Adler, 2022). It is achieved by ensuring that the findings accurately reflect the participants' experiences and perspectives. To enhance credibility in this study, multiple strategies were employed, including prolonged engagement, triangulation, and member checking (Adler, 2022). Prolonged engagement involved spending sufficient time in the research setting to build trust and gain a deep understanding of the context.

3.9.2 Dependability

Dependability relates to the consistency and repeatability of the research process and findings over time. It requires that the research process is logical, traceable, and clearly documented so that other researchers can follow the same procedures and achieve similar results (Adler, 2022). In this study, dependability was ensured through the use of an audit trail and detailed documentation of the research process.

3.9.3 Transferability

Transferability refers to the extent to which the findings of a qualitative study can be applied to other contexts or settings (Adler, 2022). In this study, transferability was

enhanced by providing detailed descriptions of the research site, participants, and the specific circumstances surrounding the use of ICT in classroom management.

3.9.4 Confirmability

Confirmability can be achieved by maintaining a reflexive journal, where the researchers document their reflections, decisions, and biases throughout the research process (Adler, 2022). This practice helps to ensure that the findings are shaped by the participants' experiences rather than the researcher's preconceptions.

3.10 ETHICAL CONSIDERATIONS

Ethical considerations are a fundamental aspect of any research study, particularly in qualitative research where the interaction between the researcher and participants often involves sensitive personal information and experiences. Observing ethical guidelines is essential to protect the rights, dignity, and well-being of participants, and to ensure the integrity and credibility of the research process (Epp & Otnes, 2021).

In this study, ethical approval was obtained from several key bodies to ensure that the research was conducted in accordance with established ethical standards. The first step involved securing permission from the University of Pretoria, Faculty of Education, Research Committee Board. Following this, ethical clearance was sought and obtained from the Gauteng Department of Education, which was crucial given that the research was conducted in educational settings involving teachers and potentially sensitive institutional information.

Informed consent was a central component of the ethical framework for this study. Participants were fully informed about the nature, purpose, and scope of the research before their participation. This information was provided in clear, accessible language, allowing participants to make an informed decision about their involvement. They were assured that their participation was voluntary, and that they had the right to withdraw from the study at any time without facing any negative consequences. This was important to maintain their autonomy and comfort throughout the research process. The informed consent process also included a discussion of the potential risks and benefits of participation, ensuring that participants were aware of all aspects of their involvement.

Confidentiality and anonymity were rigorously maintained to protect the identities and personal information of the participants. Pseudonyms were used in all data records, transcripts, and reports to ensure that individuals could not be identified. Furthermore, all

data was securely stored, with access restricted to the researcher and the supervisory team. This included digital data being stored on password-protected devices and physical documents being kept in locked storage. These measures were crucial in safeguarding the privacy of participants and ensuring that their personal information was not exposed or misused.

Throughout the study, the research was conducted with the utmost respect and sensitivity towards the participants. This involved not only adhering to formal ethical guidelines but also engaging with participants in a manner that respected their dignity and well-being. The research process was designed to minimise any potential discomfort or harm, and to ensure that participants felt valued and respected. This approach was vital in maintaining ethical integrity and fostering a positive and respectful relationship between the researcher and participants.

3.11 SUMMARY OF THE CHAPTER

This chapter outlined the research approach, design, and methodology used in this study. It has detailed the interpretivist paradigm, qualitative approach, interpretative case study design, research site and sample, data collection methods, data analysis, trustworthiness, and ethical considerations. The next chapter will delve into the findings of the research and tabulate how these findings are relevant and answer the research questions established at the beginning of the research.

CHAPTER 4: RESEARCH FINDINGS AND ANALYSIS

4.1 INTRODUCTION

This chapter presents the research findings derived from the data collected through interviews and observation of date and the findings are displayed in terms of themes and sub-themes in line with a thematic approach. Before delving into the findings, the biographical information of participants is discussed.

4.2 BIOGRAPHICAL INFORMATION OF THE PARTICIPANTS

The participants in the study are educators from independent primary schools located in Gauteng. They encompass a range of ages, from approximately 30 to 60 years old, indicating a mix of early to mid-career educators alongside more seasoned professionals. This diversity in age adds a wealth of experience and perspectives, which influence their approaches to classroom management practices, and the integration of ICT tools in education.

As educators, they hold various roles within the school, primarily focusing on teaching and instructional duties. Their collective experiences encompass a broad spectrum of teaching methodologies, classroom management techniques, and administrative responsibilities. This demographic diversity underscores their capacity to provide insights into how ICT tools are utilised across different facets of school operations, from classroom management and learner engagement to administrative efficiency and communication with parents.

Important details about the participants' diverse backgrounds and experiences in particular independent schools are provided in Table 4.1 below. To maintain anonymity, a pseudonym was given to each participant and is utilised throughout the data presentation. The five participating schools were coded as Schools A to E, and the participants are numbered 1 to 15. Three participants selected from each school are grouped to the school and the participants' pseudonym is interpreted as SA1, SA2, SA3, SB4, SB5, SB6, SC7 and so on.

Table 4.1: Biographical information of the participants

School	Participants pseudo names	Gender	Age	Position/Grade teaching	Qualification	Years of experience
A	SA1	Female	60	Head of Department and Educator	Bachelor of Education	About 35 years
A	SA2	Female	60	Head of Department and Educator	Bachelor of Education	About 35 years
A	SA3	Female	40	Head of Department and Educator	Bachelor of Education	About 12 years
B	SB4	Female	30	Educator	Bachelor of Education	About 5 years
B	SB5	Female	30	Educator	Honours in Education	About 5 years
B	SB6	Female	30	Educator	Bachelor of Education	About 5 years
C	SC7	Male	40	Educator	Bachelor of Education	About 15 years
C	SC8	Male	40	Educator	Bachelor of Education	About 15 years
C	SC9	Female	26	Educator	Bachelor of Education	About 3 years
D	SD10	Female	27	Educator	Honours in Education	About 5 years
D	SD11	Female	32	Educator	Bachelor of Education	About 10 years
D	SD12	Female	40	Educator	Bachelor of Education	About 15 years
E	SE13	Female	26	Educator	Bachelor of Education	About 5 years
E	SE14	Female	25	Educator	Bachelor of Education	About 3 years
E	SE15	Female	50	Educator	Bachelor of Education	About 25 years

4.3 RESEARCH QUESTIONS, THEMES AND SUB-THEMES

Four secondary research questions are employed to answer the primary research question of the study, namely "*How do educators in Gauteng independent primary schools use information communication technology to manage their classrooms?"* A thorough synopsis of the main themes and sub-themes that emerged from the data gathered and were connected to each secondary research question is presented in Table 4.2 below.

Table 4.2: Research questions and themes

RESEARCH QUESTIONS	THEMES AND SUB-THEMES
a. What are the technology tools and practices used by the Gauteng independent primary schools' educators in managing their classrooms?	**Theme 1: ICT tools and practices in managing classroom** Sub-theme 1.1: Categories of ICT tools employed (e.g., software, hardware) Sub-theme 1.2: Frequency and extent of ICT integration in classroom routines Sub-theme 1.3: Specific strategies for incorporating ICT into classroom management practices
b. How do Gauteng Independent Primary School educators' perceptions, attitudes, and actual usage patterns of ICT affect their classroom management practices?	**Theme 2: Educator perspectives, attitudes, actual usage patterns and classroom management practices** Sub-theme 2.1: Comparative analysis with traditional, non-ICT methods Sub-theme 2.2: Levels of educator satisfaction and confidence in the effective use of ICT Sub-theme 2.3: Personal experiences and insights
c. How are Gauteng independent primary school educators using technology to support themselves as managers of the classroom?	**Theme 3: ICT as a support mechanism for educators** Sub-theme 3.1: Utilisation of ICT for instructional planning and preparation Sub-theme 3.2: ICT tools for facilitating communication with students and parents Sub-theme 3.3: ICT applications in administrative and organisational tasks

RESEARCH QUESTIONS	THEMES AND SUB-THEMES
d. What challenges of using technology in classroom management from an educator's perspective?	**Theme 4: Challenges of ICT in classroom management** Sub-theme 4.1: Challenges of using ICT Sub-theme 4.2: Technical issues and troubleshooting Sub-theme 4.3: Insufficient training and professional development Sub-theme 4.4: Balancing digital and traditional teaching methods

4.4 RESEARCH FINDINGS AND DISCUSSION

This section discusses the findings drawn from the generated data's interpretative analysis. Table 4.2 above presents the themes and various sub-themes that were identified through the analysis of the transcriptions of interviews and non-participant observations. The findings are discussed and interpreted in the context of the research questions, theoretical framework, and existing literature. The following sections cover each of the four themes.

4.4.1 Theme 1: ICT tools and practices in managing classrooms

This theme explores the ICT tools and practices employed by educators in managing their classroom. Thus, in terms of this theme, educators are classified as managers of their own classroom spaces. The research question which encapsulates this theme is: *What are the technology tools and practices used by the Gauteng independent primary schools' educators in managing their classrooms?* The sub-themes that shed further light on this main theme are categories of ICT tools employed; frequency and extent of ICT integration in classroom routines and specific strategies for incorporating ICT into classroom routines. These sub-themes are discussed in the following sub-headings.

4.4.1.1 Sub-theme 1.1: Categories of ICT tools employed

Based on the information provided by participants, the following categories of ICT tools are used in the participating independent primary schools: LMS, communication tools, educational software, administrative tools, collaboration tools and adaptive learning platforms. The participants described how these ICT tools are incorporated into their classroom management practices.

PowerPoint is a powerful tool because I am not creative, and I struggle to design colourful and exciting lessons. PowerPoint allows me to do this in my daily lesson presentation. **(Participant SA6)**

I think that all teachers should be empowered with the skills to make spreadsheets. But I spent most of my teaching career without this resource. **(Participant SA14)**

I started using Zoom for online lessons and meeting during the Covid lockdown. And I have used it ever since. Parents are often too busy to come to the school for meetings so I schedule online meetings and this saves everyone's time. **(Participant SA7)**

Google Classroom helps me manage all of my work. I can divide my subject into different subjects and have folders for tests and assignments; folders with results and folders with other resources. It helps me arrange and manage my subject and makes my life a lot less stressful. **(Participant SA11)**

The photographs collected during the non-participant observation further corroborate the interview data. Presented below are images of ICT tools from the schools, serving as evidence.

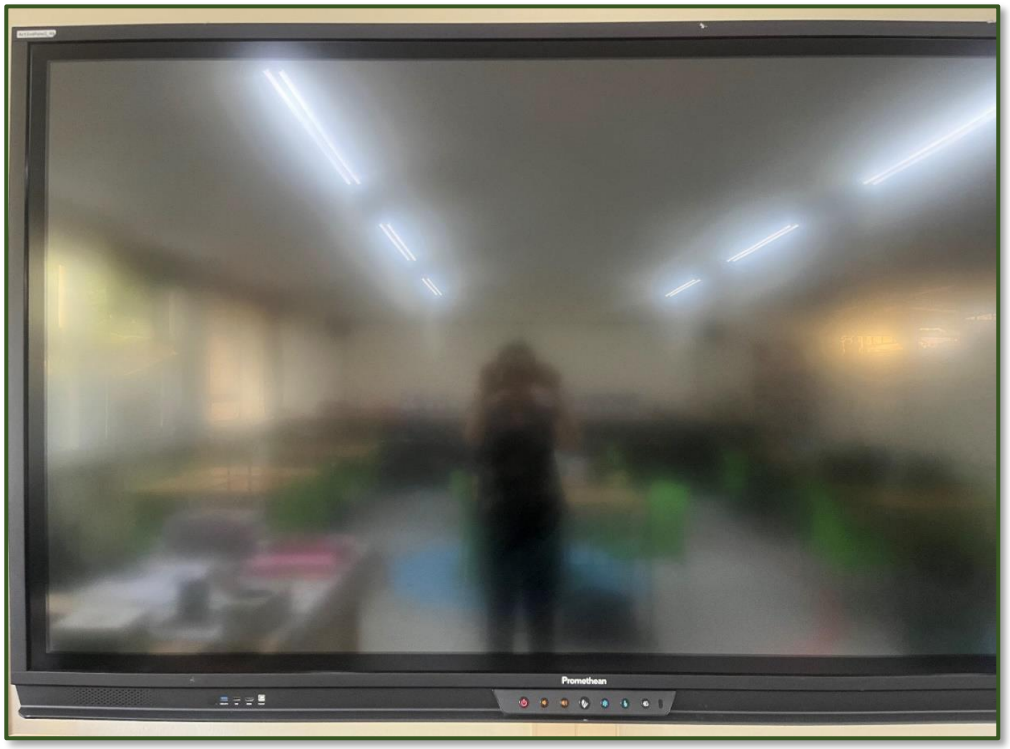


Figure 4.1: A Promethean board

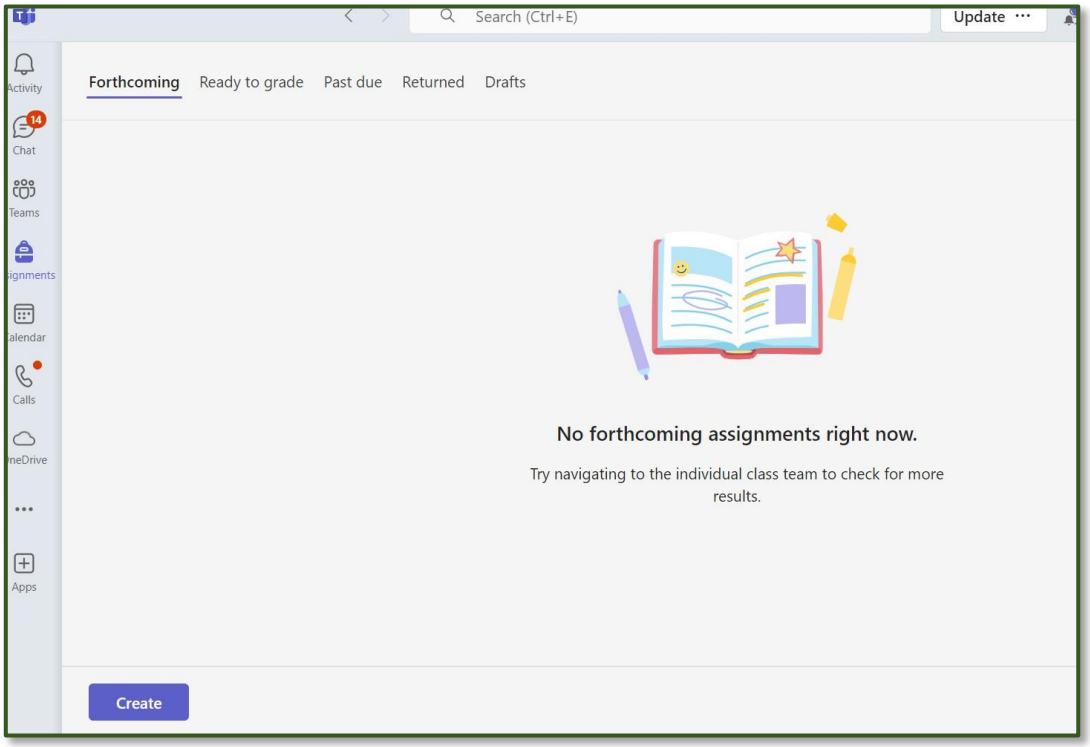


Figure 4.2: A snapshot of Microsoft Teams which can be used for grading, messaging and other administrative tasks

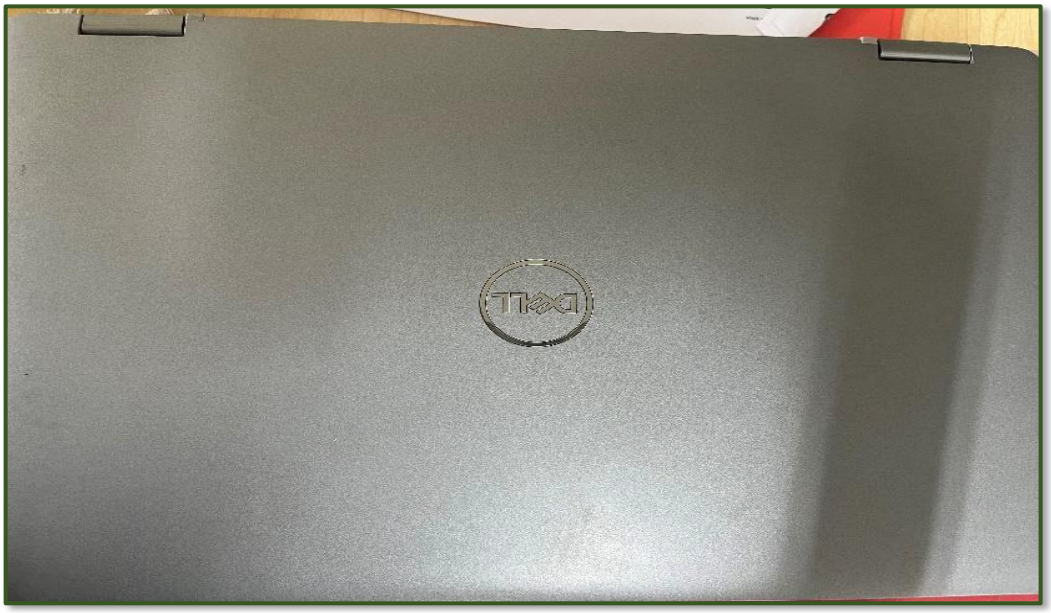


Figure 4.3: Schools often provide educators with advanced laptops such as this Dell laptop used by a participant

A subset of participants also reported using smartphones, tablets, or iPads to access

information outside of school. These portable devices are particularly advantageous for tasks that require mobility, such as accessing educational resources, recording marks, and providing learner feedback (Yumnam, 2021). The smaller size and portability of these devices make them convenient for use in various contexts, supporting continuous access to ICT tools and resources (Yumnam, 2021).

All participants reported daily access to laptops, which serve as their primary tool for instructional and administrative tasks. These laptops facilitate access to educational software, communication platforms, and online resources, ensuring that ICT is an integral part of their daily routines.

However, only three participants indicated the use of complex smartboards in their classrooms. These smartboards are instrumental in sharing information, visuals, and videos from the internet, providing a dynamic and interactive learning environment (Vasallo & Warren, 2017). The utilisation of smartboards enhances the ability to present multimedia content seamlessly and engage students through interactive lessons.

It emerged from the study that ICT is readily available to all participants, primarily due to their access to laptops and reliable internet connections. This accessibility ensures that educators can integrate ICT into their teaching practices effectively. The following findings are supported by existing literature which states that ICT resources play a crucial role in enhancing teaching and learning environments by providing tools and platforms that facilitate interaction, engagement, and access to information (Baako & Abroampa, 2023). Furthermore, Vassallo and Warren (2017) highlights that there is a growing need for educators to use ICT in the digital world in which they live. The study further elaborates on the increasing use of ICT in schools and the role it plays in educational contexts.

4.4.1.2 Sub-theme 1.2: Frequency and extent of ICT integration in classroom routines

Whilst the extent to which ICT is utilised by each of the individual 15 participants varies, all 15 participants make use of ICT for classroom management practices. All 15 participants have access to ICT tools to some extent and are thus able to utilise these tools regularly. All participants use ICT tools on a weekly, if not daily, basis specifically for classroom management practices. The following excerpts are presented verbatim from the participants.

I use my Promethean board almost every day as I no longer use a whiteboard. I project work from my laptop onto the board and I can even write on the board and use it to solve maths sums. **(Participant SA3)**

I would say I cannot live without ICT tools. I am completely reliant on these tools daily to manage my classroom space. I use Microsoft tools like Excel to plan all of my lessons, record marks and keep track of parent information. **(Participant SA9)**

I open my laptop each and every day. This has become a habit. Even if it is to respond to just one email or check information on Microsoft Teams. **(Participant SA13)**

ICT has changed the way we as teachers work. Previously, I would complete very little work during the schools holidays. Now, I have access to everything I need on just one device. And I can complete my work any day, any time and any place. **(Participant SA2)**

Martinez-Alvarez *et al*. (2021) acknowledge the multiple benefits of ICT usage in the classroom and supports the aforementioned findings. This study highlights the increased usage of ICT in the classroom because of its multiple benefits for administrative tasks and curriculum enrichment.

Thus, in terms of a frequency scale, all of educators use ICT for classroom management practices at least once a week.

4.4.1.3 Sub-theme 1.3: Specific strategies for incorporating ICT into classroom management practices

Various strategies have been used by the participants to incorporate ICT into their classroom management practices as revealed from the data. The strategies incorporated include using ICT to enhance their curriculum, the usage of ICT for administrative and communicative tasks and the use of ICT to make lessons more interesting. The following verbatim excerpts from the participants discuss strategies for integrating ICT into classroom management practices.

I spend a lot of time putting together slideshows for my lessons. They are engaging and colourful and I include music sometimes. These slideshows help me manage my classroom because the learners are more quiet and settled when they have a presentation to follow and look at. I am also able to send these presentations to the learners on Microsoft Teams if they need to access them at home for study

purposes. These presentations take a while to make but I use them every year. **(Participant SA1)**

I set quizzes on Microsoft Forms and they are multiple choice questions. Microsoft Forms can mark this quiz for me and provides learners with their marks instantly (if I allow this). It also helps me manage my time. **(Participant SA3)**

I am very fortunate to work at a school where I have constant access to ICT tools and resources. There are many more ICT tools available to me as a teacher than there were in the past when I went to school. There is always internet and wifi access for free. I can go online at any time of the day when I am at school. I also live on the school grounds so I am able to access these resources after hours. **(Participant SA1)**

Mitchell *et al*. (2017) support these findings by elaborating on the multiple ways in which ICT can be integrated into the learning environment within the classroom. This research elaborates on the multiple benefits of ICT usage and highlights how ICT can enhance the existing curriculum. Thus, multiple ICT tools are used by educators for classroom management practices. Furthermore, these tools are used regularly by the educators, who are reliant on these tools for classroom management practices. Theme 2 will explore the educator's perspectives, attitudes, actual usage patterns and classroom management practices

4.4.2 Theme 2: Educators' perspectives, attitudes, actual usage patterns and classroom management practices

The research question which this theme addressed is 'How do Gauteng independent primary school educators' perceptions, attitudes, and actual usage patterns of ICT affect their classroom management practices?' This theme explores the perspectives and opinions of educators in terms of the use of ICT for classroom management practices. There were numerous differing views expressed by the various educators and whilst many of their comments had similarities; there are also notable differences in their opinions and perspectives. This theme is analysed across two categories, which are further elaborated in the sub-themes outlined below.

4.4.2.1 Sub-theme 2.1: Levels of educator satisfaction and confidence in the effective use of ICT

Overall, the overwhelming majority of participants expressed a positive attitude towards the use of ICT in their classroom management practices. The data revealed that educators are generally satisfied with ICT usage, finding it effective for enhancing their classroom management strategies.

One participant stated:

> *ICT has revolutionised the way I manage my classroom. It not only made my work more efficient, but it's also given me more confidence in handling various classroom situations.* **(Participant SA7)**

Another educator commented:

> *I enjoy using ICT tools because they streamline my administrative tasks and allow me to focus more on teaching and engaging with my students.* **(Participant SA6)**

Yumnam (2021) found that educators and students alike have a positive attitude towards ICT in the classroom. Moreover, the study found that ICT enhances critical thinking. Furthermore, schools that foster an environment of innovation and experimentation generally see more positive perceptions of ICT integration (Alnosiaan, 2018). In addition to this interview data, non-participant observations further support these sentiments.

For instance, during the review of submitted slideshow presentations and Excel mark sheets, it was evident that educators were utilising ICT tools effectively. The slideshows were well-organised, incorporating multimedia elements that enhanced student engagement. The Excel documents demonstrated a high level of proficiency, with educators using advanced features such as automated calculations and conditional formatting to manage student data efficiently.

These findings are consistent with existing literature, which highlights the positive impact of ICT on educators' satisfaction and confidence. A study by König *et al*. (2022) found that the effective use of ICT tools in education not only improves classroom management but also boosts educators' confidence in their teaching abilities.

However, it is important to note that while most educators in this study expressed satisfaction, a minority raised concerns about the potential challenges associated with

ICT use such as the costs involved in purchasing laptops and ICT devices. As highlighted by König *et al*. (2022), factors such as insufficient training and technical difficulties can hinder educators' ability to fully integrate ICT into their classroom practices. Nonetheless, the overall trend in this study aligns with the broader literature, which supports the notion that ICT has a predominantly positive effect on educators' satisfaction and confidence in classroom management.

4.4.2.2 Sub-theme 2.2: Personal experiences and insights

It is clear from the data collected that the educators' perceptions, attitudes and actual usage patterns of ICT affect their classroom management practices positively. This was revealed from the insights and experiences shared by the participants. See the participants' verbatim view below:

> *As I started using ICT more and more over the years, I became better able to manage my classroom because it helped me save time.* **(Participant SA1)**

> *I would say that I absolutely love using ICT and it has actually helped me enjoy teaching more. So, for example, when I have to plan a lesson at the last minute; I can do a slideshow or find an online video. It makes managing the classroom so much easier.* **(Participant SA11)**

> *The thing I love most about ICT is that its portable convenience that I can take anywhere. I can even plan lessons when I am away or in the comfort of my own home.* **(Participant SA 2)**

During the observations it further became evident that the teachers who use ICT tools often and have a positive attitude towards the ICT tools, manage their classrooms effectively with ICT as their crutch. They use ICT as a support for administrative tasks and use it for their lessons and communications with parents - all of which form part of classroom management practices. There is thus a positive correlation between the perception that the educator has of ICT and the impact it has on their classroom management practices.

Wu, Pan and Yuan (2017) concluded that educators have a very positive attitude towards ICT and enjoy the benefits that it offers in terms of classroom management. Furthermore, the study found that learners, too, benefit from an increased usage of ICT in education settings. There is limited understanding of how technology can assist educators in

underprivileged schools due to a lack of resources in these areas (Van Wyk *et al*., 2017). Furthermore, these educators have a more negative, sceptical attitude towards ICT because they lack the necessary knowledge regarding these tools (Van Wyk *et al*., 2017).

4.4.3 Theme 3: ICT as a support mechanism for educators

This theme explores how ICT is a valuable tool for educators. It can be used to support the educators in implementing classroom management practices. This theme relates to the research question: *How are Gauteng independent primary school educators using technology to support themselves as managers of the classroom?* The sub-themes observe ICT for instructional planning and preparation; ICT tools for facilitating communication with learners and parents; and ICT applications in administrational tasks. This theme is discussed under three sub-themes presented below.

4.4.3.1 Sub-theme 3.1: Utilisation of ICT for instructional planning and preparation

The findings of this study demonstrate that educators make extensive use of Microsoft tools. Teachers especially use Microsoft Excel to record results and comments for each learner. This enables the educators to manage several learners' information in one document. The educators also make use of this tool as a calculator that can establish learner percentages and automatically generate graphs to show learner percentages.

A participant said the following:

> *Microsoft Excel is a vital tool because I am not that way inclined. It enables me to manage percentages, marks and class averages in one document. This information is all used to help me assess learners in future assessments.* **(Participant SA11)**
>
> *I do not know what I would do without Microsoft Word and Microsoft PowerPoint. I have made each and every lesson using one of these tools for the last few years.* **(Participant SA4)**
>
> *I think that Microsoft Excel is the best and only way to track and record results over the semester. It is so important to record accurate and reliable data of learners and Excel does this.* **(Participant SA3)**
>
> *You cannot prepare any lesson without ICT- even if it is just doing research on a topic or typing out school notes. I am completely reliant on ICT for lesson prep.* **(Participant SA10)**

Thus, the educators use ICT tools for instructional tools and planning of lessons. It was also clear from the observations that the educators make worksheets and assessments using ICT tools. All assessments and worksheets are created using ICT and the educators do not write out anything for the lessons. In terms of the theoretical framework, the technology acceptance model (TAM) has been extensively used to explain how individuals come to accept and use new technologies. TAM posits that two primary factors - perceived usefulness (PU) and perceived ease of use (PEOU) - influence an individual's decision to adopt new technology (Davis, 1989). As noted in the aforementioned findings, the teachers enjoy the ease of use of ICT and acknowledge its many benefits in terms of classroom management practices. In terms of the actor-network theory (ANT), ANT highlights that technology is not merely a passive tool but an active participant in shaping and being shaped by various social and organisational factors. It has been applied in educational research to explore how technologies are adopted and integrated into teaching practices, and how these technologies interact with existing educational frameworks and stakeholders (Wiard, 2019). In applying this to the findings of the study, the educators adopt and use ICT for classroom management practices and to interact with existing frameworks such as curriculum management and innovation.

The next sub-theme delves into the ICT tools used to facilitate communication between stakeholders in the school.

4.4.3.2 Sub-theme 3.2: ICT tools for facilitating communication with students and parents

Excel can be used to organise the parents' information such as contact details. One educator uses Excel to record minutes during parent-teacher interviews. This enables the educator to arrange personal details and information in one document which can be protected by the passwords on her device. The participants are also able to use ICT tools to communicate directly with the learners. Participants use Microsoft Teams and Google Classroom to speak to the learners using a messenger tool. This enables the participants to send learners work that they have missed whilst they are absent.

The participants stated:

> *I use Excel to keep parent and caregivers' information in one document. Some learners have multiple caregivers and even tutors and au pairs that need to be kept*

in the loop. I use Excel to keep all of the contact details and information in one document. **(Participant SA5)**

I can use Microsoft Teams to send messages at any time in case of emergencies. If I need to reach my HoD after hours; I contact her using Teams. **(Participant SA3)**

I have some sort of device with me wherever I go. It needn't be a laptop. Sometimes I just have a cell phone. But I always have access to the internet and email so that I can talk to my colleagues or learners' parents whenever I need to. **(Participant SA2)**

There are a multitude of ICT tools that the participants rely on for communication purposes. The nature of these tools means that the participants are in constant communication with learners, their parents and their colleagues. Research shows that tools include cell phones, computers, laptops, video conferencing and an array of other tools and the multitude of communication options makes it easier for stakeholders within a school to communicate regularly and effectively (Martinez-Alvarez *et al.*, 2021).

4.4.3.3 Sub-theme 3.3: ICT applications in administrative and organisational tasks

ICT is used by the participants for student information systems (SIS) to manage student records, attendance, results, and timetables. Attendance tracking is automated through digital systems integrated with SIS within the schools. As previously stated, efficient communication among administrators, educators, learners, and parents is facilitated using email systems and applications. Document management by the participants involves digitising and managing administrative documents, policies, and procedures securely, utilising document management systems (e.g., Google Drive).

Participants stated:

Gone are the days of relying on rooms full of files for learners. I can now just record all information on my laptop and save it to the "school cloud" and access it whenever I need. So, information is never really lost and can always be accessed. **(Participant SA1)**

I only do my admin online. All information for reports and for formal assessments are on my device. Even if I write information in my diary during a meeting; I immediately record it on Microsoft Teams when I get the chance. **(Participant SA3)**

> *I have folders for everything on my laptop. All work is arranged into specific files. Like lesson planning, tests, contact details. Everything has its own digital file.* **(Participant SA7)**

> *It would be impossible to come up with a proper school timetable that adheres to the necessary times and break times and availability of teachers if it were not for computers.* **(Participant SA9)**

ICT thus serves an administrative and organisational function for the participants. The participants are reliant on ICT to aid them in organising and storing information effectively and safely. Computers and laptops are pivotal information and communication technology (ICT) resources in modern classrooms, significantly enhancing educators' ability to manage and facilitate learning. These devices streamline administrative tasks by allowing educators to efficiently handle attendance, grading, lesson planning, and communication with students, parents, and colleagues (Baako & Abroampa, 2023).

4.4.4 Theme 4: Challenges of ICT in classroom management

This section examines the downfalls aspects of utilising ICT for classroom management practices. The relevant research question in this regard is: *What are the challenges of using technology in classroom management from an educator's perspective*? There are numerous challenges as discussed by the participants.

4.4.4.1 Sub-theme 4.1: Challenges of using ICT

Various challenges arise with the use of ICT. Participants have highlighted several challenges and obstacles in the context of ICT usage in the classroom. The research question related to this theme is: *What are the challenges of using technology in classroom management from an educator's perspective?* The categories discussed observe technical issues and troubleshooting, insufficient training and professional development, financial constraints and balancing technology with traditional teaching methods.

4.4.4.2 Sub-theme 4.2. Technical issues and troubleshooting

Although participants appeared confident in the use of ICT tools, many do not possess the necessary skills to resolve technical issues. The reliance on ICT tools means that any technical malfunction can significantly disrupt classroom activities.

One participant elaborated on this concern:

> *If I have a technical issue during the school holidays and I cannot get help from an expert at the school; I cannot use my laptop at all. I can use the tools, but if there are technical glitches, I cannot fix them on my own.* **(Participant SA10)**
>
> *The problem with laptops and computers is that there are always different updates and constant changes. And then when the laptop glitches or breaks or updates, I need technical support.* **(Participant SA9)**
>
> *I once had a technical issue with my laptop and it broke and I lost all of my work because I did not save everything properly. The thing is that devices work brilliantly but when they break or if you make a mistake you can pretty much lose everything.* **(Participant SA3)**

This statement underscores the dependency on technical support. Educators often face complex technical problems that require specialised knowledge to resolve, such as software crashes, network connectivity issues, or hardware malfunctions. The lack of immediate technical support, especially during non-school hours, can impede the continuity of lesson planning and delivery. Additionally, even minor technical difficulties can cause significant delays and disruptions in the classroom, affecting the flow of lessons and student engagement.

Technical difficulties with devices in the education context has become a major problem and a source of frustration for learners and educators and can cause interruptions in teaching and learning process. If there is lack of technical assistance and no repair on it, teachers are not able to use the computer for temporarily (Ghavifekr & Rosdy, 2015).

4.4.4.3 Sub-theme 4.3: Insufficient training and professional development

Training and professional development are fundamental to the effective use of ICT in schools. Participants expressed a continuous need for education and training in this field due to the rapid pace of technological advancements. Many educators feel inadequately prepared to fully utilise the potential of ICT tools. They require ongoing professional development to stay current with new technologies and to integrate these tools effectively into their teaching practices.

Participants stated:

The only reason I am proficient in technology is because I have been taught and trained. **(Participant SA7)**

Yes, training is vital. I only really got into using technology when the school offered the training programs and proper courses on Microsoft. **(Participant SA2)**

I would say that the school needs to offer more training because I can do a lot with technology, but I am sure that there is so much more I could do if I was trained. **(Participant SA10)**

The lack of sufficient training programs means that educators might only be familiar with basic functionalities of the software and hardware they use. This limited knowledge can prevent them from exploring more advanced features that could further enhance their teaching methods. Furthermore, the absence of structured professional development opportunities can lead to varying levels of ICT proficiency among educators, resulting in inconsistent application of technology across different classrooms and subjects (Munje & Jita, 2020).

4.4.4.4 Sub-theme 4.4: Balancing digital and traditional teaching methods

Balancing digital and traditional teaching methods is another challenge faced by educators. While ICT offers numerous benefits, there is a need to strike a balance between technology-enhanced learning and conventional teaching practices. Educators must navigate the integration of digital tools without undermining the value of traditional instructional methods.

A participant supported this:

I do not like using my laptop during lessons. I need to stand and talk to the learners. And I ask them to close their devices. I use ICT all the time but there is still room for traditional teaching methods. I also like seeing parents face-to-face. I do not rely on online tools to speak to parents because there is no better communication than face-to-face communication. **(Participant SA9)**

One of the concerns is that an over-reliance on ICT might diminish students' basic skills such as handwriting, mental arithmetic, and face-to-face communication. There is also the risk that students might become passive recipients of information. **(Participant SA1)**

Strom (2021) cautions against an overreliance on technology, highlighting that an excessive focus on digital tools can lead to a passive learning experience. In such scenarios, learners might become more inclined to consume information passively rather than actively engaging with the content, educators, or their peers. This passive consumption can undermine critical thinking and analytical skills, which are often better developed through active participation and discourse (Strom, 2021). Moreover, the interpersonal skills that students build through face-to-face interactions and collaborative efforts may be diminished if technology becomes the predominant medium of instruction…

4.5 TRIANGULATION OF INTERVIEW DATA AND NON-PARTICICPANT OBSERVATION DATA

The observation data supported the interview data in multiple ways. It is clear from the data observed that the educators make extensive use of ICT tools for classroom management practices. It is also clear that the educators are reliant on these tools. This will be discussed with regard to the themes which observe ICT tools and practices in managing classrooms, educator perspectives, attitudes and usage patterns of ICT, ICT as a support mechanism for educators and the challenges that exist. The next theme will explore the ICT tools and practices in managing classrooms.

4.5.1 Theme 1: ICT tools and practices in managing classroom

The data collected supports the fact that educators make use of ICT on a regular basis. Digital attendance registers viewed demonstrate that the educators make use of ICT to manage attendance in the classroom. This is a vital management tool as it assists educators in ensuring that learners who are absent have caught up their work or provided medical certificates. The digital mark books demonstrate that the educators record results using ICT such as Excel. The mark books demonstrate that the educators are using Excel not only to record the results but to generate tables and graphs using the data collected. Records of communication between the educators and parents and learners demonstrates that the educators are using applications such as Microsoft Teams to stay in touch with parents and learners both during and after the school day. Attendance is recorded daily and learner results are also recorded regularly. Thus, the educators make use of ICT constantly.

4.5.2 Theme 2: Educators' perspectives, attitudes, actual usage patterns and classroom management practices

The data revealed an array of worksheets, slides and quizzes which demonstrates that the educators use ICT regularly in the school environment. It can be deduced that because the educators use ICT to this extent, the educators enjoy using ICT resources; and thus have a positive perspective towards ICT usage. Extensive data collected showed that all participants make use of ICT for learner registration and for learner mark books. Educators no longer make use of the traditional 'pen and paper' methods when collecting learner results after assessments or when taking a register. Data further revealed that both parent and learner information is recorded online using ICT. There is a lot of pivotal information stored in file rooms in the school but this information is also saved digitally, demonstrating a strong reliance on ICT.

4.5.3 Theme 3: ICT as a support mechanism for educators

ICT is clearly a time-saving tool used to support educators in managing their classroom spaces. Furthermore, data revealed that valuable ICT resources and training material can be stored and shared using ICT resources such as Microsoft Teams. This information can then be easily obtained and saved by all members of staff. Teachers can also access parent and learner information via one communication portal on the school cloud. Teachers also use ICT tools to communicate with parents before, during and after the school day.

4.5.4 Theme 4: Challenges of ICT in classroom management

Data revealed something quite significant: whilst all educators make use of ICT, it is apparent that they have a variety of skills and diverse abilities. Whilst some educators provided slideshows with music, visuals and links; others produced more basic presentations. A challenge for educators may be adapting and growing with the ever-changing technological demands in modern society. Furthermore, it is evident that different schools have varying access to ICT resources within the school. Different devices offer different applications and operate at different speeds. Thus, the different devices that educators have access to allow for educators to perform different tasks.

4.6 CHAPTER SUMMARY

This chapter explored the various themes and sub-themes that arose from the research conducted. The information provided by the participants offered in-depth insights into the use of ICT in the classroom, particularly concerning classroom management practices. Each individual participant provided their own perspectives and expressed varying positive and negative aspects of utilising ICT. It is evident that ICT is a dynamic and complex topic in the classroom context, as many differing views and insights were offered. There are multiple tools, applications, and devices available that can be used to implement management practices in the classroom. Chapter 5 will present and explain the themes that arose from the research.

CHAPTER 5: SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

The previous chapter focused on presenting and explaining the various themes that arose from the research. This chapter brings these themes and sub-themes to a conclusion. The chapter includes a brief reflection, a summary of research findings and includes the limitations and delimitations of the study. Conclusions are also drawn in this chapter and recommendations are made.

5.2 RETROSPECTIVE SUMMARY

My Master's journey has been an informative and enlightening one. As a working mother with two young children; I often had to work through the night or conduct research during school holidays. However, I was determined to complete my studies as I have a passion for education.

Before completing my Masters research; I was unsure about my future as an educator. I have taught at multiple schools and was struggling to find my place in the school's organogram. However, after completing my thesis I have found my purpose in the school management space. I believe now, more than ever, that educators are managers in their own right. Even if an educator does not have a title, such as subject head, the educator has to apply management skills in their own classroom management space. Educators have to manage classrooms full of learners, as well as parents and other stakeholders. I am filled with immense pride knowing that I am a manager and educator.

Multiple lessons were learnt in terms of ICT as a classroom management tool. ICT is used as a valuable resource and, whilst the educators use these resources differently, they all make use of ICT to some degree. Furthermore, the skills and abilities of each individual educator vary, and this impacts the quality of ICT resources, such as slideshows and documents, produced. The educators also have different access to hardware and some laptops and devices enable some educators to do more advanced tasks than others. All educators rely on ICT to record pertinent data such as absenteeism and learner results and are thus reliant on ICT for organisational and managerial matters within their classroom spaces. It is advised that all educators embrace ICT as a

classroom management tool as it has multiple management benefits. Furthermore, technology is constantly evolving, and it is advised that educators stay up to date with the latest technology and ICT tools.

My Master's journey also taught me valuable lessons in research. My supervisor instilled in me lessons of patience. I learnt that I cannot rely on a small number of authors or resources and that it is essential to use as many sources as possible. Overreliance on one or two authors takes away from the credibility of the information that is being researched. My supervisor also gave me a greater sense of confidence in myself as she took the time to speak to me before my defence in 2023. She worked through my presentation with me and helped me to calm down.

5.3 SUMMARY OF FINDINGS

In this section, I am presenting a summary of the key findings. As stated in the first chapter, this research was focused on Utilising Information and Communication Technology in classroom management practices in Gauteng Independent Primary Schools. The results are presented below by answering each sub-question.

5.3.1 What are the technology tools and practices used by the Gauteng independent primary schools' educators in managing their classrooms?

The research findings underscored the diverse array of ICT tools utilised by the participants, reflecting a spectrum of Microsoft products, applications, and other platforms tailored for online assessments, virtual meetings, and classroom management tasks. Each participant demonstrated unique access levels and approaches to integrating ICT into their educational practices. Despite these variations, all participants leveraged ICT to enhance classroom management efficiency to some extent.

Microsoft's suite of tools, including applications like Microsoft Teams for online meetings and collaborative workspaces, and software such as Microsoft Forms for conducting online assessments, emerged prominently in the participants' practices. These tools facilitated streamlined communication, real-time feedback, and efficient data management, essential for adapting to contemporary educational demands.

Despite varying degrees of technological knowledge and usage, all participants demonstrated a commitment to leveraging ICT to become more efficient managers in their classroom space. Whether through enhancing communication with students and

parents via digital platforms or utilising educational software for personalised learning experiences, ICT played a pivotal role in supporting instructional effectiveness and administrative efficiency.

5.3.2 How do Gauteng independent primary school educators' perceptions, attitudes, and actual usage patterns of ICT affect their classroom management practices?

Gauteng independent primary school educators' perceptions, attitudes, and actual usage patterns of ICT significantly influence their classroom management practices in several ways. Firstly, educators' perceptions of ICT as facilitative tools for enhancing teaching effectiveness and administrative efficiency shape their willingness to adopt and integrate these technologies into their daily routines. Positive attitudes towards ICT often correlate with proactive exploration and implementation of digital tools such as Microsoft Teams for online meetings, Google Classroom for assignment management, and interactive whiteboard software for engaging lesson delivery.

Actual usage patterns reflect how educators incorporate ICT into their classroom management strategies. For instance, some educators utilise digital attendance systems to streamline administrative tasks, ensuring accurate record-keeping and compliance with school policies. Others leverage online assessment tools like Microsoft Forms for conducting quizzes and assignments, providing timely feedback to students and facilitating data-driven instructional decisions. These usage patterns highlight educators' adaptability in embracing technology to enhance student engagement, personalised learning experiences, and overall instructional efficiency.

Perceptions and attitudes towards ICT also influence educators' approaches to collaboration and communication within the educational community. Platforms such as Google Drive and Microsoft OneDrive enable seamless document sharing and collaborative work among educators, fostering a culture of teamwork and resource sharing. Moreover, educators' attitudes towards ICT's role in promoting parental involvement and communication influence practices such as using email newsletters or digital platforms to keep parents informed about student progress and school activities.

Gauteng independent primary school educators use technology to enhance classroom management by streamlining administrative tasks such as tracking student performance. Interactive platforms like smartboards and tablets increase student engagement.

Educators also use communication tools to stay connected with parents and data analytics to make informed decisions, allowing them to manage their classrooms in an efficient, time-saving manner.

5.3.3 How are Gauteng independent primary school educators using technology to support themselves as managers of the classroom?

Educators in Gauteng's independent primary schools are making use of technology to effectively implement various classroom management practices. They use digital tools for lesson planning, keeping a register, and contacting stakeholders, making it easier to organise lessons and ensure consistency. Applications like Microsoft Teams allow educators to enhance overall organisation by streamlining communication and administration tasks. Educators can provide instant results to learners and provide real-time feedback, promoting a constructive learning environment and reinforcing classroom rules. Furthermore, digital tools such as Microsoft Excel, enable educators to track student progress efficiently, offering immediate feedback on assignments and facilitating teaching approaches. These platforms make it simpler to identify learning gaps and address individual learners' needs, ensuring a more personalised learning experience. Communication applications, especially those integrated with learning management systems, allow educators to stay connected with parents and learners outside classroom hours, fostering a collaborative approach to managing the classroom and supporting learner engagement.

5.3.4 What are the challenges of using technology in classroom management from an educator’s perspective?

It can be concluded that there are multiple benefits and challenges involved in using technology for classroom management practices from an educator’s perspective. The notable benefits include more effective communication with parents and learners. ICT tools can be used to record all learner and parent contact information in one document. Another notable communication asset is the fact that educators have multiple communication options. Educators can communicate using email or online meeting tools. These ICT tools allow educators to manage their classroom more effectively. Participants highlighted that ICT helps them organise themselves in the classroom space and ICT offers a more efficient method of storing data safely.

While ICT benefits classroom management, numerous challenges arise from its use. The primary research question focuses on identifying these challenges from an educator's perspective. Technical issues and troubleshooting are significant concerns, as educators often lack the skills to resolve malfunctions, leading to disruptions in classroom activities. This dependency on technical support, especially during non-school hours, hampers lesson continuity. Insufficient training and professional development further complicate ICT integration, with many educators feeling unprepared to use advanced features and requiring ongoing education to keep pace with technological advancements. Financial constraints also impact ICT implementation as disparities in resources among schools result in unequal access to technology, affecting both students and educators. This financial disparity hinders the ability to invest in and maintain up-to-date ICT infrastructure, leading to inconsistent application across different classrooms and subjects.

5.4 INSIGHT GAINED THROUGH THE THEORETICAL FRAMEWORKS - TECHNOLOGY ACCEPTANCE MODEL (TAM) AND ACTOR-NETWORK THEORY (ANT)

In the context of classroom management, the TAM was used to explore how educators accept and integrate ICT into their practices. The model includes key components such as perceived usefulness (PU) and it was used to examine educators' perceptions of the utility of ICT in enhancing classroom processes, and perceived ease of use (PEOU), gauging the ease with which educators believed they could adopt and use ICT for classroom management. TAM was applied to investigate how these perceptions influence educators' attitudes, intentions, and actual usage patterns of ICT within the classroom.

The actor-network theory (ANT) highlighted the role of networks and relationships in shaping learning and knowledge production. In the classroom, educators used digital platforms to create learning networks connecting to learners, their parents and other educators. ANT was relevant to the research problem as it highlighted the role of networks in shaping the use of ICT in classroom management and leadership. ANT also observed the role of human and non-human aspects in shaping the classroom environment, offering a holistic understanding of the complex interactions between educators, learners, their parents, and technology.

The insights gained from the theoretical frameworks can be used in real-world contexts to develop policy surrounding ICT usage for classroom management practices. In terms of TAM, the concept of PU can be used to motivate future policies with regards to ICT. The fact that the educators in the study all believe that ICT is useful in terms of classroom management practices can be used to motivate ICT policies which enable more schools to have access to ICT tools. Policy development is further needed in this area as technology is an ever-changing tool that requires constant training and development.

In terms of the ANT, ICT creates an intricate network of communication between educators, learners and their parents. This communications network is made easier because of ICT tools such as Microsoft Teams, which enable all stakeholders to communicate before, during and after the school day. ICT enables educators and learners to share and save all information in such a way that it can be easily and readily available for all stakeholders in the school environment.

The findings from the study offer further insights and contribute to the TAM by highlighting the fact that PU is dependent on access to technology and is dependent on the type of technology at the disposal of the educator. Thus, this model can be expanded to consider how PU can be influenced by access to technology The results chapter highlights the connection between Actor-Network Theory (ANT) and the Technology Acceptance Model (TAM) in showing how ICT is used for classroom management in independent primary schools. ANT focuses on how people and technology interact, while TAM explains how teachers decide to use ICT based on its usefulness and ease of use. For example, the findings show that educators use ICT for tasks like taking attendance and delivering lessons because they find it helpful and time-saving. ANT also shows that support from IT teams and training workshops plays a big role in helping teachers feel confident using these tools. Together, these ideas explain how ICT adoption is influenced by both the benefits educators see and the support they receive, making it easier for them to use ICT to improve their classroom management practices.

5.5 SIGNIFICANCE OF THE STUDY

The study is significant primarily because of the technological environment in which we live. ICT is a topical discussion that impacts educators throughout the world. The findings from this study show that ICT is a significant and valuable tool in terms of classroom management practices. It enables educators to improve their organisational and communication skills within the classroom. Educators in the context of this study are able

to keep track of learner attendance and learner results using ICT tools. Vital data pertaining to learners, educators and other stakeholders in the school can be reliably stored and saved using ICT tools in the school.

Furthermore, this study highlighted a need to empower educators with the necessary skills to use ICT tools. Educators need to keep up-to-date with the ever-changing technological tools that are available in the digital environment. It is also significant to note that teachers are managers within their classroom spaces and they need the necessary ICT tools to manage their classroom.

5.6 LIMITATIONS OF THE STUDY

This study was limited to a small group of independent primary school educators in Gauteng, which restricted my ability to generalise findings to a broader South African population.

I had to complete the research within a 12-month period. This limited time frame restricted my ability to conduct long-term observations or follow-up studies that could provide more detailed insights into the challenges and solutions associated with using ICT in classroom management practices. My own experiences with classroom management and the perspectives of the participants may have introduced biases. I acknowledged these biases and employed strategies to mitigate their impact, such as incorporating multiple viewpoints.

5.7 DELIMITATIONS OF THE STUDY

I focused on 15 independent primary school educators within the Gauteng region. This deliberate choice narrows the scope of my research to a specific group, allowing for a more detailed and context-specific analysis. However, it also means that my findings are particularly relevant to this demographic and may not be directly applicable to educators in different regions or educational levels.

The research centres on the use of specific ICT tools, including Microsoft Teams, Microsoft Excel, and Google Drive, within an educational context. By concentrating on these tools, I aimed to provide a thorough understanding of their challenges and benefits. However, this focus also means that my findings may not apply to other ICT tools or technologies used in different educational settings.

5.8 CONCLUSION

The aim of this study was to explore the usage of ICT by educators to enhance their classroom management practices. My focus was exploring the specific ICT tools used by educators and how they perceive these tools in the context of classroom management practices. The main finding of the study was that ICT is a valuable resource which can improve the classroom management practices of educators. The findings show that there are also downfalls in terms of the use of ICT for classroom management practices and these include a lack of training and resources in certain areas. The focus of the study relied on the use of ICT. The participating educators all had access to ICT resources in their respective schools and the overwhelming majority of the participants expressed an appreciation for ICT tools, which are a valuable resource in the context of classroom management practices.

5.9 RECOMMENDATIONS

The following recommendations are made in terms of future research and advice to practitioners and policy makers- on the topic of ICT as a tool for classroom management practices.

5.9.1 Recommendation to practitioners

The study found that educators need training and assistance in using these complex ICT tools. It would be beneficial for universities to incorporate ICT into the education curriculum so that educators can be exposed to these tools during their studies. It can be overwhelming for a novice educator to adapt to a new teaching environment; adding the complexities of ICT can be overwhelming for educators in their first year of teaching.

5.9.2 Recommendations to policy makers

The Department of Basic Education should consider providing funding and resources to schools to enable them to use ICT tools for classroom management practices. It is clear from the research findings that ICT is a useful tool in the context of the classroom and not all schools have access to the necessary ICT tools to effectively manage classrooms. All schools in South Africa should have access to these resources so that classroom management practices can be improved throughout the country.

5.9.3 Recommendations for future research

Whilst it is clear from the study that ICT is a valuable resource which aids classroom management practices; the research was conducted at independent primary schools in Gauteng. Future studies would benefit from focusing on other provinces and regions in South Africa to ensure that findings can be applied to all South Africa schools.

The study clearly shows that the participating educators have a positive view in respect of ICT but it would be beneficial to research the views of educators who do not have daily access to these resources. Many South African schools do not have internet access (Van Wyk *et al*., 2017) and it would be useful to explore the perceptions of educators who teach in these contexts.

Another recommendation is to conduct longitudinal studies that examine the long- term impact of ICT on classroom management practices. These studies should track educators and their use of ICT over an extended period, allowing researchers to observe changes and developments in their practices, skills, and attitudes towards technology. Longitudinal research can provide deeper insights into the sustainability and evolution of ICT integration, highlighting factors that contribute to its success or failure over time. Additionally, it would allow for the assessment of the long-term effects of ICT on student engagement, behaviour, and learning outcomes.

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APPENDIX A: APPROVAL FROM GAUTENG DEPARTMENT OF EDUCATION TO CONDUCT RESEACH

GAUTENG PROVINCE
Department: Education
REPUBLIC OF SOUTH AFRICA

8/4/4/1/2

GDE RESEARCH APPROVAL LETTER

Date:	**08 February 2024**
Validity of Research Approval:	**08 February 2024– 30 September 2024** **2024/586**
Name of Researcher:	**Bakos P**
Address of Researcher:	**51 Cromantie Road**
	Hurlingham
Telephone Number:	**067 426 5930**
Email address:	**Pascaletmichael1@gmail.com**
Research Topic:	**Utilising Information Communication Technology in classroom management practices in Gauteng independent primary schools**
Name of University:	**UP**
Type of qualification	**Masters**
Number and type of schools:	**Secondary Schools**
District/s/HO	**Gauteng North**

Re: Approval in Respect of Request to Conduct Research

This letter serves to indicate that approval is hereby granted to the above-mentioned researcher to proceed with research in respect of the study indicated above. The onus rests with the researcher to negotiate appropriate and relevant time schedules with the school/s and/or offices involved to conduct the research. A separate copy of this letter must be presented to both the School (both Principal and SGB) and the District/Head Office Senior Manager confirming that permission has been granted for the research to be conducted.

08/02/2024

The following conditions apply to GDE research. The researcher may proceed with the above study subject to the conditions listed below being met. Approval may be withdrawn should any of the conditions listed below be flouted:

Office of the Director: Education Research and Knowledge Management
7th Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011) 355 0488
Email: Faith.Tshabalala@gauteng.gov.za
Website: www.education.gpg.gov.za

1. Letter that would indicate :that the said researcherls has/have been granted permission from .the Gauteng D0partment of Educ;ation to conduct the research study.
2. The District/Head OffJce Senior Manager/s must be approached separately, and in writing, for permission to involve District/Head Office Offfcials in the project.
3. **Because** of the relaxation of COVID 19 regufatlons researchers can collect ,data online, telephonically, physically access schools or may make arrangements for Zoom with the school Principal. Requests for such a"angements should be submitted to the GDE **Education Research and Knowledge Management directorate.**
4. **The Researchers are advised to wear a mask at all times, Socia/ distance at all times, Provide a vaccination certificate or negative COVI0.19 test, not older than 12 hours, and Sanitise fr:equently.**
5. A copy of this letter must be forwarded to the school principal and the chairperson of the School Governing Body (SGB) that would Indicate that the researcherls have been granted permission from the Gauteng Department of Education to conduct the research study.
6. A letter I document that outline the purpose of the res,earch and the anticipated outcomes of such research must be made available to the principals, SGBs and District/Head Office Stmlor Managers of the schools and districts/offices concerned, respectively.
7. The Researcher will make eve,y effort obtain the goodwill and co-operation of alf the GD.E officials, principals, and chairpersons of the SGBs, teachers and learners involved. Persons who offer their co-operatlon wilf not reC(j,iVe additional remuneration from the .Department while those that opt not to participate will not be penalised In any way.
8. Research may only be conducted after school hours so that the normal school programme is not interrupted. The Principal (if at a school) and/or Dfrector (if at a district/Mad office) must be ,consulted about an .appropriate time when the researcher/s may ca,ry out their research at the sites that they manage.
9. Research may only commence from the second week of February and must be concluded before the beginning of the last quarter of the academic year. If incomplete, an amended Research Approval Jetter may be requested to conduct research In the following y,ear.
10. Items 6 and 7 will not apply to .any research effort being undertaken on behalf of the GOE. Such research will have been commissioned and be paid for by the Gauteng Department of Education.
11. It is the researcher's responsibllfty to obtain written parental consent of afl learners .that are ,expected to participate In the study.
12. The researcher is responsible for supplying and utilising his/her own research resources, such as stationery, photocopies, transport; faxes and telephones and should not depend on the goodwill ofthe institutions and/or the offices visited for supplying such resources.
13. The names of the GDE officials, schools, principals, parents, teachers and learners that partioipate in the study may not appear in the research report without the written consent of each ,of these individuals and/or organisations.
14. On completion of the study the researcher/s must supply the Director: Knowledge Management & Research with one Hard Cover bound and an electronic copy of the research.
15. The researcher may be 0xpected to provide short presentations on the purpose, flndfngs and recommendations of his/her research to both GOE officials and the schools concerned.
16. Shoufd the researcher have been Involved wffh research at a school and/or a district/head office level, the Director concerned must also be supplied with a brief summary of /he purpose, findings and recommendations of the research study.

The Gauteng Department of Education wishes you well in this important undertaking and looks fonvard to examining the findings of your research study.

Kind re ards

.....

Dr. ni Mukatuni

Acting S: Education Research and Knowledge Management

DATE: .....0. \W.:M-.....

2

Making education a societal priority

Office of the Director: Education Research and Knowledge Management
7[111]Floor, 17 Simmonds Street, Johannesburg, 2001
Tel: (011)3550488
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Website: www.education.gpg.gov.za

APPENDIX B: LETTER TO SCHOOL PRINCIPALS TO CONDUCT RESEARCH

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Education

Mr/Mrs_____

Dear Sir/Madam

INVITATION TO PARTICIPATE IN RESEARCH PROJECT

My name is Pascale Bakos, and I am a masters student at the University of Pretoria. The title of my research study is: Utilising Information Communication Technology in Classroom Management Practices in Gauteng Independent Primary Schools. The purpose of this study is to establish how ICT can be used to improve the classroom management practices of teachers. I would like to invite you and your school to become part of this research project. Kindly allow me to explain the scope and role of your participation, should you decide to participate. I intend to gather the information I require for this research project in the following manner:

Proposed data collection schedule:

Date	Activity	Duration	Venue
2nd week of June 2024	Semi-structured interviews	30 minutes per participant	Selected independent school.
3rd week of June 2024	Observation of the use of ICT in the classroom.	1.5 hours	Selected independent school.

To this letter, is attached a copy of the semi-structured interview schedule to be used during the interview processes for your information.

The aim of this research project is not to pass judgement on availability and use of ICT in your school, but rather to acquire new and insightful information on this topic. I would like to emphasise that your participation and that of your centre in this research project is entirely voluntary and that you are free to withdraw from the study at any time without being disadvantaged in any way.

Please be assured that the information obtained from this study will be treated as strictly confidential. In addition, the name of your school and the names of the participants will not be mentioned or be identified by anyone during the research process or in the final research report.

At the end of the project, you will be given a copy of the research report which will reflect the findings and recommendations related to the topic. This research study presents a unique opportunity for you to become involved in the process of research aimed at exploring and improving the use of ICT in the South African education system.

If you choose to participate in the project, kindly complete the attached consent form.

I look forward to receiving your positive response.

Yours faithfully

_____
Researcher: Pascale Bakos

_____
Supervisor: Dr. Adebunmi Y. Aina

APPENDIX C: LETTER TO PARTICIPANTS (EDUCATORS) / CONSENT FORM

CONSENT FORM

Voluntary participation in Doctoral degree research project – University of Pretoria

I, _____, school head/practitioner of _____, situated at_____
agree to participate in this research project.

I understand that my participation and that of my school's is dependent on permission granted by the Gauteng Department of Education to conduct this research study.

I affirm that I understand the aim, purpose, and methods of data collection of this study and that I am at liberty to withdraw my participation at any stage of the research project -as explained to me by Mrs Pascale Bakos, the student researcher.

_____ _____

Respondent's name and signature Date

APPENDIX D: SEMI-STRUCTURED INTERVIEW SCHEDULE

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA
Faculty of Education

Semi-structured Interview Schedule for ECD Practitioners

SECTION A: Demographics

1. Age?
2. Gender?
3. Highest qualification?
4. Position at the school?
5. Number of years of experience in teaching?
6. Years of experience at respective school?
7. Years of school's existence?
8. Number of Children at school?
9. User fee per child?
10. Number of staff members at school?
11. Location of school?

SECTION B: ICT Questions

INTERVIEW QUESTION 1: How do you currently use Information and Communication technology (ICT) as a leader or manager in your current role?

INTERVIEW QUESTION 2: What downfalls or challenges have you experienced when using ICT to enhance your classroom or school management and leadership?

INTERVIEW QUESTION 3: How do you perceive the impact of ICT on your leadership and management abilities?

INTERVIEW QUESTION 4: Can you share an example or many examples on how ICT has assisted you as a leader and manager?

INTERVIEW QUESTION 5: What specific resources do you make use of in terms of ICT?

INTERVIEW QUESTION 6: Has the school where you work offered you any ICT training?

INTERVIEW QUESTION 7: How do you evaluate the effectiveness of ICT in improving your leadership and management skills?

INTERVIEW QUESTION 8: Which specific ICT programmes or applications do you find most useful in your classroom as an educator?

INTERVIEW QUESTION 9: Which specific ICT programmes have helped you lead outside of the classroom in administrative or managerial tasks such as report writing?

INTERVIEW QUESTION 10: Does the school where you work have access to ICT resources that enable you to use ICT as an effective leader and manager?