Beliefs and attitudes of school management about the implementation of Information and Communication Technology in schools

by

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ABSTRACT

Beliefs and attitudes of school management about the implementation of Information and Communication Technology in schools

Without the support of school leaders, particularly the school management team (SMT), the educational potential of information and communications technology may not be realised. SMT's need to assume a major responsibility for initiating and implementing school change through the use of information and communications technology and can facilitate complex decisions to integrate it into teaching and learning. Utilising the 'theory of action' as a theoretical framework this qualitative case study investigates the perceived beliefs and attitudes of SMTs regarding ICT implementation at school. Furthermore this study explores the perceived necessary provisions that have to be in place to realise the perceived attitudes and vision of the SMTs.

The findings of this study suggest that school management has significant and consistent espoused theories about ICT implementation and practice in schools. First, the majority of school managers advocate that ICT is indispensable for teaching and learning, as it enhances the quality of pedagogical practices. Second, they espoused that ICT in teaching and learning should be mandatory practice. Third, majority of school managers were adamant that teachers and school managers should be ICT literate. Fourth, school managers believed that ICT implementation should be a collaborative process. Fifth, school management's vision for ICT should be aligned with the school's vision for ICT. Sixth, SMT's believe that ICT should be an integral component of the curriculum and policies. The study concludes that the perceived espoused beliefs, attitudes and visions of SMTs could establish the general climate for ICT use within a school.

KEYWORDS

Information and communication technology

School management

Beliefs

Attitudes

Practice

Education

Teaching and learning

Leadership

Theory of action

DEDICATION

This mini-dissertation is dedicated to my parents, Jaco and Marlise Botha for their unconditional love, endless encouragement and abundant prayers in difficult times. Thank you for always believing in me and instilling in me the values to be diligent and to persevere. You are my inspiration and my pillars of strength.

To my late grandmother, Hettie Palm, who took a keen interest in my personal well-being and had confidence in me to complete my studies.

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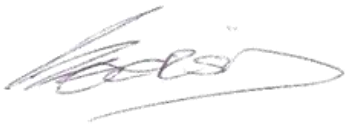

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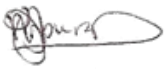

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LIST OF ACRONYMS AND ABBREVIATIONS

Acronyms and abbreviations	Meaning
CAPS	Curriculum and Assessment Policy Statement
DBE	Department of Basic Education
DoE	Department of Education
GDE	Gauteng Department of Education
GOL	Gauteng online
GPG	Gauteng Provincial Government
HOD	Head of Department
ICT	Information and communication technology
SMT	School Management Team

CHAPTER 1

Orientation to the study

1.1 Introduction

Our world is dominated by the ubiquity of Information and Communication Technology (ICT) and it has had a noticeable impact on our daily lives. As a result it has become an integral part and vital feature of this modern society. More specifically, Information and Communication Technologies (ICTs) have become so important and valued in our society, that it dictates the way we communicate, socialise, organise, plan, interact, behave, work and live. Thus, ICT affects all spheres of our lives and has become an indispensable tool to the functioning of modern society (Anderson, 2010). Subsequently there seems to be a growing need for ICT within the contemporary education environment. Literature on the implementation of ICT in general shows that for the last two decades the landmark of the educational scene has been the global adoption and integration of ICT in education (Albirini, 2006; Bingimlas, 2009; Drent & Meellissen, 2008; Pelgrum, 2001; Watson, 2006; Yuen, Law & Wong, 2003).

There has been extensive research in the integration and use of ICT in education and evidence seems to suggest that many countries praise the integration of ICT into schools as a necessity and as a result there have been widespread intentions and efforts by governments and educational institutions to make ICT a reality in schools (Demetriadis, Barbas, Molohides, Palaigeorgiou, Psillos, Vlahavas, Tsoukalas & Pombortsis, 2003). The ongoing and unprecedented development of *infusing* ICT into schools, driven by the belief that ICT can play an important part in reforming education and advancing educational goals, has placed tremendous pressure on principals and the school management team to address reform, exploit the prominence of ICT and to make it a priority in schools (Felton, 2006; Wong, Li, Choi & Lee, 2008).

This chapter firstly presents the orientation to the study, with a discussion of the background context and rationale of the study. Secondly, a description of the research problem and research questions is provided, followed by the brief clarification of concepts used in the study. Subsequently, the limitations and scope of the study, as well

as the ethical considerations of the study are briefly mentioned. The chapter concludes with the overview of the subsequent chapters and a summary.

1.2 Background context

ICT has become a core aspect of education and many countries value and consider it to be a priority and just as important as reading, writing and numeracy (Lundall & Howell, 2000; Pita, 2010; Ward, 2003). One of the most commonly cited reasons for using ICT in the classroom is its' ability to better prepare learners for the future, as more employers today demand that graduating students entering the workforce are equipped with ICT skills (Anderson, 2010; Tinio, 2003). ICT is believed to be an agent of change in education and has the potential to better prepare learners for the increasing technology–saturated work environment (Howie, Muller & Paterson, 2005). The potential benefit of this is that ICT can be used in teaching and learning to break down barriers such as learning disabilities, communication and language barriers and developmental difficulties (Adam & Tatnall, 2010). With ICT, education can happen whenever and wherever, potentially providing a solution to overcrowded classrooms and accessibility of resources (Karolia, 2013). If ICT is correctly integrated, utilised and managed in schools, it can make education interactive, stimulating and exciting, which offers learners and teachers a unique educational experience (Condie & Munro, 2007; Howie et al., 2005). Therefore countries that fail to acknowledge the impact of ICT on schools today, are missing out on a unique opportunity to improve their education systems or be globally relevant and competitive (Anderson, 2010; Hawkins, 2005; Pita, 2010).

Realising this, governments around the world have been focussed on strategies to improve the quality of education and are investing considerably in terms of money, expertise, resources and research to implement and integrate technology into education (Hawkins, 2005; Tinio, 2003). According to Kozma and Anderson (2002) and Yuen et al. (2003), many countries have realised the significant role that ICT could have in improving their education systems and has set national goals and policies in place to achieve these goals. It is expected that these efforts and initiatives will cultivate the important and necessary educational reform that ICT promises. Therefore developed

countries such as Hong Kong, Singapore, USA, Denmark, Japan, Finland, Netherlands, Portugal and Spain have all drawn up plans and launched educational policies and initiatives for implementing ICT in schools (Wong et. al, 2008). Recent developments across the world have moved beyond the idea of teaching and learning *about* ICT and have been focussed on the notion of teaching and learning *with or through* ICT (Wilson-Strydom & Thomson, 2005). As explained by Wilson-Strydom and Thomson (2005), the concept "teaching and learning about ICT" refers to the idea of teaching and learning ICT skills, where ICT tools such as the computer is used to merely represent information. By contrast, the concept of "teaching and learning through or with ICT" refers to using ICT to construct or generate new information and knowledge (Wilson-Strydom & Thomson, 2005). Therefore the focus is on learning with ICT and not the mere use of ICT in schools (Tondeur, Van Braak & Valcke, 2007). In light of this, countries such as the United Kingdom and Canada revisited their ICT curriculum to favour a more integrated approach across the curriculum and as a result ICT competencies have been included in the formal national curriculum (Tondeur, Van Keer, Van Braak & Valcke, 2008; Van Braak, Tondeur & Valcke, 2004).

One of the prevalent issues in the use of ICT in education is the considerable disparities between developed and developing countries (Jhurree, 2005). In comparison to the level of ICT integration in developed countries, ICT integration in developing countries has not yet permeated to a great extent due to socio-economic circumstances (Nawaz & Kundi, 2010). In relation to this, the use of ICT resources, such as computers and the internet, is still in its infancy stage in developing countries (Tinio, 2003). Given the wide disparities in access to ICT between developed and developing countries, means that the implementation and integration of ICT in education are at different levels and this raises serious concerns. If these issues are not addressed it can widen the gap even further between countries and schools (Tinio, 2003; Yuen, Ki, Li & Lee, 1999). If developing countries, like South Africa does not become major role players in ICT, they will not be part of the information society and will not be able to be globally competitive, leaving them faced with the reality of being left behind (Herselman, 2003). Ultimately, developing countries can no longer afford to stay passive in integrating ICT into education. Therefore most developing countries have been making all out efforts to

gain some level of digital literacy in attempt to redress inequalities and bridge the digital divide gap (Nawaz & Kundi, 2010). Some of these efforts include developing a national ICT policy, deciding on a digital literacy curriculum, providing schools with resources and training teachers and principals among others (Nawaz & Kundi, 2010). Furthermore, Nawaz and Kundi (2010) report that developing countries like Pakistan are also entering into 'international and national' partnerships to capitalise on global ICT-resources.

Both developing and developed countries are motivated by the prospect of greater, economical, social, technological and educational gain, that ICT integration into schools promises. The indispensability of digital literacy for developing countries emanates from the ability of ICT to empower people and in doing so it is believed to contribute to economic development and poverty alleviation (Nawaz & Kundi, 2010). Furthermore ICT have the potential to extend educational opportunities and improve the relevance and quality of education on a global scale for both developing and developed countries (Tinio, 2003). Consequently governments, educational authorities and policy developers are adamant that schools adopt ICT into their curriculum and classrooms (Tinio, 2003; Watson, 2006).

While much is written about the potential of using ICT and although there is evidence of the benefits to be gained, the development of ICT in schools is progressing unevenly across and within schools (Condie & Munro, 2007). Hawkins (2005) agrees that while there have been many advances in the field of science, commerce, transportation and health care; education has remained unchanged, suggesting that we are living in a changed world, but with unchanged classrooms. Kozma (2003) cautions that the positive impact of technology does not come automatically. In consensus to this statement, Lloyd (2005) affirms that ICT infrastructure on its own does not have an impact or an effect on school change, but the use of technology in teaching and learning is what is needed to reform education. According to Tinio (2003) the effective integration of ICT into the classroom is a complex and multifaceted process that involves not just access to technology, but a variety of issues. Besides capital, financing, infrastructure, educational policy and planning, developed and developing countries are

also faced with other contextual factors of institutional readiness, teacher competencies, curriculum content and effective and efficient leadership and management, among other (Tinio, 2003).

1.2.1 The South African ICT in education context

For developing countries, such as South Africa, the digital divide is a reality and is faced with the enormous task of preparing their societies and governments for the information and communication revolution in order to become global competitors (Tinio, 2003). When it comes to the use of ICT in South African schools, the Department of Education (now the Department of Basic Education) reports that the provinces in South Africa are at different levels of ICT integration (DoE, 2004). On the one end of the spectrum we have schools equipped with computer centres, printers, interactive whiteboards, access to the Internet, laptops and enough resources and funds to efficiently use ICT within a school and on the other end, schools with not enough resources and funds to afford even one computer. Some of the challenges identified by the DoE that developing countries like South Africa are facing with regards to ICT implementation and use, is the lack of infrastructure, resources and funds, which contributes to widening the digital divide between Africa and the developed world (DoE, 2004). Most of the attention in ICT research from a South African perspective has been on how the lack of infrastructure and access to technology affects the use of ICT in schools. However, there are other nontechnical factors that play a role in the adoption of ICT in schools (Chigona & Chigona, 2010). Some of the nontechnical factors identified in Chigona and Chigona's (2010) research that affects the use of ICT includes, low levels of ICT literacy amongst teachers, insufficient ICT training, lack of confidence, inadequate technical support and a fear of using technology.

The South African government seems to have a positive intent towards limiting these barriers and overcoming the challenges facing ICT integration in schools. The White Paper on e-Education (DoE, 2004) and the teacher laptop initiative (DoE, 2009) are some of the policy intent to support teachers and schools towards using ICT. However, studies conducted by Vandeyar (2010, 2013, 2014) suggests that the e-Education policy was not implemented as intended by policy makers. In addition various national policy

initiatives to overcome the barriers to ICT integration have been developed. One national initiative includes the development of "The guidelines for Teacher Training and Professional Development in ICT," policy framework to provide norms and standards on teacher's ICT competencies for the implementation of the White Paper on e-Education (DoE, 2004). This guideline (DBE, 2007) specifically addresses the ICT training needs of teachers. In addition to the national initiatives, various provincial initiatives were also launched to support national legislative and policy frameworks. The Khanya project in the Western Cape Province, the Gauteng on Line project of the Gauteng Provincial Government (GPG) has gone the extra mile to ensure that ICT is operational within schools. The main focal point was bridging the digital divide gap, by providing underperforming and less fortunate schools the much needed assistance and guidance in making ICT a reality within most schools by 2013 (DoE, 2004). Unfortunately the impact of the GOL computer initiative was very limited and there have been copious allegations that the project had not been running effectively, earning it the nickname "Gauteng Offline" in some school communities. The Gauteng Department of Education (GDE) also developed guidelines for school management teams on the management and usage of ICT in public schools (GDE, 2011).

Within the South African context, factors such as a lack of resources, time constraints, funds and a limiting curriculum are only some of the barriers that school managers in government schools are faced with when it comes to using ICT in classroom practice. In many well-resourced government schools, much of the existing technology is reported to be underused by many teachers and few schools seem to move beyond the initial stages to apply technology for instructional purposes (Leonard & Leonard, 2006).

1.3 Research problem

School management teams are challenged to translate various curriculum reforms changes into effective classroom practice. One policy namely, the White Paper on e-Education (DoE, 2004), expects teaches to change their teaching practice and use ICT to enhance teaching and learning. It is evident that ICT has been successfully integrated into the industrial, business and entertainment sectors, however the impact of ICT on education has not been as successful as initially anticipated and the sanguine notion of

ICT as the answer to educational reform is yet to become a reality (Cox & Marshall, 2007). Despite all the efforts made by governments around the world, researchers reckons that the use of ICT in education is still inadequate and disappointing and that ICT are yet to be fully integrated into schools' curriculums (Baskin & Williams, 2006; Smeets, Mooij, Bamps, Bartolome, Lowyck, Redmond & Steffens, 1999). In most countries the number of schools succeeding in their integration and use of ICT to change their pedagogical practices is still very limited (Kozma & Anderson, 2002). Although developed countries have more and better access to resources, skills, funds and experience than developing countries, they experience other concerns and challenges in terms of ICT integration, such as teacher motivation, lack of appropriate ICT curriculum content and lack of support, training and competence (Jhurre, 2005). Howie et al. (2005) reports that 71% of the principals in their study indicated that the teachers' lack of knowledge pertaining to ICT practice for teaching and learning, were a major obstacle in achieving their ICT-related goals and expressed a need for a policy whereby all teachers should receive training for using ICT in their classroom practice. Furthermore, according to the SAIDE research project, one of the reasons why ICT is not successfully implemented in schools is due to the lack of information available to principals (Bialobrzeska & Cohen, 2005). The principals in their study believe that their own lack of competence in using ICT and a lack of information hampers their ability to successfully implement ICT in their schools (Bialobrzeska & Cohen, 2005).

In light of this, school management teams are challenged to translate various curriculum reforms into effective classroom practice. Despite the proliferation of well-intended technology plans and government policies, political vision of ICT integration in South African schools is not being realised and as a result ICT integration and classroom practice, fall short of realising the potential ICT to support teaching and learning in schools (Leonard & Leonard, 2006). If South African schools are to keep abreast with the rest of the world and develop the 21st century learner, they need to motivate, connect, empower and engage their teachers to embrace ICT (Liwane-Mazengwe, 2013). Thus, the challenge for most South African schools and school managers is not access to ICT resources schools, but mobilising all stakeholders to be motivated and skilled to use ICT more routinely in practice. This can only be accomplished by the

vision and leadership of the school management team (Tondeur, Valcke & Van Braak, 2008). This study investigates the perceived beliefs, attitudes and visions of school management regarding ICT implementation at school. The study also explores how these beliefs, attitudes the necessary provisions that have to be in place in order to achieve these visions.

1.4 Rationale for the study

My perception of ICT and its relevance for education has been shaped by my personal experiences. As a teacher I have experience with using ICT in practice in my classroom and as a member of the school management team (SMT), I was involved with administrative and managerial duties and decisions with regards to ICT practice. As a teacher and a member of the SMT, I became aware of the challenges and issues regarding ICT implementation and practice in schools. I believe that this awareness, knowledge and sensitivity to the issue of ICT practice, prompted a keen interest in the topic of ICT practice and school management. Thus, the interest in this topic originated from my experiences as a member of the school management team that involved the oversight of issues pertaining to e-learning and the implementation and use of ICT in my school. This leadership experience awakened a personal curiosity about how the personal beliefs and attitudes of the school management team contribute in encouraging or dispiriting the use of ICT in practice.

A review of literature revealed limited information about the relationship between school management and ICT practice in schools (Passey, 2002; Schiller, 2002; Yee, 2000). Furthermore, the use of ICT within a South African school context is still a reasonably progressive conception and limited literature is available about the role of school management teams' in ICT integration. The research focus is to gain a deeper understanding about the way the beliefs and attitudes of school management teams may influence the implementation, integration and classroom practice of ICT within a school.

Accordingly, this study presents an opportunity to investigate the perceived beliefs, attitudes and visions of school management teams with regards to ICT implementation and practice in South African schools.

1.5 Research questions

The research questions that will lead this study are:

- What are the perceived beliefs, attitudes and visions of SMT's regarding ICT implementation at school?
- What are the perceived necessary provisions that have to be in place to realise the perceived attitudes and visions of SMT's?

1.6 Concepts

The following concepts need clarification, in order to create a better understanding of how they are conceptualised, interpreted and used in this study:

School Management Team

The senior management team or more commonly known as the school management team (SMT) is a group of selected individuals, based on their position within the hierarchy of the school (Clarke, 2007). Traditionally a school-based management structure presupposes a school management team, which consists of the principal, who is at the top of the pyramid, immediately followed by the deputy principal and then the heads of departments (HOD) (Hayward, 2008). Designated responsibilities from core functional areas are often delegated down from the principal to deputy principals and heads of departments, as well as some specialist or senior teachers, who form part of the school management team (Kozloski, 2006).

Information and communication technology (ICT)

The term information and communication technology (ICT) includes many areas of information, communication, computing and technology and covers many types of technologies, their functions and the fields in which they are being used (Pita, 2010). Therefore, the term ICT is an all-encompassing term for a range of technologies such as computers, laptops, smart phones, cell phones, tablets and television, as well as facilities

such as the Internet, social networking, emailing, database management systems, e-commerce, only to name a few. In other words it is the amalgamation of all technologies, which encompass all digital and electronic tools used for information, communication and computing (Anderson, 2010). The Gauteng Department of Education (GDE, 2011) defines ICT as technology (equipment, resources, devices, programmes, software) that can be utilised as media for information and communication proposes. The terms ICT, ICTs and technology are used interchangeably in this study to mean technologies that assist in manipulating and exchanging digitised information.

ICT implementation

ICT implementation in schools can be widely interpreted, on the one hand it can mean the development of computer skills and on the other hand it can be taken to mean the use of ICT as a resource and tool for teaching and learning (Howie et al., 2005). For the purpose of this study ICT implementation adopts the latter meaning, when conceptualising and interpreting ICT implementation in the educational context.

ICT integration

The concepts, "*ICT practice and ICT integration"* is used interchangeably in this study to refer to how ICTs are being used in teaching and learning activities, in other words, how ICTs are employed, harnessed and engaged within the curriculum to support, develop, shape and co-construct knowledge in pedagogical settings (Hodgkinson-Williams, 2006). With ICT practice or ICT integration the assumption is made that both teachers and learners have acquired skills in utilising ICT as part of their teaching and learning activities respectively (GDE, 2011).

Beliefs

The psychological held understanding of the concept *"beliefs"* is used to conceptualise it for this study. The concept "*beliefs"* is described as a set of values, convictions, generalisations and expectations, established by earlier experiences that shape our perception of the physical and social world (Hermans, Tondeur, Van Braak & Valcke, 2008).

Attitudes

The term *"attitudes"* is conceptualised as the evaluations of various aspects of the social world (Baron & Byrne, 2003). They are the means by which we evaluate and understand things or situations positively or negatively and reflect our deeply held values and beliefs (Sternberg & Sternberg, 2001). Similarly Baron and Byrne (2003) describe it as the extent to which people have a favourable or uncertain reaction to issues. Therefore attitudes can be described as a predisposition to respond favourably or unfavourably to an object, person or an event (Sang, Valcke, Van Braak & Tondeur, 2009).

1.7 Scope and limitations

This study focussed on the ideologies of individuals in the schooling system, which included principals, deputy principals, and heads of departments that constitute the school management team. These participants were chosen to obtain an understanding of their beliefs and attitudes towards ICT practice in schools. The study was conducted from a South African perspective and limited to three public primary schools in the Pretoria[3], Tshwane District[4] of Gauteng[5]. Thus private schools and secondary, as well as schools in other districts and provinces in South Africa were excluded.

A multiple case study approach was attempted to obtain information about the perceived beliefs, attitudes and visions of the school management teams with regards to ICT practice in schools in a specific district and province and thus the purposive sampling and convenient sampling methods were utilised to select three socio-culturally different primary schools for the study. According to Soy (1997), critics of the case study method believe that the study of a small number of cases can offer no grounds for establishing reliability or generality of findings. This study did not attempt to generalise the findings, but could contribute to identify possible trends that may apply to similar research situations and may be used for further research.

[3] Pretoria- a town in the province of Gauteng in South Africa
[4] Tshwane district ---one of the district offices of the Gauteng Department of Education in the Tshwane/Pretoria area.
[5] Gauteng is one of the nine provinces of South Africa.

1.8 Ethical considerations

Being ethical means to have the ability to distinguish right from wrong and the commitment to do what is right (Tibane, 2007). This means to take personal responsibility for making sound decisions and acting with integrity in conducting the study. Prior to conducting the research, permission was requested from the Gauteng Department of Education to undertake the research in the selected schools (Appendix A). After receiving approval from the GDE[6] (Appendix B), a letter introducing the conduct and purpose of the study was sent to the principal of the selected schools, to request permission and to gain access to the research sites (Appendix C). Since this study is people-orientated and personal of nature, as it deals with people's ideologies, non-disclosure, confidentiality and trustworthiness were prioritised. An effort was made to establish and maintain good rapport and trust with the participants in the study, by providing them with informed consent information that explains the purpose and background of the study, as well as informing them about their rights to withdraw from the study at any given time (Appendix D1). To ensure that participants understood their rights and acknowledge voluntary participation, they were requested to complete a certificate of consent (Appendix D2). To further certify confidentiality schools and participants' names were changed in the reporting of the findings. These ethical procedures adopted for the study will be clarified and elaborated on in chapter 3.

1.9 Outline of chapters

The subsequent chapters provide a brief overview of the study.

Chapter 1

This chapter serves as the introduction, in which the orientation to the study is explained by deliberating on the background context, problem statement and rationale for conducting the study. This is followed by the research questions and clarification of the concepts used in the study. Finally, limitations and scope of the study, as well as the ethical considerations are briefly discussed. The chapter concludes with the overview of the subsequent chapters and a summary.

[6] GDE- Gauteng Department of Education

Chapter 2

This chapter reviews the existing literature to develop an understanding and perspective about ICT implementation and practice in schools. Specific attention was given to the conceptualisation of ICT, the status of ICT implementation in schools, the importance of school leadership in times of change, the roles and functions of the school management team in the school and how their beliefs and attitudes about ICT could influence their actions to implement and use ICT in pedagogical practices. The latter part of this literature study elaborates on the theoretical framework used to scaffold for this study.

Chapter 3

This chapter is an in-depth discussion and description of the research design and methodology of the study. The interpretive meta-theoretical perspective underlying this research is discussed as well as the case study approach adopted to conduct research. The site and participant selection, data collection methods and research instruments that were applied in this research are explained. This is followed by a description of the method of data analysis. Finally a description of the ethical issues and limitations of the study is discussed to conclude this chapter.

Chapter 4

This chapter discusses the research findings based on the data collected through the empirical investigation. The data analysis, based on the grounded theory approach, is presented and discussed according to four categories, with themes and sub-themes, using direct quotes from the participants in the study.

Chapter 5

This chapter discusses the findings and conclusion of the study and attempts to answer the research questions on the premise of the data and literature. The chapter concludes with implication for practice and policy, and recommendations for future research.

1.10 Summary

ICT is a unique innovation that can foster and promote teaching and learning, therefore if we want education to be relevant in the 21st century; our education system needs to be in sync with the technological-orientated lifestyle of modern society. The reality of this is that governments and schools cannot ignore the fact that ICT is indispensible to education and the majority of literature suggests that the integration and use of ICT should become a high priority in schools. However in practice, the integration of ICT in schools continues to pose challenges for both developed and developing countries, such as South Africa (Wilson-Strydom & Thomson, 2005). It is clear from literature on ICT implementation in South African schools, that there are many barriers and challenges that needs to be addressed, before ICT becomes an effective and efficient resource in South African schools. In order to overcome these challenges and to ensure the effective use of ICT to support learning and teaching in schools; depends on a number of dimensions, such as availability of resources, connectivity, teacher confidence and capability, school policy, ICT integrated teaching and learning and effective leadership and management (Bialobrzeska & Cohen, 2005; Yuen et al., 2003). The policymakers and school managers must reckon with all the challenges when making decisions about the integration of ICTs in schools. The next chapter explores the existing literature about ICT practice and school management as it relates to this study.

CHAPTER 2

Literature review

2.1 Introduction

This chapter endeavours to explore the existing literature about school management and ICT practice. The literature review begins with a brief discussion of the SMT's responsibilities and tasks in schools, followed by a discussion on the importance of leadership in influencing change in schools. Subsequently, ICT in education and the status of ICT implementation in schools are conceptualised and explained. The barriers to ICT implementation is examined, followed by an in-depth discussion on the role of leadership in influencing ICT implementation within the school system. Finally the roles of the SMT in ICT implementation are reviewed based on how their beliefs and attitudes about ICT influence their actions. The latter part of this literature study elaborates on the theoretical framework used for this study.

2.2 The role of school management teams in school

The school management team plays an important role in the school system and were put into place to ensure that the school culture is dynamic and supportive of an effective teaching and learning culture (Ndou, 2008). The SMT's functions and duties broadly range from planning and budgeting to organising and staffing, implementing policy, controlling discipline, problem solving, monitoring and evaluating plans and motivating staff (Clarke, 2007). More importantly, school managers are often expected to take on the important role of influencing, facilitating and improving the teaching and learning culture of the school (Bos & Visscher, 2001; Dexter & Anderson, 2000).

Considering the job description and roles of the SMT, it seems that school managers are expected to be more than just managers of schools; they are required to take the lead and become agents of change in education. In relation to this, Kozloski (2006) states that the role of today's principal is twofold, in that they must be prepared to support change within the school culture and initiate and facilitate the change process. Therefore, there is a strong need for not only efficient managers, but also strong

leadership within a school, especially when it comes to mobilising the staff and school to embrace new changes.

2.3 Leadership influencing change in schools

Education is one of the most important aspects of a society and cannot afford to become stagnant. Therefore, schools, teachers and school managers are under considerable pressure to change and adapt to the times. Managing school change and improvement is one of the most complex tasks of school managers (Hughes & Zachariah, 2001). Education management in schools has undergone a radical change, as the growing expectation is that school managers these days should be visionaries, effective problem-solvers, consensus builders, and role models of appropriate practice (Leonard & Leonard, 2006). As a result school managers are not only required to be competent in managerial and administrative skills, but also needs to acquire necessary specialised knowledge and invest in leadership skills to better equip and capacitate them to manage schools more effectively in the 21st century (Liwane-Mazengwe, 2013).

According to Clarke (2007) the requirements of modern leaders are far more challenging than those in the past and have resulted in the need for a more complex, fluid and egalitarian leadership approach (Clarke, 2007). In order to adopt this kind of leadership approach implies that leaders need to have certain leadership competencies to ensure that their organisation can operate in the rapidly changing environment. Thus, by virtue of being an effective school manager, provision needs to be made for school managers to upgrade their qualifications and to hone their leadership skills to become agents of change (Liwane-Mazengwe, 2013). Alan Hooper and John Potter (in Clarke, 2007), identify seven leadership competencies, considered to be essential for successful leadership in times of change:

- Leaders need to be role models
- Leaders must be good communicators
- Leaders need to be proactive
- Leaders must be effective decision-makers
- Leaders need to set the direction of the organisation
- Leaders need to create alignment

- Leaders must encourage staff and elicit, enhance and utilise their best attributes and strengths.

These leadership competencies or skills could not only better prepare school managers to cope and deal with challenges, but could more equipped them to implement change in the school environment. In addition to skills and competencies, leaders also need to establish strategies to implement change (Hughes & Zachariah, 2001). Clarke (2007, p. 2) suggest four key strategies that leaders need to utilise as they seek to produce future focussed change. These strategies include:

- Vision – to establish direction and purpose
- Strategy – a plan to achieve the vision
- Aligning people – marketing and getting people on board with the vision
- Motivating and inspiring – creating a commitment to drive the process

Several themes emerged from the literature review that will be discussed namely; school management teams as ICT change agents; the influence of the SMT's vision for ICT practice on the school's vision; the correlation between ICT competence and managing ICT practice; and the role of SMT's beliefs and attitudes in ICT implementation..

2.3.1 School management teams as ICT change agents

Change involved in implementing ICT in schools is a complex process (Yuen et al., 2003). Studies have shown that there is a strong correlation between technology leadership and technology integration and could determine the varying levels ICT implementation success (Dexter & Anderson, 2000; Grainger & Tolhurst, 2005; Hughes & Zachariah, 2001; Otto & Albion, 2003; Yuen et al., 2003). As with other organisations, there is increasing recognition that strong and visionary leadership plays a pivotal role in schools and is "crucial in implementing successful technology programs in order to achieve technology-related outcomes (Leonard & Leonard, 2006). The GDE (2011) believes that the effective management and use of ICT in schools, is based on the school leaders decisions, commitment and strategies towards, budgeting and providing training and support.

Yuen et al. (2003) investigated the link between leadership strategies and characteristics and the successful implementation ICT initiatives in schools and found that the leadership strategy of schools shapes their responses to ICT implementation. This is echoed by Grainger and Tolhurst (2005), who cautions that the lack of leadership strategies could lead to perceptions of lack of relevance and usefulness in terms of ICT practice which could encumber ICT implementation and practice. Yuen et al. (2003) report that in schools with a visionary leadership strategy, where then principal is the key agent of change, these schools successfully engaged in implementing and integrating ICT in teaching and learning. Furthermore Yuen et al. (2003) indicate that in schools with a multiple leadership strategy, where the principal is not solely responsible for ICT leadership and who supported teacher and learner innovation; not only integrated ICT successfully, but also utilised ICT innovatively in teaching and learning. In a similar study Scrimshaw (2004) found that schools that were successful in the implementation use of ICT, followed a collaborative leadership approach, supported innovation and included others in the decision-making process. Thus it can be deduced that there is a need for leaders in educational organisations to make a mind-shift toward a more goal-orientated, collaborative approach, if they expect teachers to adopt these new beliefs about teaching and learning in the modern world. Subsequently, espousing leadership strategies could establish the general climate for ICT use within a school and is central in enabling and motivating teachers to engage in innovative practice (Grainger & Tolhurst, 2005).

It is evident from the literature that significant responsibility is placed on the school management team, as leaders, to implement and ensure the effective utilisation of ICT in schools. Accordingly the GDE also places emphasis on the role of school managers in managing ICTs in schools, and as a result in 2011, they developed guidelines specifically for school management on how to implement, manage and sustain the usage of ICT in public schools in Gauteng (GDE, 2011). They state in these guidelines that “the requirements to effectively manage ICT demands and resources have become a major responsibility for SGBs and SMTs in public schools” (GDE, 2011, p. 11).

The integration of ICT has impacted on the traditional roles and responsibilities of the school manager and as a result increasingly, more school managers are required to assume leadership responsibilities (Flanagan & Jacobsen, 2003). According to Flanagan and Jacobsen's (2003) study, these added roles and responsibilities for principals and school managers as technology leaders, have left many school managers feeling overwhelmed by the mandate to integrate ICT. They explain that the principals and school managers have not been prepared for their new role as technology leaders, because they find themselves in unfamiliar territory and have therefore struggled to achieve ICT outcomes in their schools (Flanagan & Jacobsen, 2003). Consequently, if school managers are expected to play a key role and effectively inspire and lead ICT integration, then they should be given meaningful opportunities to develop ICT and leadership skills (Flanagan & Jacobsen, 2003). In accordance, Otto and Albion (2003) believe that principals have critical roles in supporting and guiding teaching and learning with ICT in schools. These roles include:

- The development and implementation of a vision
- The planning and implementation of policy
- Modelling the use of ICTs
- Managing resources; and
- Co-ordinating staff development

2.3.2 School management team's vision for ICT implementation

Yee's (2000) study suggests that some school principals had an unwavering shared vision that ICT had the potential to improve student learning. There seems to be a strong correlation between Otto and Albion's (2003) roles in implementing ICT and the strategies that Clarke (2007) identified as essential for leaders to implement change within a school. Both authors stress the importance of establishing a vision for the organisation and acknowledge that having a clear vision is one of the most essential aspects of leadership and contributes to the success of the school, because it creates direction and purpose. Bos and Visscher (2001) concur that in addition to setting goals and policies related to technology, having a shared vision is critical to manage ICT in a school setting. Consequently the success of implementing change is dependent on a leader's ability to persuade people to commit to a common vision.

In a school environment a shared vision can either increase or limit chances to successfully adapt to change (Bialobrzeska & Cohen, 2005). The SMT's vision for ICT practice in a school affects and shapes the school's vision and goals for ICT practice and determines the kind of ICT resources used and how ICT is managed within a school (Bialobrzeska & Cohen, 2005; Dexter & Anderson, 2000). It is important that the SMT embrace their roles as ICT leaders and utilise the strategies and skills as mentioned previously to positively communicate their vision about ICT to the rest of the staff. Getting policies and staff aligned with the school's vision and goals for ICT practice, requires the SMT to do strategic planning, make budgeting decisions and creating opportunities for staff development to achieve the school's ICT vision and goals (Clarke, 2007; Dexter & Anderson, 2000;). School leaders need to challenge the educational process and inspire a vision for meaningful change, by communicating that vision and modelling strategies that will enable and support teachers to be innovative in practice. Therefore the quality of technology integration in schools is likely to be determined largely through the calibre and capacity of school managers to both advocate and to model the appropriate orientations and practices needed to sustain it (Leonard & Leonard, 2006).

2.3.3 School management teams: ICT competence and training

Besides beliefs and attitudes, principal's and school management's actions, interests; self-efficacy and knowledge about ICT also influence their decision to prioritise the use of ICT in their school (Yee, 2000). Felton (2006) indicated that there is a strong correlation between formal training, proficiency and computer use within practice. The principals in Felton's (2006) study who had formal training in computers believe that they are more proficient and better able to use computers in their work. The question arises whether principals who did not have formal training will have the same perception about the use of computers in practice? Brockmeier, Sermon and Hope (2005) study found when principals are comfortable with technology; it leads to them fostering the use of ICT in the school. Similarly, Yee (2000) noted that there is a relation between competence in using computers and attitudes towards computers. Those who are competent in using computers and proficient ICT users have a positive attitude toward computers and those with a positive attitude towards computers and ICT

are proficient users (Yee, 2000). School leaders and managers' awareness, understanding and use of ICT themselves, is an effective way of modelling the practice to the rest of the school staff (Afshari, Bakar, Luan, Samah & Fooi, 2008). In the White paper on e-Education (DoE, 2004), the focus is on building teachers and managers confidence in using ICT as well as providing more support, as they believe that this will influence their attitudes and beliefs towards using ICT more effectively within schools.

Felton (2006) asserts that principals should receive support and training to expand their use of computers and clarifies that principals who possess a sufficient level of computer competence is better able to model and practice ICT leadership in their schools. Therefore training and regular upgrading of ICT skills are important for effective modelling the use of ICT in schools (Schiller, 2002). The assumption can then be made that how school principals and managers incorporate ICT into their own school tasks and school policy, could predict the extent to which they will promote the incorporation of ICT into their schools (Bos & Visscher, 2001).

Based on the premise of educational change and leadership, the body of literature agrees that there is a definite need for principals and school managers to become technology leaders in their schools, as leadership is the crucial element in developing an effective and innovative school that will facilitate quality teaching and learning as well as quality management (Bialobrzeska & Cohen 2005; Dexter & Anderson, 2000; Dinham 2005; Kozloski, 2006). Thus, the success of ICT implementation is less about the infrastructure, equipment, resources, support or training available and more about the, mindsets, beliefs, assumptions, attitudes and values of the individuals and leaders in the organisation (Grainger & Tolhurst, 2005). Experts agree that the success or failure of technology integration could be linked to the behaviours and ideologies of the leaders, as their own knowledge and beliefs about teaching, learning and technology will lead to changes in practice (Hughes & Zachariah, 2001).

Thus, if school managers want to be influential in the modern school, they need to be agents of change, in other words increase their capacity for accepting, embracing and initiating change. This expectation exists for technology integration as much as it does

for the other facets of the school. ICT in education has the potential to be paramount in bringing about changes in teaching and learning (Bingimlas, 2009). Therefore, as technology is at the centre of change and continues to drive changes in society and education, a good starting point would be to look ICT implementation in schools.

2.3.4 School management teams' beliefs and attitudes

According to literature, an attitude can be described as either having a positive or a negative emotional reaction or disposition towards a specific situation can play an important role in determining a person's reaction to situations or circumstances, as well as how a person will behave or act in a specific situation (Al-Zaidiyeen, Mei & Fook, 2010). Thus, a person's attitude refers to the point of view or stance a person takes towards a certain issue based on their knowledge or believes about it. A person's attitude or viewpoint can influence their vision they have and ultimately have an impact on their actions and also on the choices they make. Therefore attitudes are acquired though experiences, especially in interacting with others and has a strong influence on our behaviour (Sternberg & Sternberg, 2001). According to Sternberg and Sternberg (2001), a person's attitude is based on their thoughts and feelings towards someone or something and this affects the way people act towards someone or something. Simialrly, individuals react emotionally to information about change (such as the implementation of ICT into pedagogical practices); this information, could elicit emotions or reactions such as frustration, fear, excitement, or enthusiasm (Lines, 2005). The formation of attitudes towards change is a critical element in the change process, because once these attitudes have been formed, it may be difficult to alter (Lines, 2005). In addition to this, beliefs are constituted by a person's feelings, attitudes, thoughts and experiences and forms part of and influence the subjective world of a human being (Cohen, Manion & Morrison, 2003). It can therefore be implied that our beliefs and attitudes are not entirely separate from each other can help to understand and predict our behaviour in a wide range of contexts (Baron & Byrne, 2003).

Watson (2006) suggests that when it comes to change within an organisation it is important to consider an individual's approach, which is often based on their perceptions, attitudes, values, beliefs and opinions. Lines's (2005) research on attitude

theory, acknowledges the role played by significant people and groups in a person's environment. Individuals reactions to change, such as implementing ICTs into curriculum and classroom practices, reflects the assumption that their attitudes towards that change will determine the outcome of their behaviour towards that change (Lines, 2005).

Literature further suggests that there is a strong relationship between attitudes and computer use (Sang et al., 2009; Tondeur et al., 2008). School managers have reported varying attitudes to the use of computers, ranging from supportive to negative. To this extent, if beliefs and attitudes play an important role in influencing actions and vice versa, school managers' attitudes and beliefs about computer use (ICT) in schools can be viewed as a precept to how they are likely to implement, use and promote ICT practice in their schools (Tsayang, 2011). Bos and Visscher (2001) concurs that the extent, to which school principals promote the use of ICT in their schools, depends on the degree to which they believe it to be useful. Similarly Tondeur et al. (2008) highlighted the importance of the perceptions of school leaders with regards to the successful integration of computers or more specifically ICT. In relation to this, as mentioned previously, Otto and Albion (2003) asserts that the beliefs of principals about teaching with ICT and their vision for technology integration influences their actions, decisions and management approach towards implementing ICT in their schools.

In a study conducted by Felton (2006) on school principals, the results indicated that most principals have a positive perspective towards the use of computers as they indicated that the use of technology allows them to perform their leadership and managerial tasks more efficiently. Some of the main findings with regards to beliefs and attitudes of principals about the use of ICT that were identified in Felton's (2006) research are: computers are a valuable tool for teaching as well as learning and administrative purposes; technology improves the quality and accuracy of their work; computers assists in downsizing on routine paperwork; computers in practice save time and therefore creates the opportunity to be more time efficient; computers creates the opportunity to have more control over gathering information and decision-making; computers helps to increase accountability and productivity; computers help them to

become more effective managers and contributes to the general effectiveness of the school.

These notions give impetus to the fact that principals' or more specifically school managers' attitudes towards computers can be a determining factor in the successful implementation of ICT in education and thus asserts the importance of ascertaining school managers' beliefs and attitudes towards the use of ICT in schools. However Tsayang (2011) also cautions that while perceptions, attitudes and beliefs can be viewed as a prerequisite for taking initiative, it can also be an inhibiting factor, if the perceptions are negative. Therefore, unless school managers recognise the importance and value of ICT in teaching and learning, they will not promote it in their schools, similarly if teachers do not recognise the importance and value of ICT in teaching and learning, they will not use it in their classes.

2.4 Information and communication technology in education

ICT mainly deals with information literacy that embraces all technologies to enable and support the handling of information and facilitating different forms of communication (Lundall & Howell, 2000; Pita, 2010). Thus ICT can be described as the convergence of all the uses of a gamut of technologies that enable individuals, organisations, businesses and schools to access, use, store, create retrieve, transmit, exchange and communicate information anytime and anywhere in the world (Anderson, 2010; Lundall & Howell, 2000; Pita, 2010). Anderson's (2010) diagram of ICT (Figure 2.1 below) provides a useful and clear framework for the conceptualisation of ICT. This study keeps aforementioned conceptualisation of ICT in mind when exploring the use of ICT within the educational context.

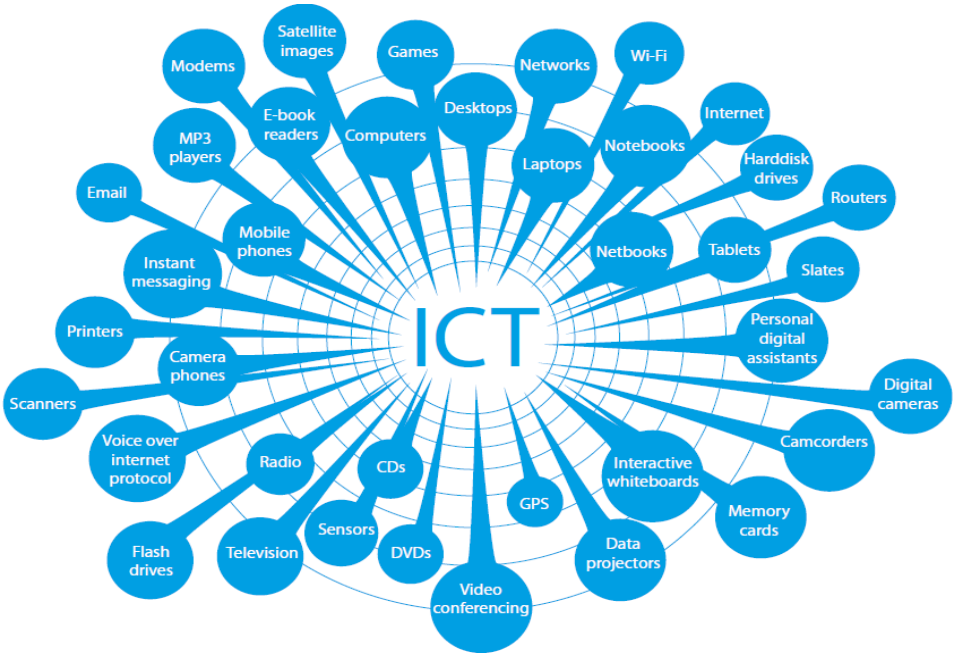

Figure 2.1: Anderson's diagram of technologies in ICT (Anderson, 2010, p.4)

Herselman (2003) describes ICT as a driver and enabler that holds many advantages for teaching and learning. Some of these advantages according to Kozma and Anderson (2002) include, promoting active and independent learning, breaking down gender, language, communication and social-cultural barriers and providing student with skills to search, organise, analyse and communicate information and their ideas in a variety of media forms. Thus, ICT can provide the learner with a valuable hands-on experience and an opportunity to learn and develop skills, making it possible for learners to become proficient creators of knowledge, who can participate in a technology-driven modern society (Howie et al., 2005). Furthermore the use of technology in practice offers new opportunities and capabilities that inevitably lead to changes in pedagogy and for this reason there is a high expectation of teachers to make routine use of ICT in their teaching practice (Afshari et al., 2008; Cloke & Sharif, 2001).

As a result technology is no longer seen as a nice-to-have teaching aid, but has become a vital teaching tool and resource in the 21st century classroom. Technology provides the opportunity for schools to shape the educational environment and enable teachers and learners to actively engage with information through various mediums. However, the Gauteng Department of Education asserts that "however good the ICT infrastructure in a school may be and however wide the range of software the school has, these are

only as good as the teacher using them" (GDE, 2011, p.16). Therefore, in spite of the wide recognition of the value of technology in education, the real potential of ICT can only be attained through integrating it into instructional practice for teaching and learning. Leonard and Leonard (2006) reported that problems in fully integrating technology into the curriculum still persist and are still apparent in many schools.

2.5 Stages of ICT integration and practice in schools

Ward (2003) identifies four stages of inclusion of ICT into schools; these stages describe the level at which ICT has been integrated into a school:

- Installation - Sufficient infrastructure and staff training.
- Administrative or professional use - Limited use for routine tasks such as reporting or lesson planning.
- Integration into the curriculum - Use by teachers for curriculum delivery.
- Innovation - Used for changing teaching and learning practices.

Similarly, Bialobrzeska and Cohen (2005) identified different levels of ICT implementation within the South African school context. They suggest that each school interpret these levels of ICT implementation according to their own context and needs. Consequently, their central message is that the level of ICT implementation depends on the school's and specifically school managers' needs and vision for ICT practice. They identified the following levels of ICT integration (Bialobrzeska & Cohen, 2005 p. 95):

- Entry – learners and teachers are able to use computers
- Adoption – able to use computers for management, administration, teaching and learning.
- Adaptation – able to use technology to enrich the curriculum.
- Appropriation – able to integrate technology into teaching and learning.
- Innovation – able to use technology as a flexible tool to create new learning environments as part of whole-school development.

According to Ward (2003) research has shown that in most schools there have been advances in the installation and administrative stages, but little has happened in schools in terms of curriculum integration and innovation levels, with most schools still stuck in

the first two stages of implementation. This premise was echoed by Howie et al. (2005), who report that in general many schools have been using computer technology for routine school administrative work. More schools are reported making use of intranets, such as networking and school management systems to reduce teachers demanding administrative workload (Condie & Munro, 2007). These computer-supported, management systems and networking technologies have become more readily available and easy to use for record-keeping, gathering assessment data, monitoring attendance and finances, communicating and reporting to parents and sharing of information amongst teachers (Condie & Munro, 2007). Furthermore an increasing number of teachers have found a laptop particularly useful for managing administrative tasks such as planning and preparation, capturing and calculating marks for assessment and compiling of report cards, as well as using the internet for research and resources to support and stimulate teaching and learning (Condie & Munro, 2007). Therefore according to these experts, the use of ICT in schools has developed significantly over the years, but for many schools the focus is on learning about the use ICT and less on teaching and learning with ICT (Wilson-Strydom & Thomson, 2005). It seems that while some schools are being highly innovative and attempting to capitalise on the benefits that ICT has, others schools seem to be content with only achieving the government's target, in terms of number of computers, connectivity and administrative use (Condie & Munro, 2007).

In their studies of ICT integration in schools Yuen et al. (2003) proposed three stages of ICT adoption in schools. The first stage, called a 'technological adoption model' represents the initial stages of innovation, where school leaders are concerned with whether teachers are able to master the necessary skills or technologies for any purpose, not necessarily for pedagogical practices. The second stage, describes the "deliberate integration of ICT into the teaching and learning processes as an integral part of the curriculum" (Yuen et al., 2003, p.166). They refer to this at the catalytic integration model. Based on this model it seems that school managers placed emphasises on integration, rather than on mere access to technology. The third stage is called the "cultural innovation model", which expects teachers to not only integrate ICT into teaching practices, but use it innovatively to change the culture of teaching and learning.

Based on Yuen et al.'s (2003) research, it is important to note that, teachers as well as school managers play a significant role in the schools' implementation level of ICT.

Though respective research studies have documented that many teachers are integrating technology into their classroom practice, however the number still remains relatively small. If schools want to reap the benefits of ICT, a more integrated curricular role is needed for ICT (Kozma & Anderson, 2002; Ward, 2003; Yuen et al., 2003). Thus, they motivate that schools should move towards adopting an innovative model for ICT implementation. Teaching and learning should be the core lens through which schools view ICT integration efforts (Baskin & Williams, 2006).

2.6 Barriers to ICT implementation and practice in schools

Due to the importance of ICT in society and education, identifying the perceived obstacles to the integration of technology could assist school managers to understand how they could overcome these barriers and enhance ICT integration in schools (Bingimlas, 2009). Several studies (Bingimlas, 2009; Demetriadis et al., 2003; Ertmer, 1999; Flanagan & Jacobsen, 2003; Grainger & Tolhurst, 2005; Tondeur et al., 2008) have focussed their attention on studying the barriers that challenge the successful implementation and integration to ICT in schools. In Tondeur et al.'s (2008) study, principals were questioned about the barriers they perceive and experience with regards to the integration of ICT into their schools. Their results indicate that principals noted the following aspects as barriers to ICT implementation and practice in schools (Tondeur et al., 2008):

- Lack of access to resources
- Limited ICT skills of teachers
- Lack of time to manage the process of implementation
- Lack of a functional ICT school policy

Furthermore, Grainger and Tolhurst (2005) found that factors, such as the role of leadership, technical support, time dedicated to ICT training and use, management approaches to implementation and teachers' perceptions and attitudes all had a significant impact on the level of ICT implementation. Similarly Demetriadis et al.

(2003) noted in their study that ICT practice in schools were influenced by teachers' attitudes towards the infusion of technology into schools and asserted that motivating teachers to use ICT remains a significant problem. Similarly, Ertmer (1999) refers to internal barriers such as teachers' pedagogical beliefs as having an impact on teachers' adoption and use of technology. In light of this, Ertmer (1999) noted that "while the conditions for successful technology integration finally appear to be in place including ready access to technology, moderately trained teachers, and a favourable policy environment, high-level technology use is still surprisingly low" (p. 2). According to Ertmer (1999) personal and vicarious experiences, as well as social and cultural norms influences a teacher's beliefs and these beliefs influences teacher's adoption and use of technology in their classrooms.

It is evident from these studies that there are both extrinsic and intrinsic barriers to the integration of ICT. Bingimlas (2009) classifies teacher-level barriers as intrinsic and school-level barriers as extrinsic. Teacher-level barriers refer to factors such as teacher confidence and competence in ICT use and school level barriers refer to factors such as access to resources, support and training. Hendren (2000, as cited in Bingimlas, 2009) more appropriately categorises these barriers as individual versus organisational barriers. Accordingly extrinsic barriers are factors pertaining to the organisational context, such as access to resources, time, technical support and training. Intrinsic barriers are factors pertaining to the characteristics of individuals in the organisation, such as attitudes, beliefs, practices and resistance to change (Bingimlas, 2009).

Based on this categorisation of barriers to ICT implementation, it seems that there is a relationship between the individual and organisational barriers. The lack of ICT knowledge, skills and competence could be related to the lack of effective training opportunities available to teachers and managers. Similarly, Bingimlas (2009) noted that a lack of accessibility to resources could impact on teachers' negative attitudes towards using ICT more often in class. Furthermore, a lack of leadership could affect teacher motivation with regards to ICT practice (Grainger & Tolhurst, 2005).

Taking all these issues into consideration, the priority of infusing ICT in education has created a huge challenge for all stakeholders and has placed tremendous pressure on teachers, principals and school managers to step up to the challenge and overcome these barriers in order to successfully implement and integrate ICT into their schools. Notably, the question becomes what can school leaders do to overcome obstacles to ICT implementation? And how do their beliefs and attitudes about ICT, support national and provincial government's efforts, initiatives and policy intent towards overcoming these barriers and successfully integrate ICT in schools?

2.7 Theoretical framework

The theoretical framework for this study will be based on the "theory of action perspective" from the work of Argyris and Schön (1978). The focus of their study is on how theories of action inform professional practice (Agyris & Schön, 1978). According to the theory of action perspective, theories of actions can be described as premeditated human behaviour which informs action, therefore all deliberate action has a cognitive origin (Agyris & Schön, 1978). In other words behaviour is inferred from an individual's cognitive reflection which includes norms, strategies, assumptions and models of the world (Agyris & Schön, 1978). Argyris and Schön explains that people have mental maps with regard to how to act in situations and these mental maps guide people's actions and determine the way they plan, implement and review their actions (Smith, 2001). Therefore it can be implied that aspects such attitudes and beliefs, influence mental maps and therefore contributes to forming a theory of action.

A theory of action is an explanation of what we are doing and a mental map is what we use to make decisions, therefore our cognitive mental maps influence our theory of action (Smith, 2001). Similarly, Dick and Dalmau (2000) describe theories of action, as the "mechanisms" which we use to link our thoughts with our actions. Therefore it can be presumed that there may be a split between theory and action. Argyris and Schön (1978) distinguish between an espoused theory and a theory-in-use in the theory of action perspective. Espoused theories are theories we announce to the world, in other words espoused theories explain what we do or what we would like others to think we do (Smith, 2001). Theories–in-use is our actions as observed in our behaviour, in others

words what we actually do (Smith, 2001). Dick and Dalmau (2000) explains espoused theories as the beliefs people hold and what they claim to observe in their behaviour, whereas theory-in-use is what others observe in their behaviour. According to Agyris and Schön (1978), there is a tendency for people to have inconsistent thoughts and actions. Dick and Dalmau (2000) explain that people are often ineffective in many of their behaviours, because there is an inconsistency between their espoused theory and theory-in-use, in other words, people don't practice what they preach. They go on to state that when people become aware of the dissonance between their espoused theory and theory-in-use, it can initiate change in one of these theories. Smith (2001) agrees that to achieve effectiveness in behaviour, congruence must develop between these two theories of action and this can only be done through reflection.

Furthermore the theory of Argyris and Schön (1978) denote that similarly organisations also have theories of action which inform their practice. They go on to explain that individual members within the organisation can bring about changes in the organisation's theory of action and that individuals' theory of action influences organisational learning (Smith, 2001). Organisational learning can also be defined as the ability of an organisation to adapt and respond to changes in the internal and external environments of the organisation, which in turn depends on the experience and actions of individuals (Agyris & Schön, 1978). Individuals within an organisation are cognitively and actively engaged in creating an understanding of the organisation, they continually change or modify their mental maps and images of the organisation and in doing so they create an understanding of themselves in the context of the organisation (Agyris & Schön, 1978). Therefore, when focussing on organisational change, the focus must not be on the organisation itself, but on the active process of organising and how individuals within the organisation organise themselves (Smith, 2001).

Principals, school managers and teachers all have their own beliefs and attitudes about the use of ICT. These beliefs and attitudes, which are part of their mental maps, help to inform their espoused theory about ICT and how they use it in practice. The question arises how their espoused theories influence ICT practice and whether it matches their theory-in-use? Agyris and Schön (1978) indicate that the theory of action serves to

explain or predict human behaviour. Thus within the context of the "theory of action", this study will attempt to understand how the beliefs and attitudes of school management shape their espoused theories of ICT and how it matches up with their theory-in-use, with regard to ICT practice. In other words to investigate what management think, say and believe about ICT and how they use ICT and actually implement ICT in practice.

2.8 Summary

Although ICT has brought new possibilities into education, it has also placed more demands not only on teachers, but also on school managers. The implementation and practice of ICT affects every level of the school and the school management team is at the centre of the struggle of changing schools. Therefore they play a pivotal role in determining the extent to which innovations are implemented and adopted into educational practices within the school (Howie et al., 2005). Each of the different actions or decisions they make may potentially have a measureable outcome on the degree of ICT integration in the school (Anderson & Dexter, 2000). Therefore the effective integration of ICT in schools is not only based on the infrastructure, organisational practices and policies of a school, but also on the leadership and the roles of the head teachers and senior staff (the school management team), in taking forward these developments (Condie & Munro, 2007). Thus, it is evident from the literature that technology leadership in schools is indispensable and therefore principals and school management must be prepared to take on the role of technology leaders in their schools (Brockmeier et al., 2005). School managers should be aware that when it comes to leadership, everything counts - everything they say and do; and also everything they don't say or do. The "theory of action perspective" is used as the theoretical underpinning for this study, as it can contribute to gain a deeper understanding about how management's attitudes and beliefs (theories) influence their actions to implement and promote ICT practice in schools.

Chapter 3 gives a detailed account of the research design and research methodology process.

CHAPTER 3

Research design and methodology

3.1 Introduction

This chapter aims to present a discussion of the research paradigm and methodology used for this study. I then proceed with a discussion of the research strategy and research design that were utilised to complete the study. The data gathering methods and research instruments that were applied in this research are then mentioned and described. This is followed by a description of the method of data analysis. Finally a brief description of the ethical issues and limitations of the study is discussed to conclude this chapter.

3.2 Research paradigm and methodological perspective

This study was conducted from an interpretive paradigm with the objective to explore the perceived beliefs and attitudes of school managers about the use of ICT in schools. My academic background in psychology and education influenced my choice of paradigm. The epistemological stance on interpretive approaches is that knowledge and access to reality is gained only through social constructions such as consciousness, language, shared meanings, tools and documents (Myers, 1997). Those who espouse the interpretive approach claim that social action must be understood in the social contexts in which they are constructed and must include the meaning that social actors give to their actions (Walsham, 2006). In line with this Cohen et al. (2003) points out that interpretive researchers are concerned with making sense of the world and want to understand a person's interpretation of the world in which they interact. This interpretive worldview appeals to me as researcher, because it provides the opportunity to gain an in-depth view and understanding of how school managers influence ICT practice in their schools. According to Neuman's (2000) understanding of the interpretivist approach, the researcher is given the opportunity to address issues of influence and impact of the social context and document the multiple views of participants. Using the interpretive perspective enabled me as the researcher to attempt to understand the social, organisational and personal issues related to the

implementation and use of ICT in schools from the perspective of the participants in my study.

Given the interpretive stance adopted for my study, the qualitative research methodology with semi-structured interviews and document analysis as data collection methods was a suitable means of acquiring an understanding of the perspectives of the school management team about ICT practice in schools. The qualitative research method aligns with my objective as an interpretive researcher, in that the focus is on understanding the person's interpretation of the world. Hoepfl (1997) concurs that in qualitative research the focus is on seeking an understanding and illumination, in order to gain insight into the participant's experience of a situation. In qualitative research the emphasis is on the importance of an individual's interpretation, experience, feelings and thoughts (Denby, Butroyd, Swift, Price & Glazzard, 2008). Qualitative research permits the participants' unique interpretations to emerge and may help researchers develop an understanding of the influence they have on the social and cultural contexts within which they live (Myers, 1997). A qualitative research methodology strives for an in-depth understanding in a natural setting and consequently was chosen for this study to develop a rich, detailed understanding from within the participants' experiences of ICT implementation and practice within a school setting (Denby et al., 2008).

3.3 Research strategy

The case study research approach enables the researcher to closely study the data within a specific context and focuses on a limited number of individuals or a small geographical area (Zainal, 2007). Both Yin (1994) and Cohen et al. (2003) describes case studies as an in-depth, analytical research design that focuses on portraying, analysing and interpreting a specific instance or phenomena in its real-life context. The case study method provides a unique example of real people in real situations, as it seeks to understand the perceptions of individuals (Cohen et al., 2003). These descriptions accords with the focus of my study on investigating the perceived beliefs, attitudes and visions of school management with regards to ICT practice in a specific school settings.

A multiple case study approach was an appropriate research strategy, as the focus was on investigating the interpretations of various individuals in the school management team within their respective schools about the implementation and use of ICT. Yin (1994) argues that multiple cases strengthen the results, thus increasing the confidence of the theory and results. Based on these various types of case studies, the most suitable type of case study design that fits the purpose of my study is the exploratory case study approach. Exploratory case studies attempt to understand a phenomenon by acquiring new insight into what happens within a case, which has no clear, single set of outcomes (Baxter & Jack, 2008; Yin, 1994).

3.4 Research design

3.4.1 Selection of research sites

The research sites in the study were chosen to provide a local perspective of ICT implementation and practice in schools in the Pretoria[7], Tshwane District[8] area. The research sample included three public primary schools. Maximum variation sampling (Cohen et al., 2003) is a purposive sampling method that seeks to identify and capture core experiences and central shared aspects, in order to produce a detailed description of a particular case (Hoepfl, 1997). When using a maximum variation sampling method, a small number of cases are selected to maximise the diversity relevant to the focus of the study (Cohen & Crabtree, 2006). As stated in the research strategy, the focus of the case study research is on different individuals in their different settings (Yin, 1994). Thus maximum variation sampling (Cohen et al., 2003), was used to identify and select three primary schools from different socio-economic contexts (see Table 3.1). My choice of schools was further guided and influenced by contextual factors such as time constraint, availability of schools and the proximity of schools. My background as a primary school educator and school manager prompted a specific interest in primary schools. My assumption was that ICT implementation and practice was more pronounced in primary schools compared to secondary schools.

[7] Pretoria- a town in the province of Gauteng in South Africa.
[8] Tshwane district ---one of the district offices of the Gauteng Department of Education in the Tshwane/Pretoria area.

Convenience sampling (Cohen et al., 2003) was used, to identify three primary schools in the Pretoria, Tshwane District area, which had ICT or computer laboratories available at their schools for teaching and learning. The three selected primary schools comprised of a township school[9], a former model C school[10] and a former Indian school[11] and were chosen as the research sites (see Table 3.1). Cohen et al. (2003) points out that maximum variation sampling is useful if the aim of the study is to investigate unique changes, variations or patterns that have emerged as a result of the response of the participants to a phenomenon. Cohen and Crabtree (2006) claims that researchers often strive to understand how a phenomenon is seen and understood among different people, in different settings and at different times, accordingly the basic principle behind maximum variation sampling is to gain greater insights into a phenomenon by looking at it from all angles.

Prior to conducting research, a letter (Appendix A) and an application form, was sent to the Gauteng Department of Education[12], requesting permission to conduct research at three selected primary schools in the Gauteng[13] area, Tshwane district. After receiving approval from the GDE (Appendix B), a letter was emailed to principals of the sampled schools, requesting permission to gain access to their school and to use their school as a research site (Appendix C). Subsequently, after receiving feedback from the principals of the selected schools, I contacted them telephonically, to confirm a suitable date and time to schedule an appointment to conduct the respective interviews. The participants were then contacted personally via phone or email ahead of the time to arrange a suitable time for both the participant and myself as the researcher to meet and conduct the interview. With permission from the Gauteng provincial department of education and the principals of each respective school, the fieldwork of my study was conducted during the period of March 2012 until September 2012.

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[9] Township schools are schools in the (often under developed) urban living areas situated in the township area or built on the periphery of cities or towns, also often referred to as rural schools.
[10] Former Model C schools are urban public schools, previously known as former whites-only schools during apartheid.
[11] Former Indian schools are public schools situated in urban areas with a prominent Indian based community. During apartheid, these schools were mainly reserved for Indian pupils.
[12] Gauteng Department of Education is the provincial division of the Department of Education of South Africa.
[13] Gauteng is one of the nine provinces of South Africa.

The socio-economic context of research sites

School A

School A, a former model C school is situated in Capital Park[14], west of Pretoria, Gauteng and the economic status of the surrounding community is blend of poor to middle class. Despite being situated in an urban residential area, many of the school's learners commute daily from townships in the surrounded area. The school is neat, well maintained and well resourced, compared to school B (township school). The school's computer centre is well resourced and equipped with 35 computers, loaded with educational software, access to the internet, a computer and printer for the educator as well as a data projector and white screen. Most educators have their own personal laptops, as well as access to a school laptop within each grade. The school has data projectors for educators to use in their classrooms, as well as a data projector in the school hall, which they utilise for school assemblies. The admin office is equipped with computers, printers and copiers. The principal, as well as the deputy principal have laptops and a printer in their respective offices. All teachers have access to the internet in their classrooms. School A utilises a school management system[15], called Principal Primary software[16] to execute their administrative duties and application software, called D6 School Communicator© to communicate with parents. The school has their own website and is monitored by surveillance cameras in the classrooms and around the school for discipline and safety reasons. The principal monitors these surveillance cameras with a server and a computer situated in his office.

School B

The township school (school B) is situated in Mamelodi East[17], northeast of Pretoria and serves the surrounding community is mostly impoverished. The school is one of a number of no-fee schools[18] in the Mamelodi area. The school is neat and well maintained and have access to a limited amount of ICT resources. The school has a

[14] Capital Park is a residential suburb, situated in the west of Pretoria in Gauteng, South Africa.
[15] School management system is a database system for educational institutions to manage student data.
[16] Principal Primary software is a web-based fully integrated admin, financial and communication management system for schools.
[17] Mamelodi East is a township residential area northeast of Pretoria in Gauteng, South Africa.
[18] No fee school: public schools are identified as no-fee schools based on the level of poverty in the surrounding area. These schools solely rely on government funding and do not charge additional school fees (The South African Schools Act, 1996).

Gauteng Online computer lab[19], which contains 28 computers and limited access to the internet via the lab. In addition to this, the school also has two computers, a printer and a photocopier in the admin offices, with no access to the internet, as well as one stand-alone computer in the staffroom and media centre. The principal has a stand-alone computer, with a printer and access to the internet and the deputy principal has access to a laptop and a printer in his office. Not all staff members have laptops and rely on the Gauteng Online lab for access to the internet.

School C

School C (former Indian school) is situated in Laudium[20], southwest of Pretoria. The school's socio-economic status is predominantly poor, because the majority of their learners commute daily from townships in the surrounding area. Similar to school B, school C also has a Gauteng Online computer lab, with internet access and software. In addition, the school has an interactive whiteboard available for teachers to use in their classrooms. The principal and deputy principal both have computers in their offices, as well as access to a printer. The majority of the staff has their own personal laptop.

Table 3.1: Summary of research sites

Site	Type of School	Socio-economic status	ICT resources available	Number of participants
School A	**Former model C school**	High	Computer centre: 35 computers. Most educators have access to laptops. Access to internet. School website Data projectors. D6 School Communicator© application software	3 SMT
School B	**Township school**	Low (No-fee school)	Gauteng Online computer lab: 28 computers. Limited access to internet via Gauteng Online lab. Limited amount of educators have laptops.	3 SMT
School C	**Former Indian school**	Middle	Gauteng Online computer lab: 28 computers. Limited access to internet via Gauteng Online lab. Interactive Whiteboard Most educators have access to laptops. School website	3 SMT

[19] Gauteng Online computer lab: A government funded computer lab for public schools in the Gauteng province.

[20] Laudium is a residential area in the southwest of Pretoria that mostly caters for the surrounding Indian community.

3.4.2 Selection of participants

The purpose of the research was to create an understanding of the interplay between school management and ICT. This entails examining factors such as school management's beliefs and attitudes about ICT, school management's view on the value of ICT in teaching and learning, school management's convictions and generalisations about ICT practice, only to mention a few. Due to focus of the study, being on school managers, purposive sampling (De Vos, 2002) was used to identify these participants in each of the selected schools. Purposive sampling allows the researcher to focus on a particular feature or process that is of interest to the particular study (De Vos, 2002). Thus the participants chosen for the study comprised of the principal, the deputy principal and one HOD at each selected school that constitute the school management team. The demographics of the selected participants in the study are summarised below (refer to Table 3.2).

Table 3.2: Demographics of participants in the study

SCHOOL A			
Designation	**Principal**	**Deputy Principal**	**HOD**
Race	White	White	White
Gender	Male	Male	Female
Teaching experience	23 years	17½ years	12 years
SMT experience	16½ years	9½ years	7 years
Academic & Professional qualifications	BA degree ACE[21] (Management)	Basic Education Diploma (BEd) ACE (Educational management) BEd (Hons) in Educational management	BA degree Teaching Diploma (Higher education) BA (Hons) degree in Educational Psychology ACE (Educational management)

[21] ACE Advanced Certificate in Education

SCHOOL B			
Race	Black	Black	Black
Gender	Male	Male	Female
Teaching experience	31 years	15 years	22 years
SMT experience	28 years	5 years	-
Academic & Professional qualifications	Junior-secondary teacher's diploma Senior education diploma Instructor's course (Electrical work)	Teaching Diploma (Senior phase)	Teaching Diploma (Senior phase) BA degree BA (Hons) degree
SCHOOL C			
Race	Indian	Coloured	Indian
Gender	Male	Female	Female
Teaching experience	42 years	36 years	22 years
SMT experience	36 years	16 years	3 months
Academic & Professional qualifications	Teacher's diploma	Teacher's diploma	Senior primary education diploma

3.4.3 Pilot study

A pilot study can be described as a small-scale trail run of the prospective study whereby the research process and data collecting tools are tested prior to conducting the main research (De Vos, 2002). The purpose of the pilot study is to improve the quality and effectiveness of the research process to ensure a successful study, as Van Teijlingen and Hundley (2001) suggests that it is essential for a good study design. Therefore, prior to data collection, a pilot study (De Vos, 2002) was conducted between March and April 2012 at a school in the Pretoria, Tshwane district, which was similar to the possible target sample, as mentioned in the selection of research sites and participants (refer to pilot study details in Table 3.3 and Table 3.4 in Appendix E1). Conducting a pilot study provided me, as the prospective researcher, the opportunity to acquire first-hand practical experience orientated me for conducting the main research. (Refer to journal entry 1 & 2 in Appendix H). The pilot study is an effective means to assess the feasibility of the research questions and test the adequacy of the research process, as well as to pre-test the interview protocol (Van Teijlingen & Hundley, 2001) (refer to Appendix E2). In this study the pilot study allowed me to refine the interview protocol by removing questions that seemed repetitive.

3.5 Data collection

The integration of methods ensures that the research question is answered from different perspectives and leads to triangulation of the data (Mason in Cohen et al., 2003). A combination of interviews, document analysis, field notes and a researcher journal were used in collecting data for this study.

3.5.1 Interviews

Silverman (in Cohen et al., 2003) lists the purposes of interviews in qualitative research as, gathering facts, accessing beliefs about facts, identifying feelings and motives, commenting on actions, exploring present and past behaviour and eliciting reason and explanations. According to Silverman's list, these purposes encompass all the aspects that my study intended to investigate. In relation to this, interviews have the potential to align the research question to interview questions (Butin, 2010). Therefore interviews were the definitive method for gathering data about the beliefs and attitudes of school management about ICT and ICT practice in schools.

Face-to-face, semi-structured interviews offers a greater degree of flexibility to the researcher and is useful in situations where the interviewee has difficulty answering a question or provides only a brief response, in that it allows for the interviewer to make use of cues or prompts to encourage a response (Mathers, Fox & Hunn, 1998). This method of interviewing allows the researcher to be flexible in that they can deviate from the interview schedule to follow up on the participant's responses (Denby et al., 2008). The main rationale for using open-ended questions was that I hoped to obtain an in-depth understanding of the participant's responses and consequently obtain a wider perspective of the issues regarding the influence of school management on ICT practice.

Interviews were conducted with the school management teams of the three selected schools in the study. A face-to-face, semi-structured individual interview was conducted with the principal, deputy principal and one HOD of each respective school. One interview was conducted with each SMT member and the duration of the interview was about 30 minutes to 45 minutes. The interview setting for this study was at the selected school sites of the respective participants. De Vos (2002) suggests selecting an

interview setting that is, easily accessible, comfortable, quiet and free from interruptions. A total of nine face-to face individual interviews were conducted.

A set of predetermined questions or an interview protocol as Butin (2010) refers to it, were developed prior to the interviews. Each interview protocol consisted of six sections, namely teaching experience, beliefs and attitudes about ICT, practice and use of ICT, impact of ICT, role in implementation, vision or goals for implementation. Each section contained a set of open-ended questions relevant to that specific topic (Appendix F). The interview protocol was carefully constructed to avoid potential researcher bias (Butin, 2010). I made use of an interviewer checklist as a guide to assist me in the interview process (Appendix G). The interview checklist can be viewed as a signpost that guides the interviewer and participants through the interview process and ensures that the researcher is organised and participants are well prepared, for the interview (De Vos, 2002).

All interviews were digitally audio recorded using an Apple© iPhone and application software called Dragon Recorder©. These recordings were done with the consent from the participants. However De Vos (2002) cautions against the use of using a digital audio recorder in that some participants may feel uneasy or nervous being recorded and this must lead to them not responding to some questions.

In contrast to the warnings of using audio recordings, Denby et al., (2008) advocates the use of a digital audio recorder. It is faster, more effective and accurate and will allow the researcher to concentrate on the quality of the participants' responses (Denby et al., 2008). As researcher I agree with this notion and found the use of the digital record of great value to my research process. The voice recordings were downloaded on to a laptop safe keeping and to be replayed and transcribed after the interviews were conducted. All interviews were transcribed in Microsoft© Word format. The interview transcripts and field notes were read and re-read to gain an initial understanding of each participant's perspective and to identify preliminary themes for data analysis. A total of 9 interviews were conducted, transcribed and analysed.

3.5.2 Field notes

Field notes are chronological descriptions of what happens to the setting and the participants, the events taking place, as a well as an account of the researcher's attitudes, perceptions and feelings during the research process (De Vos, 2002). I utilised field notes to report on my observations before, during and after conducting the interviews and to reflect on my interpretations of what I heard, saw, experienced and thought about the participants, the research site and the interview process. After an interview I used a note book to jot down my impressions of the interview and my observations about the research site and participants, in the hope that it will aid me in understanding the participants in their natural setting more comprehensively. Field notes compliments the interviewing process as it can help to document the work in progress, identify a pattern emerging, pose further questions and can also be used to reflect on and compare to other forms of the data gathered (Soy, 1997***)***. Field notes was used to comment on the interview process and to keep track of my ideas, thoughts or further questions during the interview process, as well as to reflect on the data gathered and record themes that emerged. These written field notes were then perused and re-read during the analysis stage of the research process and used to reflect on the data gathered from the interviews.

3.5.3 Document analysis

Document analysis involves analysing official documents such as minutes of meetings, agendas or office memoranda that were written with a view to the continual functioning of an organisation (De Vos, 2002). In order to gain insight into school management's perspective about ICT practice, documents such as the school's ICT policy (if available), LTSM[22] budget, mission and vision statement (school policy) and other relevant documents related to ICT (if available), such as minutes of meetings, were requested and collected with the consent of the SMT. These documents were used as secondary data sources to study and compare to the data collected during the individual interviews (Denby et al., 2008). Documents related to strategic planning, staff development and the school budget can be analysed to identify the future plans for the

[22] LTSM-Acronym to refer to all relevant Learning Teaching and Support Materials, that facilitate and aid teaching and learning, typically provided to support South African School's Act section 21 schools (Gauteng Department of Education, 2011).

utilisation of ICT within the respective schools (De Vos, 2002). Based on this selected schools' policy on ICT, LTSM budget and mission and vision statements were requested to be perused and analysed to identify an emergent theme and coded accordingly.

Although document analysis can be of great value to the qualitative researcher, there are factors that could influence its merit as a research tool. According to De Vos (2002) the accessibility or availability of relevant documents could be problematic. Only one of the three schools in my study had a formal ICT policy (see Appendix I3), whereas the other schools relied on national or provincial policies related to ICT. However, despite these problems, I found document analysis to be of value, as it allowed me to investigate whether these selected documents, available or not, reflected or affirmed the SMT's beliefs, attitudes and vision for ICT practice. Table 3.5 provides a summary of all documents used for data analysis, which included school based ICT policies, SGB constitutions, budgets and mission and vision statements.

Table 3.5: Summary of documents used for data analysis

Document type	School A	School B	School C
Policy	School policy Policy on computer technology	SGB constitution	Not available
Budget	Draft School Budget	LTSM budget outline	Not available

3.5.4 Researcher journal

A researcher journal (Butin, 2010) was used throughout the study to document and reflect on the process of data collecting and analysis. Ortlip (2008) urge qualitative researchers to use reflective practice during their research process, which requires a researcher to "talk about themselves". Thus, a researcher journal is valuable tool for demonstrating the research process and creates the opportunity for the researcher to reflect on the progress of the research, by recording problems experienced and report on changes made (Denby et al., 2008). More appropriately it can be described as "running

commentary to oneself" and documents the intellectual journey that *the researcher* has made (De Vos, 2002). A notebook was used to document my thoughts, questions, ideas or connections made during the research process. My notes in my researcher journal, gave me the opportunity to introspect and reflect on my experience as the researcher. These reflections became useful in identify difficulties and challenges that I encountered during the research process, as I had indicated previously in the description of the interview setting. The researcher journal can be used to reflect on emerging themes and categories, as Bryant and Charmaz (2007) states that reflexivity contributes to the grounding of categories as they emerge through the analysis process. Consequently, I used the researcher journal as a means to reflect and comment on my thoughts about the data, as I did an initial scan of the transcripts for each of the schools (refer to Appendix H for extracts of journal entries).

3.6 Data analysis

The data analysis process for this study is based on the grounded theory analysis approach, as De Vos (2002) advocates that it has special relevance to the human service profession, such as education. Both Lincoln and Denzin (2003) and Burck (2005), have identical descriptions of grounded theory analysis. According to their perspective, grounded theory analysis is based on the premise that data is analysed to identify important concepts that emerge from the text and material, in order to link it to ideas and theory "grounded" in the data. The grounded theory approach helps the researcher to search for and identify general statements about categories of data and to build theory about processes, thereby developing conceptual analyses of social worlds (Burck, 2005). The grounded theory approach is known in literature as the *comparative method* of analysis and involves various steps in analysing data. These steps basically include, reading through a small sample of text, coding, discovering patterns, identifying and forming descriptive categories, comparing and linking categories according to similarities and differences, grouping or clustering categories, re-examining data according to categories, interpreting and grounding of theory (Burck, 2005; De Vos, 2002; Lincoln & Denzin, 2003; Merriam and Others, 2002). Based on these steps and suggestions for the grounded theory approach, I conducted the data analysis for this study.

I started the data analysis process by first organising and preparing the data collected for analysis by transcribing verbatim, the interviews from the digital audio recordings for each respective school. The transcriptions were typed using a computer word processing programme, Microsoft Word®. Cresswell (2009) suggests reading first through the data after it has been transcribed to get a general feel for emerging themes or topics that might arise in the analysis; he refers to this process as "optically scanning" the material. I used this method of *optically scanning* to read through all the data in order to obtain a general sense of what the participants are saying.

Cresswell (2009) suggests taking apart the data sentence by sentence or paragraph by paragraph and giving it a name that represents the phenomena. Notes were recorded in the research journal about my general thoughts and comments about the initial emerging themes or topics. Lincoln and Denzin (2003) refer to this process as memoing. The process of *memoing* involves writing or typing reflective commentaries about the data to gain a deeper analysis (Lincoln & Denzin, 2003). After reading through all the raw data, a list of topics was created based on the responses of the participants in the study, this process is known as first- level coding or indexing (De Vos, 2002; Evans, 2002). I clustered together similar topics, according to how they relate to each other.

These codes were then used to create categories. Categories were given descriptive names based on how it related to the research question and common themes that emerged from the data. Categories are vital for educational research and are described in literature as the "cornerstones" for reflective practice (Merriam et al., 2002) and "stepping stones" for developing theory (Evans, 2002). Each topic and category was then given a code name and abbreviated into codes. Manual coding or hand coding (Cresswell, 2009) was used to code the data on the transcripts. The coding process involves breaking down the data, conceptualising it and then putting back together in new ways, which makes the analysis of the data more systematic (De Vos, 2002). Therefore the data for each category was assembled in one place for further analysis and refinement. In conceptualising and organising the data for the categories, I looked at

patterns, trends, commonalities or contradictions between the various topics identified (Evans, 2002).

The final step of the data analysis process was to interpret the data and compare the findings to the literature and theory (Cresswell, 2009). Themes were compared and analysed for each individual participants as well as across the different cases (schools) to represent the multiple perspectives or views of the participants in the study. To illustrate points from the participants I made use of direct quotes to ensure authenticity of the information (Cresswell, 2009). In the discussion of the findings and analysis, the schools were given pseudo names to ensure the anonymity and confidentiality of the participants in the study. The results of the data analysis are provided in the next chapter.

3.7 Ethical procedures adopted for the study

Qualitative methods such as interviews and focus groups are processes of human interaction therefore the interpretive researcher should be faithful to the participants and avoid ethical issues such as misinterpreting, conflicting opinions, distorting and deleting findings (Vivar, Mcqueen, Whyte & Armayer, 2006). Since this study focuses and deals with personal matters, such as beliefs, opinions, attitudes and experiences, as the researcher, I had to be sensitive and contemplative when engaging with the participants and the data collected. The following section discusses the ethical procedures adopted to ensure that the study is ethically sound.

3.7.1 Gaining access, informed consent and voluntary participation

Getting permission to access to the research site and permission from the participants to be interviewed is essential and in doing so, the researcher validates the research (Denby et al., 2008). Thus prior to conducting research, I sent a formal letter (see Appendix A) to the GDE, requesting permission to conduct research. I then used the GDE approval letter (Appendix B) to establish a rapport with the principals of the schools in my study and to request permission to gain access to their schools and to use their school as a research site (Appendix C).

Denby et al. (2008), states that information about the aims and purposes of the research should be given to participants before asking for consent. Prior to the interviews, the researcher provided the participants with information about the purpose and background of the study, as well as informing them about their rights (refer to Appendix D1). Informed consent forms were then given to the participants to complete, to certify voluntary participation and consent (Appendix D2). Cresswell (2009) indicates that consent forms acknowledge that the rights of participants will be protected throughout the research process. Similarly, Groenewald (2004) recommends making use of an informed consent "agreement" to gain consent from participants, as this is critical to establish a good rapport and empathy with participants and ensures the depth of information. In addition to this participants were asked for permission and consent to audio-record the interview session. Audio-recording the interviews augmented the authenticity of the data.

3.7.2 Confidentiality and non-disclosure of information

To protect the identity of participants all participants were informed before the interviews, about the possible risk of non-anonymity (Cresswell, 2009). To ensure that the study hold no potential risk or legal harm to participants, the information and responses shared during the research was kept confidential and not disclosed to third parties without the consent of the participants. Participants were assured that any information that they provide during the course of the research would remain confidential. Furthermore participants were informed that their identities would not be revealed in the final report, thus transcripts were coded to replace the names of the participants and schools and participants with pseudonyms.

3.7.3 Trustworthiness

Charmaz (in Denby et al., 2008) states that qualitative research specifically educational research requires the researcher to build trust and empathy with the participants in the study. Therefore rapport needs to be established between the participant and the researcher (Denby et al., 2008). To ensure trustworthiness measured were taken to ensure that the participants understood the implications of participation in this research. I assured and emphasised the fact to the participants in my study of their right to

withdraw at any time from the study. In addition to this I assured them that the study will not in any way affect their position within the school or compromise their relationship with colleagues or learners, as the information they shared will be kept confidential. Participants were also given the interview schedule prior to conducting the interview to establish trust and create an open and transparent relationship between the participants and myself as the researcher.

3.8 Validity strategies adopted for the study

Guba and Lincoln (in Morse, Barrett, Mayan, Olson & Spiers, 2008) stated that in order for qualitative research to be considered worthwhile the attainment of rigor is necessary. They further suggest making use of various strategies to ensure rigor in the qualitative inquiry (Morse et al., 2008). The following section discusses the validity strategies followed to ensure that my study is reliable and valid.

3.8.1 Triangulation

Triangulation involves the use of multiple and various methods, data collection and sources, as well as theories to corroborate evidence (Qnwuegbuzie & Leech, 2007). Triangulation according to Denby et al. (2008) is used to double-check data and to support or indicate a difference in data, as this increases the credibility of the study. Onwuegbuzie and Leech (2007) mention the four types of triangulation, as outlined by Denzin in their article, namely data, investigator, theory and methodological triangulation. Miles and Huberman (1994) suggest that using a combination of sampling strategies contributes to triangulation of the data. Thus I utilised a combination of sampling methods, such as purposive sampling and maximum variation sampling for my study.

Furthermore to ensure triangulation of the data I made use of different methods of data collection and different data sources. Data collection methods included semi-structured interviews, document analysis, and field notes. Three sources of data were used, namely the principal, deputy principal and HOD. The different sources of data that were used ensured that a multitude of perspectives were examined from various participants and contributed to creating a more adequate representation of the phenomenon

(Onwuegbuzie & Leech, 2007). As part of methodological triangulation, a pilot study was done as a trail run to refine the research process and instruments.

3.8.2 Reflexivity

Reflexivity is based on the notion that the researcher is inescapably part the social world that they are researching and therefore they bring their own predispositions, knowledge, ideas, attitudes, beliefs and views to the research (Cohen et al., 2003). The researcher should be aware of the biases and therefore must be sensitive to the language and words used during interviews and in the study to ensure that there are no discrimination on the grounds of gender, sexual orientation, race or age (Cresswell, 2009). By keeping a researcher journal throughout the research process maintains researcher reflexivity (Burck, 2005). In self-reflection the researcher takes the responsibility for their own positioning and creates an open and honest narrative in qualitative research (Burck, 2005; Cresswell, 2009). Therefore I used a research journal, as discussed in the data collection section previously to write notes and memos about the process and progress of the research and to record my thoughts, ideas and opinions of the findings or discoveries as well as reflecting on my part and influence in the research process.

3.8.3 Transferability

To ensure the transferability of the results, different schools from different socio-economic settings were used as well as various data collection methods. Case –to- case transferability was established by focusing only on primary schools.

3.9 Summary

This chapter explained the qualitative research process and methods used for this study. This included a discussion of the research paradigm, methodological and data collection and analysis methods. The chapter concludes with the discussion of the ethical procedures and validity strategies followed to ensure that the study is reliable, valid and ethically sound. A summary of this chapter is presented in Table 3.6 below.

Table 3.6: Summary of research design and process

Research design and process	**Decision**	
Researcher paradigm	Interpretive	
Methodological perspective	Qualitative	
Research strategy	Case-study	
Research methods	Pilot study	Interview protocol
	Semi-structured interviews	Interview protocol
	Document analysis	ICT policy (if available) & Budget
	Researcher journal	Journal & Field notes
Participants	School management teams (n=3)	Principal (n=3) Deputy principal (n=3) HOD (n=3)
Sampling methods	Purposive sampling Maximum variation sampling	
Data	Interview Transcripts Documents analysis Field notes and Journal entries	
Data analysis	Grounded Theory approach Manual coding Categorising and identifying themes	

CHAPTER 4:
Findings

4.1 Introduction

This chapter presents the findings from the analysis of the interviews conducted with nine members of the management teams from the three selected schools in the study. The objective of the interviews was to allow participants to express in their own words their beliefs and attitudes about issues with regards to the integration and use of ICT in teaching and learning. The aim was to gain insight into the beliefs and attitudes of SMT's towards ICT integration and practice in their schools. From the analysis of the interview transcripts the findings were organised according to the categories, themes and sub-themes that emerged from the *apriori* coding of the data. The discussion of the findings is presented according to four categories. The four categories are:

- School managers' attitudes towards ICT practice in education
- The beliefs of school managers' about ICT practice in schools
- School managers' visions for ICT practice in schools
- School managers' perceptions about provisions necessary for successful ICT practice in schools.

Table 4.1 gives an indication of the development of categories, themes and sub-themes to provide a more comprehensive understanding of the findings.

Table 4.1: Development of categories, themes and sub-themes

Category: Attitudes				
Themes	**Attitudes towards using ICT in practice.**		**Attitude towards being computer literate.**	
Sub-themes	Affirmative attitudes	Tentative attitudes	Compulsory attitudes	Non-compulsory attitudes
	Assertive attitudes	Apprehensive attitudes		

Category: Beliefs		
Themes	**Beliefs about the benefits of ICT using ICT in teaching and learning.**	**Beliefs about the challenges of integrating ICT into practice.**
Sub-themes	ICT is indispensible for equipping learners for the future.	Under-utilisation of available ICT resources for teaching and learning.
	ICT empowers teachers and enhances the quality of teaching and learning.	Lack of confidence and willingness of teachers to utilise ICT in their classroom practice.
	ICT caters for different learning styles.	Lack of support from educational authorities and funding for ICT resources. Dangers of using ICT in a school context.

Category: Visions	
Themes	Modernising classrooms with ICT resources. Utilisation of ICT for teaching and learning. ICT potentially transforming education.
Sub-themes	Not applicable

Category: Provisions		
Themes	**Perceived responsibilities of SMT in implementing ICT practice.**	**Perceived necessary conditions for ICT practice.**
Sub-themes	Provide support, resources and training.	School-based ICT policy.
	Motivate and promote ICT practice.	Integration of ICT into curriculum.
	Model ICT practice.	ICT training for school managers and teachers.

4.2 School managers' attitudes towards ICT practice

The first category focuses on identifying common themes in the school managers' attitudes about ICT practice in education. As previously discussed in the literature study, our perception of the world and how we act, as a result of these perceptions constitutes of our attitudes we hold (Baron & Byrne, 2003; Sternberg & Sternberg, 2001). Nawaz and Kundi (2010) noted that a certain way to determine an individual's approach to computer use is to determine what their attitudes are.

In the context of this study, the attitudes of school managers about ICT were identified, to gain insight into how they perceive ICT practice in schools. This category is discussed according to two themes. The first theme deliberates on school management's attitudes towards the use of ICT in practice and the second theme focuses on school management's attitudes about computer literacy amongst school managers and teachers. Each theme is discussed respectively.

4.2.1 Attitudes towards using ICT in practice

During the interviews, participants were asked to express their views on ICT and to describe their level of interest and competence in ICT use, to determine their attitudes about ICT use in schools. From the analysis of the interview data, it became evident that school managers' attitudes about ICT practice could be divided into four sub-themes, namely affirmative, assertive, tentative and apprehensive attitudes. Consequently, each of these divergent attitudes that emerged from the analysis and interpretation of the interview data are discussed correspondingly.

4.2.1.1 Affirmative attitudes

The analysis of the interview data revealed that some school managers exhibited affirmative attitudes towards ICT practice. Affirmative attitudes refer to feelings and thoughts of optimism, encouragement and hopefulness, which produces an "I am" or an "I can" or "You can" or "We can" mentality (Tibane, 2007). School managers with affirmative attitudes about ICT and expressed their interest and personal competence in the use of technology (ICT). This notion is best reflected by the school management team from Pinnacle Primary. The deputy principal of Pinnacle Primary, a township

school, who considers himself, skilled and competent when it comes to the use of ICT in practice, affirmed:

> *I am not scared. I am tech savvy. What is important is the attitude, because I had a change of attitude, when you change your attitude, you know they say that positive attitude is when you lean against something and negative you lean away. When you lean away, you know you can't do anything, but if you lean against you can push, you can turn, so I started leaning towards my, my work.*
> *[Deputy Principal – Pinnacle Primary].*

The principal and the HOD from Pinnacle Primary, also expressed their personal interest in technology respectively:

> *It was just the interest that I had, you know to start doing things in a modern way and the computer was a tool that one can use, you know to modernise things really. [Principal – Pinnacle Primary]*

> *You know, I am very much interested, because I've seen that in our, in our life today technology play a very important role.*
> *[HOD – Pinnacle Primary]*

The principal of Apex Primary, a former model C school, also displayed an affirmative attitude in his view of ICT and supports the use of technology in his school. He expressed his view:

> *I support technology, it's the future. I am open for it.*
> *[Principal - Apex Primary]*

The principal of Crest Primary, a former Indian school, and the principal of Pinnacle Primary echoed this notion, as they expressed their willingness to improve their own competence when it comes to ICT practice:

> *Lately I find it (ICT) interesting just to communicate, socialise, you know, I try to be updated. [Principal – Pinnacle Primary]*

> *I am prepared to go and try things and do things, my administrative things on the computer. I realised the importance of it (ICT) and I got to grips with it and I think it is an excellent thing for education and of course ICT makes your life much easier, much, much easier. [Principal – Crest Primary]*

In addition to these affirmative attitudes, a majority of school managers also voiced attitudes of assertiveness when it comes to the use of ICT in today's schools.

4.2.1.2 Assertive attitudes

An assertive attitude produces an "I must" or an "I have to" or "You will" or "You have to" mentality (Tibane, 2007). In a sense it can be described as being "forceful" or compelling of nature. In the context of this study the majority of school managers had assertive attitudes about the use of ICT in schools and argued that ICT practice were no longer optional, but mandatory. The principal of Pinnacle Primary felt that due to the pressure and demand of authorities, teachers and school managers need to utilise ICT in their practice. He explained:

> *You know, the district is there, so it will require schedules to be, you know computerised and things like that, as a result it compels them that they need to know about computer, they need to know about some of these things (ICT), because I remember the other time, the district required us to do a presentation in the form of a power point and you know, it needed all the SMT members to be familiar with that type of presentation. [Principal – Pinnacle Primary]*

His statement was corroborated by the principal of Apex Primary, who feels strongly about the need to stay updated and current when it comes to ICT and managing the use of ICT in schools, as he feels that this could determine whether a school is successful or not. He expressed his view:

> *We can't stay behind. I realise in managing a school and stuff like that, we have to stay, well not with it, but I want to try and be ahead. So, I believe you must be updated; if you want to be one of the leading schools or just want to keep up to date you need to be. I mean I'm not ahead of everything, but I'm always willing to improve.*
> *[Principal - Apex Primary]*

He elaborated, by expressing his expectations of staff members to embrace and utilise ICT in their daily practice:

> *You must buy into it and it's about attitude. If you are not willing to do it and you are afraid of it, then I believe then suffer on the old way. I say get there; get your minds set to it. The staff must get on the boat and travel with. I expect everyone just to buy into it and just to see it as something well at one stage we are going to use it daily. Get your minds set to it. I mean they must use it. [Principal- Apex Primary]*

In accordance to this statement the deputy principal of Apex Primary agreed that a reluctance to cooperate could result in these staff members being excluded from the process of integrating ICT into the school. He confirmed:

> *I think at the moment because we are, how can I say, we are pushed for time and I think at the moment it's a get on board type of thing or you going to miss the bus. [Deputy Principal – Apex Primary]*

The principal of Apex Primary further expressed his concerns that ICT resources will not be utilised in the school and as a result has made it mandatory for all staff, teachers and managers, to utilise the school's computer-based software, as he believes that this will compel the staff to integrate ICT into their daily practice. He clarified:

> *I don't want stuff just to sit there and collect dust. I force them now to say I need this at one certain point, date and time; we only take Principal Primary stuff (computer-based administrative and management software). So it forces them sometimes and guiding, to get those people who are afraid, but to tell them to enforce it on them. [Principal – Apex Primary]*

It is evident that the principal's and deputy principal's assertive approaches towards the use of ICT, is being cascaded down to the rest of the SMT, as the HOD expressed her view about the use of ICT, as being enforced onto teachers and school managers. She stated:

> *Everyone in the school, well the rest of the SMT and you, are sort of forced, if everyone else is doing their marks on Principle Primary (computer-based administrative and management software) , you don't have a choice , you have to do it on Principle Primary or if everyone else is doing the timetable on you know on the computer, then you have to do it like that, so it's more like the environment. [HOD – Apex Primary]*

In contradiction to the affirmative and assertive attitudes, some school managers also expressed tentative and apprehensive attitudes towards the use of ICT in a school setting, which could have a different effect on the integration of ICT.

4.2.1.3 Tentative attitudes

The analysis of the interview data also revealed that there are school managers with tentative attitudes towards ICT practice, as they conveyed their views about the use of ICT in schools. Some school managers expressed that their personal disinterest in computers or technology was the reason for not being fully committed to using ICT in their practice and as a result developed tentative attitudes towards ICT. This notion is best reflected by the principal and deputy principal of a former model C school:

> *I am not very into it myself, but I realise you must stick to time. I mean, I just realise it's the future, so I am not against it, but I am not a IT boffin or a person like that. I understand everything, the basic stuff, but I'm not totally hooked on it. [Principal – Apex Primary]*

> *Okay, well I must say, I haven't been quite up to date with, with computers and all, then I started to realise it's more, that's going to be something that I'll have to start eventually using.*
> *[Deputy Principal – Apex Primary]*

Another school manager stated that his tentative approach towards using ICT in practice was as result of being able to delegate administrative demands which require ICT skills to his secretaries. He explained:

> *You see I am fortunate, I am not very computer literate, but I've got two secretaries that are extremely computer literate, look I am getting there. I can get away with a lot of things on the computer right now. I can do all my administration et cetera, but there are those intricate things and those things, all right my secretaries come in and they show me and then we go on. [Principal – Crest Primary]*

Contrary to these statements, some school managers claimed that they had a keen interest in ICT, but due to a lack of knowledge and skills they were hesitant and cautious when it comes to using and promoting ICT. The deputy principals from Apex Primary and Crest Primary noted respectively:

> *I am very interested in using it, but in the same time I am not always familiar with exactly how to use it, so I won't say it is scared, maybe it's a lack of knowledge. [Deputy Principal – Apex Primary]*

> *I am not phobic, I am more tech backwards, I am not afraid of it, but I am just like one step or two steps behind where I should be or where I would like to be. I am fascinated with technology, but I think it came in my life too late and I didn't put enough effort in, you know, making myself technology savvy. [Deputy Principal – Crest Primary]*

In addition to this the deputy principal of Crest Primary and the HOD of Apex Primary, also felt that due to their tentative attitudes, they were responsible for creating a lackadaisical atmosphere in the school when it comes to promoting and implementing ICT use. They expressed their views respectively:

> *You know I feel in that way we are relaxed. We should have done much more to get everybody up to standard technologically, not the top but at least the basics and be comfortable behind the computer. [Deputy Principal – Crest Primary]*

> *Maybe I should just get comfortable with it first, you know, before I can promote it as a workable thing in the school. So if I can maybe just get myself to use it more and to know what the advantages of using it, then it would maybe easier to implement it in the rest of the phase. [HOD – Apex Primary]*

In further analysis of the interview data, it became evident that some school managers were not only tentative about the use of ICT in a school context, but some school managers also communicated apprehensive attitudes towards ICT, as they expressed feeling of fear, anxiousness and nervousness when it came to the use and implementation of ICT. These apprehensive attitudes are discussed subsequently.

4.2.1.4 Apprehensive attitudes

Apprehensive attitudes can be described as being fearful, anxious, uneasy or uncomfortable about something. In the context of this study, school managers with apprehensive attitudes about ICT, reflected and espoused their attitudes towards their own lack of competence using ICT, as well as being timid about the implications of

using ICT within a school context. A few school managers reasoned their fear or anxiousness to use ICT in practice, as a result of their limited knowledge and expertise that made them self-consciousness to use ICT. These apprehensive attitudes are best expressed by the HOD of Apex Primary, the HOD and Deputy Principal of Crest Primary respectively:

> *I'm more the phobic kind of person, than the inspirational; I won't say I am an expert with the computer. [HOD – Apex Primary]*

> *Not too savvy about things, I'm still learning, still old school, you know, but getting the hang of it slowly. I'm not too computer literate. [HOD – Crest Primary]*

> *I am far from savvy, but I prodded along and very often I call someone and once they show me something I pick up. I know my limitations; there is a whole lot more I need to know.*
> *[Deputy Principal – Crest Primary]*

The HOD of Apex Primary also stressed that the lack of computer competence and lack of ICT skills, results in people not being able to benefit from the use of ICT and this contributes to people developing apprehensive attitudes about ICT. She explained:

> *I think everyone feels that there is a lot of more work to do with the computers, now that we have that with the marks, because it is like writing it down and typing it in and then the checking is more difficult, you know so I think, maybe that also tend to make people more negative. [HOD – Apex Primary]*

In addition to having fears of incompetence, the principal of Apex Primary also expressed his concern about the unreliability of technology equipment at times, which could also lead to apprehensiveness when it comes to using ICT in practice. He shared his experience:

> *Sometimes technology can drop you. I mean I had experiences in the hall, where you prepared a presentation and a PowerPoint thing and it just didn't want to connect and it just doesn't want to work and you sit like a fool. [Principal – Apex Primary]*

Based on these statements it is evident that many school managers classified as having certain attitudes toward the use of ICT in a school context. In some instances school managers exerted assertive and affirmative attitudes, while others expressed a more ambiguous view of ICT, having tentative and apprehensive attitudes towards ICT practice. These indentified attitudes towards ICT practice could be used as a signpost as to how school managers could influence and manage ICT implementation and practice within their respective schools.

In addition to having various attitudes towards the use of ICT in practice, comments of a number of school managers also reflected their attitudes about the issue of computer literacy amongst school managers and teachers. These attitudes are identified and discussed subsequently.

4.2.2 Attitudes towards being computer literate

The importance of computer literacy was a common theme that emerged from the interviews with the SMTs of the various schools in the study. Computer literacy or being computer literate has a multitude of interpretations and has evolved overtime as technology improved (Nawaz & Kundi, 2010). Terms such as computer competency, computer proficiency and computer literacy are often used interchangeably. Nawaz and Kundi (2010) define computer literacy as "as an understanding of computer characteristics, capabilities, and applications, as well as an ability to implement this knowledge in the skilful, productive use of computers in a personalised manner" (Nawaz and Kundi, 2010, p.20). In the context of this study, the term computer literacy will be defined as possessing the knowledge, skills and ability to use computers and related information and communication technologies efficiently and effectively. I used compulsory and non-compulsory attitudes to classify sub-themes in this theme.

4.2.2.1 Compulsory attitudes

School managers in this study deliberated on the increase of administrative demand and pressure from the Department of Education on SMT and teachers. They further noted that due to the technological advancement in society and the requirements of educational authorities requesting that most documentation and administration are done

digitally using ICTs, there has been an increase in expectations of school managers and teacher to be computer literate and proficient in using ICT equipment. This has created an impetus in education that school managers and teachers should be computer and ICT literate in order to perform their administrative duties and functions. This became evident when the principal of Apex Primary and deputy principal of Crest primary stated respectively that computers are part of our everyday lives and we cannot escape this:

> *Everything I have to do is computers. [Principal – Apex Primary]*

> *It is very important to be computer literate. Everything is about computers, I 'm sorry the pen is out of fashion.*
> *[Deputy Principal – Crest Primary]*

These statements were further supported by the principal from Crest Primary, that claimed:

> *I think if you want to be a manager of a school you have to be completely literate, computer literate. Everything that you need and everything that you are going to access and everything that you are going to process is going to go via your computer. Now I dread to think someone that has got no computer knowledge, you know today the paper work alone it's unbelievable. It's going to hamper you. [Principal – Crest Primary]*

He elaborates that the administrative duties of school managers necessitate computer literacy:

> *You know what they say, necessity is a mother of invention. So I found it, when I came into administration, I found it absolutely necessary. If you are not computer literate, you are going to find it very difficult, very difficult, because today we need everything to be processed by computer, so they have to be literate. [Principal – Crest Primary]*

His statement was further supported by the deputy principal that pointed out:

> *I think it's very important to be computer literate if you are in a management position, because then otherwise you are gonna, you not going to do all your management functions correctly.*
> *[Deputy Principal – Apex Primary]*

The analysis further revealed that pressure and demand from educational authorities on school management, has caused many school managers to adopt compulsory attitudes towards ICT integration into the curriculum. The implication of this is that many school managers in this study stressed the importance and need for teachers to be computer literate to be able to utilise ICT in their teaching practice. This notion is best reflected by the principal and deputy principal from Apex Primary:

> *They had to fit in, they can't be illiterate themselves.*
> *[Principal – Apex].*

> *It is very important that the educators must also be computer literate; otherwise they are going to manage their class halfway.*
> *[Deputy Principal – Apex Primary]*

The principal and HOD of Pinnacle Primary agreed with the school management from Apex Primary that in order for teachers to perform their duties effectively, it is essential for a teacher to be computer literate. They expressed their views respectively:

> *It is important that they should be computer literate, because in some instances they need to prepare lesson, they need to prepare tasks or activities for the learners, if a teacher is computer literate, they can do it for himself or herself. [Principal – Pinnacle Primary]*

> *You must know computers, so that we can help the children. So it is very important that we must be technologically inclined. I think a computer and a teacher should work in glove.*
> *[HOD – Pinnacle Primary]*

These compulsory attitudes has influenced school management to make decisions about the use of ICT and noted that they have put into place certain measures that will "force" teachers to make regular use of ICTs in their daily practice. Some of these decisions and measures include, making the use of ICT compulsory to do administrative tasks such as mark schedules and the mandatory use of the computer centre for learners and mathematics teachers to enforce the integration of ICT into the curriculum. The deputy principal of Apex Primary and the principal and deputy principal of Crest Primary explained correspondingly:

> *If you don't have computer skills and you don't know how to work out some of your work essentials on the computer it all goes down to the office ladies and that, it feels to me if you lost a bit of control in terms of what you are doing then. So I think it's very...it's very important that the educators must also be computer literate and nowadays like we are doing currently, is they have to do their own marks every term on the computer. [Deputy Principal – Apex Primary]*

> *In fact at this school we made it compulsory that every learner in our school visit our computer centre at least once a week. 2013 we will make it compulsory for every Maths teacher to be in the computer centre for two periods a week with the children, compulsory. Once you make it compulsory eventually they will find that you have to do it, then they'll do it. [Principal – Crest Primary]*

> *Very important, because like at the moment we computerize everything, nothing is done by hand, our reports, any documentation, class lists, everything we computerize. We were always going in that direction. Where we didn't accept hand written stuff, because it just doesn't look professional anymore, it just looks second rate and that, so I feel teacher, the principal and management must have the minimum of computer skills, just to see by things like that, you know. [Deputy Principal – Crest Primary]*

In addition to these sentiments, the deputy principal of Crest Primary also stressed her compulsory attitude towards computer literacy by comparing the necessity of having a laptop to being as essential as having a red pen. She voiced her opinion:

> *It is like how you must have a red pen, now you must have a laptop. Really it is the direction that ICT is going or education is going. [Deputy Principal – Crest Primary]*

The principal of Apex Primary supported this statement and added that if a person is not computer literate in the today's society they will be considered to be illiterate. He explained his view:

> *If you can't read or write in the earlier days you were illiterate, now in today's day, you can read, you can write, but you can't work on a computer, you are going to be illiterate, that's the future. If you are not computer literate, you are going to become illiterate, actually you are illiterate.[Principal – Apex Primary]*

Some schools have even gone as far as including computer literacy as a prerequisite for employing staff at their schools. This notion was reflected in the statements of the principals of Pinnacle Primary and Apex Primary respectively:

> *Before you get employed when we, we normally say a person must be computer literate, it is a requisite for SMT.*
> *[Principal – Pinnacle Primary]*

> *It's important for us that a person is computer literate to be employed at this school. [Principal – Apex Primary]*

It is evident from these statements, that the majority of school managers in this study have strong attitudes about the necessity of school managers and teachers to be computer literate. Findings also suggest that there were school managers that opposed this view and expressed non-compulsory attitudes towards computer literacy.

4.2.2.2 Non-compulsory attitudes.

Only a few school managers in the study expressed non-compulsory attitudes towards ICT use and the necessity of computer literacy amongst teachers. The HOD perceived the use of computers as inconsequential for improving the quality of teaching and learning. She stated:

> *No, no I don't think it's a necessity but I think we, you know give it five years then it's going to become a necessity. But at this stage, you know teaching is still very much you know, efficient without computers. [HOD –Apex Primary]*

The principal of Crest Primary felt that he could not force teachers to make use of ICT in their teaching practice, as it was not a compulsory instruction dictated by policy or educational authorities and viewed the use of ICT and being computer literate as a choice and a decision that rests with the individual teacher. He explained:

> *Look, the use of ICT at this point in time, it's not compulsory, it's up to an individual who wants to improve his teaching in class, to make use of it, so I cannot really take a person to task, because he hasn't really used any of the tools, as long as his work is up to date, it's fine. But maybe at a later stage there will be such a policy that we insist that maybe twice a week your lesson should incorporate some ways of ICT. [Principal – Pinnacle Primary]*

He further explained that although the use of ICT is embedded in the school's mission statement (refer to Appendix I 1 – Document analysis), it is not yet compulsory negotiate this as the reason for teacher taking a laid-back approach to integrating and using ICT in practice. He clarified:

> *Look I think in our mission there is something about technological advancement, which really would have love that teachers should take this serious, but as I said it is not yet compulsory so they still dragging their feet in that regard. [Principal – Pinnacle Primary]*

4.3 Beliefs of school managers about ICT practice in schools

The data also revealed that school management had espoused perceived beliefs about ICT and ICT practice in schools. This category focussed on identifying the common themes and sub-themes, which emerged from the interviews about the beliefs of school managers about ICT practice in schools. This category is divided into two themes that emerged from the analysis of the data. These themes are; beliefs about the benefits of ICT in teaching and learning and beliefs about challenges to integrating ICT into practice.

In addition to expressing their attitudes towards ICT and computer literacy, school managers also shared their beliefs about ICT practice in schools in the subsequent section.

4.3.1 Beliefs about the benefits of using ICT in teaching and learning

There seems to be consensus amongst school managers' beliefs about the various benefits of using ICT in teaching and learning. The analysis of the interview data suggests that the most common beliefs amongst school managers about ICT use in teaching and learning are, first, ICT is indispensible for equipping learners for the

future. Second, ICT empowers teachers and improves the quality of a teaching. Third, ICT is valuable in catering for different learning styles. These sub-themes are discussed correspondingly.

4.3.1.1 ICT is indispensible for equipping learners for the future

The majority of school managers in this study had a positive view towards the use of technology in a school setting. School managers in this study believe that ICT is a necessity in schools, in order to produce technologically savvy learners who can participate in a society driven by technology. Consequently, they view ICT as an indispensible tool in schools that provides learners the opportunity for developing life skills that they may need for their careers beyond school. These notions are best reflected by the principal of Apex Primary and the principal of Pinnacle Primary. The principal of Apex Primary school, who espoused assertive and compulsory attitudes towards ICT practice, believes that the use of technology in education is a necessity for everyone; particularly learners should master ICT to secure their futures. He expressed his belief:

> *It's just a huge necessity to me and the children; I mean to them it's something that you must have. I just realise it's the future. To me it's the future, so we need to educate our children with it. They need to be familiar with it. [Principal - Apex Primary]*

The principal of Pinnacle Primary, a township school, also considers ICT as a significant role player in education. He expressed his belief that learners must be exposed to ICT from a very young age, in order to gain the necessary skills to be adept in an information rich society:

> *You know, it has a significant, important role in the sense that, I mean we are living these days in the world of technology and these learners have to start early to familiarise themselves with this type of information, getting information for them to use now and also in future, so it is very important, very important.*
> *[Principal - Pinnacle Primary]*

The deputy principal of Apex Primary coincides with these principals' conviction that the use of technology in education is essential to prepare today's learners for the future, which is embedded in their school's mission statement, which was confirmed by document analysis (refer to Appendix I 2). He asserted:

> *I think it is something that has to be used in schools. So, I think ja, overall it's great. And our mission is to equip the learners for the future and I think there is no better way than by doing that with computers. [Deputy Principal - Apex Primary]*

His beliefs are similar to the beliefs of the HODs of Crest Primary and Pinnacle Primary, who views ICT as an integral part of modern society and vital for grooming learners for their future careers. They believe that ICT is valuable to education, as it prepares children to become independent learners. They expressed their notions respectively:

> *Children can see, learn and discover on their own, so I think for those reasons it [ICT] would actually be good, you know for education. It will play a role, you know, a major role and it also prepares them for the future as well. [HOD - Crest Primary]*

> *By using computers, I think to the kids; they get the firsthand information and again it prepares them for the future career, if we use these computers." [HOD - Pinnacle Primary]*

Similarly the principal of Crest Primary school recognises that ICT is invaluable to education, as he believes that it is necessary for progress in education. He expressed his aspiration for the learners of his school to be exposed to ICT:

> *I think it is an excellent thing for education. I want at all times my learners to be involved with ICT, because this is the way forward. [Principal- Crest Primary]*

These comments or concerns reflects how school managers emphasise the necessity of integrating ICT into classrooms for learning purposes, which is fixed on their beliefs about ICT's potential to equip learners with skills necessary to participate meaningfully in a technology-driven modern society. In addition to these beliefs, a majority of school managers also expressed their beliefs about the importance of using ICT for

instructional purposes and the significant role it plays in developing and advancing the teachers' classroom practices. These beliefs are discussed respectively.

4.3.1.2 ICT empowers teachers and enhances the quality of a teaching

When participants were asked about the strengths of ICT for teaching and learning, school managers believe that making ICT resources available to both the teachers and learners is essential, as ICT is the conduit through which teachers and learners can access information and resources. The beliefs of the school managers from Crest Primary and Pinnacle Primary are based on ICT's ability to make information accessible to teachers and learners. The deputy principal from Crest Primary views ICT as a modern approach for teachers to gain access to a vast amount of information and resources, which can be used for instructional purposes. She explained that:

> *I think in teaching it (ICT) like exposes you to so much to what you wouldn't have had access to in the past. Before we use to use notebooks and you know encyclopaedias and that was it. With the tap of a button you going to a new world and information is endless that you can use, resources are endless that you can use.*
> *[Deputy Principal - Crest Primary]*

The deputy principal of Pinnacle Primary agrees with this notion and emphasise the importance of using ICT in teaching and learning to gain access to information. He expressed his belief:

> *With ICT you can have more information than when I get into class without it, without ICT. [Deputy Principal - Pinnacle Primary]*

The HOD of Pinnacle Primary and the deputy principal of Apex Primary concur, as they believe that utilising ICT resources, such as computers and the internet for teaching and learning, is a more effective and productive means for teachers to access information. They explained:

> *I've seen that in our life today technology play a very important role. I think the first thing that comes to my mind when I am thinking about ICT, it's information. I get information much easier. The computer makes information available. It saves us from going to the library, to go to the encyclopaedias, you just connect the computer and all the technology gives you the information, so it makes information accessible to us (teachers). [HOD - Pinnacle Primary]*

> *I think there is a lot of advantages. I think you can find anything on a computer, like dictionaries, like, you can name it, like I said programmes or whatever. But I think you can do your planning on your computers, you can do lessons or everything you need in class you can...and then if you are linked to your interactive boards and whatever, it's going to be much easier to present your lesson.*
> *[Deputy Principal - Apex Primary]*

In accordance to these beliefs, the deputy principal from Crest Primary believes that through the use of ICT resources such as computers, teachers are given the opportunity to empower themselves and become experts in their field. She explained that:

> *It empowers the teacher and by empowering yourself, you are strengthening the child, the learner as such, because you are strengthening your information. So I feel it strengthens you a lot in terms of the content of your learning area and it opens up so many other opportunities that you wouldn't have had before the use of computers. [Deputy Principal - Crest Primary]*

The deputy principal's belief of ICT is supported by the principal's belief that ICT not only provides teachers with the opportunity to acquire resources, but also enables them to develop professionally. He noted that:

> *ICT can give teachers a tremendous resource material, tremendous, it is unbelievable. And also it can enlighten teachers as to where they going to from here. It can also develop a teacher (cont)... if you really want to develop yourself in your field, you have to go through the ICT, because there is so much of material out there (cont).*
> *[Principal –Crest Primary]*

The majority of school managers in the study believe that computers and technology are powerful teaching aids which could improve the way lessons are prepared and presented. School managers expressed their beliefs that ICT would raise the level and quality of a teacher's lesson when they utilise ICT tools and resources. This notion is reflected in the principal of Pinnacle Primary's belief about the role of ICT in teaching:

> *Also in teaching it would definitely play a role, because I think the teacher can use some of this equipment to facilitate his or her teaching in class or to make the lesson interesting. I think it puts more strength in what we are teaching in class.*
> *[Principal - Pinnacle Primary]*

The principal of Apex Primary agreed that the use of ICT tools and resources make teachers appear more professional and passionate, if they are prepared and could lead to better results:

> *I think your, your, the way of your preparation and presenting of everything is much more professional, if you get to the stage of where you do power point, I mean, some of the kids would say I can't read the teachers handwriting, where you still get the old overheard projector. And yes the strengths also has to be, well I hope that you get educators who are standing in front of the classroom and really have a passion for what they are doing and they need to be prepared and I think one of the strengths will be better results then.*
> *[Principal - Apex Primary]*

It is evident from the interviews that the majority of school managers, recognise the value and importance of using ICTs in education, as many have acknowledged it as a necessary condition for the improvement of the quality of pedagogical practices and is further supported by their beliefs about ICT's ability to accommodate and facilitate different learning styles in a classroom environment.

4.3.1.3 ICT caters for different learning styles

A number of school managers expressed strong beliefs about the versatility of ICT and its ability to cater for learners with different abilities and needs. The deputy principal of Pinnacle Primary believes that ICT can be utilised to create and inclusive teaching and learning environment to ensure that all the learners need are catered for. He explained:

> *We have a new thing called inclusion and then this inclusion it says: Teach me the way I can learn. Now how can you teach a learner who finds it difficult to see black and white colours without ICT?*
> *[Deputy Principal – Pinnacle Primary]*

He further clarified that ICT can be used to addresses different methods of delivering instruction to learners, as he believes that learners' perceptions has evolved with the times and asserted that utilising ICT in teaching and learning would help learners to excel:

> *Some learners, learn better by hearing, some learners learn better by seeing, other are spatial, you know, they use play, so all their learning, different learning styles, they can be addressed with ICT. I believe that their thinking is tuned in a different way than our thinking in the past days. So they will do better if they have those gadgets in their classes. [Deputy Principal - Pinnacle Primary]*

The deputy principal's belief is echoed by the HOD:

> *As a teacher you must not be limited to certain information, you must have a lot of information because you find that in the class you have different kinds of children. Some of them, they are not gifted in this part and others you will find that, when you start teaching them about the use, the usage of computers, they excel.[HOD - Pinnacle Primary]*

The school management team of Apex Primary agreed with the school managers of Pinnacle Primary and had a shared belief about the benefits of using ICT for teaching and learning. The principal, deputy principal and HOD expressed their belief that the use of ICTs in practice can modernise teaching methods to facilitate the different learning styles and as a result enable different learning opportunities: Their views are presented correspondingly:

> *Well instead of listening the whole time to the educator I think they, I believe that it's good to hear and visualise as well.*
> *[Principal – Apex Primary]*

> *I think you can reach a lot of people, because you can use some of the visual effects and the auditive effects that you can get out of the computers and whatever you are using, instead of just talking and writing on the board or something.[Deputy Principal - Apex Primary]*

> *Make things more visual to learners you know, especially your visual learners and then if they can use a, say for instance a computer themselves, it is also interactive learning, co-operative learning. [HOD - Apex Primary]*

It is evident for the interviews that the majority of school managers share strong beliefs about the value and importance of integrating ICT into practice and many of them also

advocate the advantages that ICT has for schooling in their beliefs. However, although the implementation and practice of ICT is believed to be a necessity and stated as a priority by most of the school managers in the study, it is evident from the interviews that there are other factors that also plays a role in the implementation and integration process. During the interviews, school managers also deliberated on contextual factors that they believe to influence intentions and strategies to successfully implement ICT into their schools.

4.3.2 Beliefs about the challenges of integrating ICT into practice

Most school managers in the study expressed their aspirations for integrating ICT into classrooms, but reasoned that there are various barriers or challenges that impede on the implementation process. This theme focuses on discussing the trends identified during the analysis of the interview data, about the perceived challenges of school managers about ICT practice in their schools. The most common challenges that school managers believe to be impeding on the successful implementation and integration of ICT practice in schools are, under-utilisation of available ICT resources, lack of competence and willingness of teachers to utilise ICT in their classroom practice, lack of support from educational authorities and funding for ICT resources and dangers of using ICT in the school context.

4.3.2.1 Under-utilisation of available ICT resources for teaching and learning

Some school managers expressed their concerns that the available ICT equipment and resources are under-utilised or sometimes not utilise at all by teachers in their classrooms. The principal of Crest Primary believes that the under-utilisation of ICT resources challenges the integration of ICT into the curriculum, especially in learning areas, such as Mathematics. He explained:

> *It is not always everybody who utilise that. We still have a challenge maybe with the Mathematics, how to incorporate computer with Mathematics. I think they still need development in that particular area. [Principal – Pinnacle Primary]*

The HOD of Apex Primary and deputy principal of Pinnacle Primary echoed this notion and believes that in not utilising the available ICT resources in their classrooms, schools

are not living up to the expectations of learners and the SMT. Their views are expressed respectively:

> *We use it for the basics like the marks, typing our own exam papers and assessment tasks, that's basically what we use it for. We don't use it to teach as we should. I think that the management team, especially our principal, you know he really wants us to use it and no one is using it. [HOD –Apex Primary]*

> *The learners have expectations on how they want to be taught. And we disappoint them because we don't use ICT.*
> *[Deputy Principal –Pinnacle Primary]*

Due to the under-utilisation of available ICT in practice, school managers compared ICT resources to the proverbial "white elephant in the room". The deputy principal of Pinnacle Primary and HOD of Crest primary implied that teachers are aware of the available ICT resources, but are deliberately ignoring the prominent issue of utilising it in their teaching practice. They voiced their views respectively:

> *So the ICT for those other educators is just a white elephant standing there. [Deputy Principal –Pinnacle Primary]*

> *Using the Smart board, which is just laying there, white elephant at the moment. But it's elective, there are one or two teachers using it. [HOD –Crest Primary]*

The deputy principal of Crest Primary agreed with the HOD's statement:

> *Because we are not using this smart board the way it can be, it's got some many possibilities. I thoroughly enjoyed that Smart board, but it is underused. [Deputy Principal –Crest Primary]*

In addition to the under-utilisation of available ICTs in practice, school managers also expressed their concerns about the willingness and level of competence to infuse ICT into their classroom practice.

4.3.2.2 Lack of competence and willingness of teachers to utilise ICT in their classroom practice.

According to Hayward (2008) all change, growth and movement are often accompanied and challenged by resistance. A reluctance or lack of interest from teachers to use ICT in their classrooms was a common challenge experienced by most of the school managers in the study. Besides limited time and lack of resources; school managers also expressed their concern about mobilising and motivating teachers to use and integrate ICT into the curriculum. School managers reasoned teachers' negative attitudes towards change and ICT as one of the factors influencing ICT practice in schools. The HOD and deputy principal of Apex Primary shared their beliefs:

> *You know what, unfortunately they are quite negative at this stage now something like that, because it's new, you know and change is always difficult for people. [HOD –Apex Primary]*

> *Well, to be quite honest with you, we've got a, our staff is a bit, what can I say, a bit difficult in accepting new things. I will say the most important thing is the attitude, the attitude of educators.*
> *[Deputy Principal – Apex Primary]*

The principal of Apex Primary agreed with the rest of his management team and voiced his belief about teachers' attitudes in the context of ICT practice:

> *Some educators, they are not interested in it, but it's a mindset to educators, some of them are kind of afraid of everything. You get those "I don't care", but some of them just don't want to lack behind.*
> *[Principal – Apex Primary]*

In addition to this school manager believe that teachers seem to stay with the instructional methods with which they are comfortable and familiar with and tend to stay in their comfort zone with regards to their teaching methods. This places pressure on school managers and makes the task of integrating ICT in schools daunting. The school managers of Apex Primary elaborated:

> *I think you know a lot of schools got educators that's part of the old way of teaching and to get them positive in terms of just using the computers and so on, sometimes can be a stressful and painful situation.[Deputy Principal – Apex Primary]*

> *I think maybe because they, they're not literate, you know computer literate for a start and then second thing is, you know people get so use to, they are in a comfort zone, so they like using what they did last year and the year before. And I think with all the changes, like the CAPS and everything, teachers in general are negative for more changes, ja [yes] towards the changes. Our educators here for instance, if it is just one huge mission to get them to enter their marks on the computer you know to now get them to use a computer for learning and teaching, I think it is going to be another mission. So I think that's one of the problems that our school for instance would face.[HOD –Apex Primary]*

The principal of Crest Primary echoed these managers from Apex Primary's beliefs:

> *You see it's, it's sometimes a bit difficult to get the teachers to actually go into the centre (Gauteng Online)...basically because the teachers are not fully geared up and I would say that the teachers is lacking in that; their enthusiasm, they rather do the chalk and talk system. [Principal – Crest Primary]*

School managers also expressed their beliefs, that the teachers' age and computer expertise play an important role in how ICTs are utilised in the classrooms. The general view is that older teachers are more reluctant to utilise ICT in their daily practice. The belief is that these teachers lack competence and confidence when it comes to the use of ICT and as a result are less like to be compliant to the expectations and demands of the SMT. This notion is best reflected in the statements of the principal of Pinnacle Primary and deputy principal of Apex Primary respectively:

> *I think their age difference becomes a problem. I have teachers that are quite old now and when you tell them about technological things, it's no! As a result they are not keen to learn at this point and time, some of these things we would like them to implement in class. [Principal – Pinnacle Primary]*

> *I will start off by saying this, is the attitude of senior educators towards ICT, you know they just say but we've never done it like this and we don't know how to do it like this, so I would first say attitude. They need to be positive, the need to be acceptable towards the fact that everything is changing and they have to be willing to be trained to use it in the correct way, so that it benefits them in class.*
> *[Deputy Principal – Apex Primary]*

Furthermore school managers believe that teachers are not skilled enough or competent enough to use ICT for classroom practice. The principal and deputy principal of Apex Primary coincide with each, as they believe that teachers has not yet reach a level of ICT competence necessary for integrating ICT into classroom practice, because many of them still struggles with the basic ICT skills for completing their administrative duties. They stated:

> *Your educator's must also be there and they are not there yet. I think they are not familiar with it, yet with it and the people are still afraid. So in terms of that there are a few barriers, where people are not to savvy to do it for themselves, simple administrative work. [Deputy Principal – Apex Primary]*

> *Well, to be quite honest I think at the moment the level of our educators and what we have at school that we can use, I think...the resources at the moment is on a much higher level than the educators and their compatibility towards that. They are struggling quite a bit to use the systems that are currently available to them. So, I don't think the educators' level are exactly where it should be for the resources that we have available at school. [Deputy Principal – Apex Primary]*

Apart from these intrinsic factors, some school managers also revealed that contextual factors also played a significant role.

4.3.2.3 Lack of support from educational authorities and funding for ICT resources

During the interviews a number of school managers expressed their discontent with the lack of effort from educational authorities to support schools financially, in their endeavours to integrate ICT, and disapproved of the quality of national or provincial ICT initiatives. The comments of the deputy principals of Apex Primary and Crest Primary, expressed their grievances respectively:

> *Then one of the biggest barriers that we have, is the support of the department itself. You don't get the backup from your superior or your districts and notational offices to go ahead and to use your ICT as much as you can. [Deputy Principal – Apex Primary]*

> *The department doesn't do much to help us in terms of technology. The only thing they done for us is give us Gauteng Online, which is mostly Gauteng offline. I really think it's a partnership. Like we should identify our needs and do what we can, but I think where there is a shortage or whatever the department should help us to a certain extent. [Deputy Principal – Crest Primary]*

Furthermore, the evidence from the interviews revealed that regardless of the socio-economic context of the schools in the study, all school managers perceived and experienced financial constraints as an obstacle to the successful implementation and integration of ICT practice. This notion is best reflected in the comments of the following school managers, who expressed their comments respectively below:

> *Budget, now there we have a big problem. We want, you know, to have it more available to our learners. The cost factors are hitting us, because the department only gives us certain amount and they emphasizing on purchasing our textbooks. Now we can't dictate to the department and say no we rather want to go that way, so we have to find funds. We can only budget from there separately for ICT from monies we can collect ourselves. It's a restriction; money is a problem there. [Principal – Crest Primary]*

The deputy principal added:

> *Now we always have funding problems and I feel that maybe we can organise the stuff and the department can perhaps fund it. Maybe we should work in partnership, because the organisation must come from the school. It is always a matter of funds with us.*
> *[Deputy Principal – Crest Primary]*

The principal of Pinnacle Primary agreed:

> *It's financial implications for us as well, you know. Remember, our schools are no fee paying schools, we rely entirely on what the government is giving us, because parents are not paying school fees, the resources, the financial resources are not enough.*
> *[Principal – Pinnacle Primary]*

The deputy principal of Apex Primary agreed and added:

> *I would think it will be the budget, it is very important that you need to have a, sufficient funds to implement the correct ICT resources at your school. It is a financial issue, you need to budget, you need to raise funds, you need do stuff like that to eventually get to your goals and maybe to set up a few short term and long term goals in terms of where you want to be. [Deputy Principal – Apex Primary]*

Apart from these contextual factors, a few school managers also shared their concerns about the dangers of ICT in a schooling environment.

4.3.2.4 Dangers of using ICT in the school context

Although there is a consensus of views amongst the SMTs of schools, about the important role of ICT in education, some school managers also expressed their concern and beliefs about the dangers of using ICT in the school context. The principal of Crest Primary believes that although ICT is indispensible to education and in spite of his aspirations for his learners and teachers to utilise ICT in the classroom; he fears that ICT or more specifically, the information that is being accessed through the use of ICT is a threat to the values and morals of society. He voiced his concern:

> *I believe the morals and the ethics of human beings are being destroyed by what is accessible through ICT. It is a major concern for us in schools, because the kind of things that happen in our schools because of this access was never something that happened in schools. [Principal – Crest Primary]*

However he further reasons that in spite of this drawback of ICT, he still believes that ICT is needed for essential learning skills, such as research, but requires the guidance of the teacher. He explained:

> *You know there is so much of evil on ICT, so we can't negate that, but they will have to do a lot of research and with the type of technology on hand, they can advance on their own pace, but they need the teacher all the time. [Principal – Crest Primary]*

The deputy principal of Crest Primary shares this belief and substantiates that one of the shortfalls of ICT is the lack of control and the possibility of learners and teachers exploiting this. She expressed her concerns:

> *With the children the shortfalls are for learning like the abuse of things, you know anything can be abused, not only by the children, but the teachers as well, you understand? Take the cell phone, especially the younger generation, they just want to be on that.*

She elaborated:

> *So I feel it is distracting them from what they should be doing and this is a reality, it is becoming more and more in fact people, especially with BBM and WhatsApp and Facebook, people are on there all the time, all the time. If we could control the use of it, the cell phones have endless potential or possibilities at using it in education, you know what I mean? It is difficult to control them, you can bring it to school but the control is going to be difficult. Yes, it can be very dangerous. [Deputy Principal – Crest Primary}*

The principal of Pinnacle Primary also expressed his concerns about the possibility of teachers trying to exploit the use of ICT as an easy way out. He explained:

> *At times teachers might try to exploit that, you know person not preparing, thinking that you know that would be an escape or easy way to present his lesson, that might be disastrous I think, because in any lesson that you are going to present, you need thorough planning and you know exactly what is it you are going to do or how you are going to implement some of this equipment. You cannot just get into a class, because you are not prepared and just show the video the entire period, you won't achieve the results that you know.*

In addition to sharing their attitudes and beliefs about ICT practice, school managers were also asked to describe the visions they have for ICT practice.

4.4 School managers' visions for ICT practice in schools

This category focussed on identifying the common themes, which emerged from the interviews about the visions of school managers for ICT practice in schools. From the analysis of the data it became evident, that all school managers in this study envisioned a future where ICT plays a significant role in teaching and learning. The most common themes that emerged are:

- Modernising classrooms with ICT resources.
- Utilisation of ICT for teaching and learning.

- Equipping learners with ICT skills.
- ICT could potentially transform education.

These visions are elaborated on subsequently.

4.4.1 Modernising classrooms with ICT resources

The school management team from Pinnacle Primary had a shared vision for ICT practice and expressed the need to modernise classrooms and teaching practices through utilising ICT resources. As the deputy principal and principal expressed their views and visions respectively:

> *We are raising a technologically, you know, orientated generation in a very wrong way. We are teaching them in an old way, chalk and talk board and then it doesn't work. You can't get to these learners with chalk and talk boards, you can't.*
> *[Deputy Principal – Pinnacle Primary]*

> *I would love to see all this green chalk board vanishing from our school and let us introduce something modern. iPads for mathematic, you know things like that, that's the future we are looking at.*
> *[Principal –Pinnacle Primary]*

Their vision for ICT was shared by the deputy principal of Apex Primary who agreed that the ideal classroom must be modernised though utilising modern ICT resources. He explained:

> *I would believe the ideal thing is to go to a class with let's say interactive whiteboards and iPads and that stuff.*
> *[Deputy Principal – Apex Primary]*

Similarly, the school management of Crest Primary expressed their aspirations for resourcing classrooms and learners with ICT equipment to enable independent learning. The principal, deputy principal and HOD's views and visions for ICT practice are presented correspondingly:

> *I would like every learner in this class have a laptop from grade one, right though everybody and everything is now on computer and that is the ideal situation you want. [Principal – Crest Primary]*

> *I would love to see every class with a smart board, right, that's really a dream. I would love to see our library with 40 computers, you go in there with goods with everything. So that is how I would envision a class and maybe one or two computers with a printer, go in , you know, go and print your assignment, go in the internet there. I can see a school who can raise funds and have iPads. I would like to see each child with an iPad. Wi-Fi for the school, it doesn't matter where you are, the teachers with their laptops can get on to it. And that is my dream. Cause the minute you put some stuff on a screen or on an iPad or whatever, they are going to go for it and read. So that is how I envision it.[Deputy Principal – Crest Primary]*

The head of department also expressed her vision:

> *Smart board, computer in every class and I know we were talking, we wish if a couple of years time, that every child come with their what, Blackberry or something and we teach with that also.*
> *[HOD – Crest Primary]*

In envisioning the ideal classroom situation for ICT practice, school managers also proclaimed their vision for utilising ICT in teaching and learning practices.

4.4.2 Utilisation of ICT for teaching and learning

Various school managers also communicated in their visions for ICT, the need for ICT to be incorporated into teaching and learning. The principal of Apex Primary envisioned a future where learners and teachers utilise ICT, in classrooms for teaching and learning. He expressed his vision for ICT:

> *To have teachers all familiar with and computer literate, to have smaller classes, 20 learners in a class, every child sitting with their laptop in front of them and that's the new way of going to school. [Principal – Apex Primary]*

The school management team of Pinnacle Primary agreed unanimously, that by exposing learners and teachers to ICT resources, it could enhance the quality of teaching and learning. The principal, deputy principal and HOD expressed their visions respectively:

> *The mission does state, we would love that these learners get exposed to any form of ICT. [Principal –Pinnacle Primary]*

> *I think my dreams and visions, I'll make sure that each and every learner in my class is exposed to computer; maybe we make use of computers, even in class. I think that will help, whatever I am teaching them, whatever, they must make use of the computers.*
> *[HOD –Pinnacle Primary]*

> *If an educator can get a laptop each and everyone of us, I am telling you things are going to work differently. So ja [yes], it is endless possibilities and our learners are going to perform very fantastically.*
> *[Deputy Principal – Pinnacle Primary]*

Their vision for ICT echoes the school's mission statement, as confirmed through document analysis (Appendix I 1), which proclaims to stimulate learners intellectually and socially by exposing them to modern technology to ensure effective and efficient learning and teaching.

Correspondingly, analysis of the interviews and documents revealed that the school management team of Apex Primary's shared vision is embedded in their school's mission statement, that proclaims to equip learners for the future using technology resources (refer to Appendix I 2). As the HOD and deputy principal asserted respectively:

> *Our vision and mission is "equipped for the future" and I mean it sort of speaks for itself, that is the future you know, is using technology and computers. [HOD - Apex Primary]*

The deputy principal confirmed this statement and added:

> *And our mission is to equip the learners for the future and I think there is no better way than by doing that with computers.*
> *[Deputy Principal - Apex Primary]*

4.4.3 ICT potentially transforming education

By modernising classrooms and utilising ICT resources more routinely, some school managers shared a vision about the potential of ICT to transform teaching and learning practices. The principal of Apex Primary belies that this vision is subject to teacher's competence and compliance. He explained:

> *I mean probably at the end of the day we are going to become like a university, where the educator's whole thing is going to be a PowerPoint presentation and it's going to be live on a website. Well the schools aren't there yet, but they'll get there, it depends on our educators. [Principal – Apex Primary]*

Although the school managers of Crest Primary shared positive beliefs and attitudes about the use of ICT in education, the school management's vision for ICT practice were contradictory. The deputy principal of Crest Primary envisioned a future were teachers will be replaced by technology. She expressed her view:

> *ICT is going to take over education, you understand what I am saying? That is how I feel, I can see it, a time where we have fewer teachers, cause there is going to be so many programmes and stuff that can be done via ICT, instead of the human. So I feel it's going to play a huge huge role in the future.*
> *[Deputy Principal - Crest Primary]*

While the principal of Crest Primary disagreed, stating that teachers are irreplaceable regardless of ICT's potential to transform education. He refuted that:

> *The ICT, the computer can never replace the teacher, it's impossible. The human touch in teaching is needed together with ICT.*
> *[Principal - Crest Primary]*

This paradox in visions could lead to an ambiguity in the school's vision for ICT practice and could cause a reluctance to adopt ICT practices. These visions provided insight into the perceived necessary provision that need to be in place to realise school management's beliefs and attitudes.

4.5 Provisions for implementing ICT practice in schools

In addition to these visions, school managers also shared their ideas about the necessary provisions and conditions needed for successful implementation of ICT practice. From the analysis of the interviews it became clear that, school managements' ideologies and visions, influence their perceptions of the conditions necessary for the successful infusing of ICTs in schools' pedagogical practices and the perceived roles they play in ensuing these visions and necessary conditions. This category is discussed according to

two themes. The first theme focuses on the perceived responsibilities of the school management team to implement ICT practice and the second theme elaborates on school managers' perceptions for conditions necessary for successful ICT practice.

4.5.1 Perceived responsibilities of school management in ICT practice

Subsequent to the analysis of the interviews, the various responsibilities of school managers were identified based on the perceptions of the participants in this study. School managers were asked to comment on what they perceived to be, school managers' responsibility in implementing ICT practice in schools. These perceived responsibilities will be discussed subsequently.

4.5.1.1 Provide support, resources and training

The principal of Crest Primary's perception of his role in ICT practice is mainly facilitating the process of resourcing classrooms with ICT. He expressed his role as follows:

> *Now the principal's role, main function is to facilitate the process. So when you facilitating, you must see to it that all the needs are there, so that the process can continue. If it means getting resources, you know, you must go out and get resources. [Principal – Crest Primary]*

In addition to this, the deputy principal of Apex Primary believes that school managers can promote the use of technology by proving teachers with resources and training to ensure that they are competent and confident with using ICT in their classrooms. He explained:

> *To make sure that all the educators are comfortable and trained in the way that they will have to use their, you know computers and whatever they need to do in terms of their schoolwork and so on. I think, to make sure that the necessary resources are there and available and if not to implement it so that anybody can use the computers and so on. [Deputy Principal – Apex Primary]*

The deputy principal of Pinnacle Primary believes that in providing teachers with support and resources, school management can eliminate the challenges they face with regards to ICT practice and that this could establish a sense of trust. He explained:

> *As a manager I am responsible for addressing the challenges that the teachers experience in class. If I come up with those ICT learning support material then they go to class and use it and they find better results, then they gain confidence in me.*
> *[Deputy Principal – Pinnacle Primary]*

Similarly, the deputy principal of Pinnacle Primary agreed that school managers should ensure that teachers are well resourced and added that support from management can influence the teachers' attitudes towards ICT practice. He expressed his view:

> *I believe it is, you know, number one the teacher needs to change their attitude towards ICT, but they cannot do it on their own, it is the responsibility of management to stimulate the educators. And then when their attitudes are now positive, we need to make sure that they are well resourced. [Deputy Principal – Pinnacle Primary]*

4.5.1.2 Motivate and promote ICT practice

Some school managers believe that by promoting the use and advantages of ICT in teaching and learning, it will serve as motivation for the routine use of ICT in practice. In light of this, the principal of Crest Primary and the deputy principal of Apex Primary explained their views respectively:

> *I would encourage them (teachers) to use ICT definitely. Where we have some educators that are not totally literate, we try and encourage them to become more literate. You must encourage people all the time. [Principal – Crest Primary]*

> *And to promote the technology, as one of the, I will say the better resources that you can use in teaching and for your daily admin and so on. [Deputy Principal – Apex Primary]*

Pinnacle Primary's principal echoes the notion of encouraging the routine use of ICT in practice and expressed how his school's SMT have approached this responsibility:

> *Once a week we have staff meetings where we try to inculcate the use of ICT, to incorporate it in their learning areas, so that they can bring the enthusiasm in the class. [Principal – Pinnacle Primary]*

4.5.1.3 Model ICT practice

A number of school managers claimed that school managers should lead by example in modelling the use and advantage of using ICT in practice, as they believe that this will motivate teachers to use ICT more often in their own practice. This belief is best expressed by the deputy principal of Pinnacle Primary and principal of Crest Primary:

> *When it comes to the computer, when we are showing them what to do, they are managing to do it, and they feel motivated and then they are going to go on further. If you want people to learn computers, then I must lead though it, I must be able to do it. You can't ask someone to you know do something which you are not going to do it. [Principal – Crest Primary]*

> *If we demonstrate how it (ICT) is done, then it is going to motivate them to use ICT. [Deputy Principal – Pinnacle Primary]*

The principal of Pinnacle Primary echoes this notion and reiterates that the advantages of ICT practice needs to be demonstrated firsthand to teachers as part of formal meetings. He explained:

> *In meetings try to inculcate and show them the need to be, to use ICT equipment for the betterment of ICT. [Principal – Pinnacle Primary]*

The deputy principal of Apex Primary also believes in demonstrating or showcasing the advantages of ICT, but in contrast to the aforementioned school managers, he believes that this function should be delegated to someone else and not school managers. He expressed his view:

> *Create opportunities for people to come and showcase, you know, the advantages of using ICT and educate on how to use it. [Deputy Principal – Apex Primary]*

Similarly, the principal of Apex Primary, expressed his belief that a school manager's main role is to manage the process. He explained that he prefers delegating the responsibility of training and modelling ICT practice to an expert in the field. His statement is presented below:

> *I believe I am here to manage. I am that kinds of person, that I manage everything, if you tell me you want the computer centre up and running, then I employ a guy that knows what to do, that's how I work. You get the right people for the right thing. I send specialist people to train them (teachers). So it's again of managing. I believe it's horses for causes. You know I can't motivate people, but I can activate them. [Principal – Apex Primary]*

It is evident from these comments of school managers that the responsibilities of implementing and integrating ICT into practice often overlap with each other and are interrelated. Most of the principals and deputy principals in this study were aware of and could articulate their responsibilities and critical roles they played or could play in the implementation and integration of ICT practice in schools. However the HODs in the study struggled to identify and articulate what the school management's roles and responsibilities are in terms of ICT implementation and practice, which could imply that there is not a consensus among SMT about what their function is with regard to ICT practice and could be perceived as one of the reasons for the protracted process in implementing and integrating ICT into teaching and learning.

In addition to these responsibilities which school managers identified as being critical for ensuring the implementation and integration of ICT into practice, school managers also deliberated on other contextual factors that impact on ICT practice in their respective schools and the conditions necessary for dealing with these factors, which is discussed subsequently.

4.5.2 Necessary conditions for ICT practice

As mentioned previously, school managers expressed their views about what they presently perceive to be needed or necessary for ICT to be successfully implemented and integrated into their schools. The analysis of the interview data revealed that the most common conditions identified by school managers were, the need for a school-based ICT policy, the integration of ICT into CAPS curriculum and ICT training for teachers.

4.5.2.1 School-based ICT policy

Field notes revealed that only one school in the study had some form of ICT policy. However evidence from document analysis revealed that this policy explicated the procedures and use of computer technology equipment in a computer centre and does not mention or make provision for ICT use in the context of teaching and learning, nor does it mandate the compulsory use of ICT in practice (refer to Appendix I 3 - Document analysis). This was confirmed by the principal of Apex Primary:

> *It's a separate policy. That is mainly, what is happening in the computer centre.[Principal – Apex Primary]*

Upon further analysis of the data, evidence from the interviews and document analysis, revealed a lack in school-based ICT policies and consequently a number of school managers expressed that there is a need for the development of a school-based ICT policy. This notion was confirmed by the deputy principal of Crest Primary and the Principal of Pinnacle Primary respectively:

> *I don't recall an ICT policy. I don't think so. We don't have a separate policy. [Deputy Principal – Crest Primary]*

> *We don't have any policy per se for ICT, maybe we still have to develop that. [Principal – Pinnacle Primary]*

In addition to this, school managers also expressed their aspirations for developing an ICT policy that will mandate the use of ICT for teaching and learning and instruct teachers on how to utilise ICT for classroom practice. The deputy principal of Crest Primary explained:

> *We are busy designing our separate ICT policy, we want it separate from everything. Right now it is in the general policy, but what we have now what we want to do is separate the whole thing, to say right this now just to so with our ICT and everything regarding ICT. Now for next year we have to have a policy so that people that are going in will know you have to work within the confines of that policy. You know you can't just work loosely, like the policy will include for example Maths period, two compulsory periods Maths and in the policy it will be dictated to them to say what must be governed in that periods. [Deputy Principal – Crest Primary]*

The principal of Pinnacle Primary also reflected:

> *You see I think that is one area we would be looking into where maybe we would definitely come up with a policy in the ICT. Get the policy in place and if the policy is in place, then my duty is to see that, that policy gets followed. [Principal – Pinnacle Primary]*

Some school managers expressed the need for guidance from an official school-based ICT policy, because they believe it will mandate the use of ICT in schools and also motivate and compel all staff to utilise ICTs more often in their daily practice for administrative and pedagogical practices. They believe that if mandated in the form of an ICT policy, teachers will be less reluctant and more motivated to accept and implement ICT into their classroom practice. The principal of Pinnacle Primary stated:

> *When you also have the guiding policy, that give guidelines on how to go about it, I don't think we will have much of a problem, but I think for starters we need a policy for ICT and get everybody to implement that. There should be a policy in place, compulsory.*
> *[Principal – Pinnacle Primary]*

His statement was echoed by the head of department:

> *You know a policy is something that binds you. I think if we have a policy each and every teacher will be encouraged to know computers, how to make use of it. It will serve as a motivation to the teachers at the same time and I think it should be documented again in policy. [HOD – Pinnacle Primary]*

The school managers of Crest Primary also expressed the need for policy to ensure that necessary control systems, procedures, restrictions and conditions for ICT practice are in place, to enable the secure use of ICT within a school environment. The principal and deputy principal of Crest Primary stated respectively:

> *There is no control on the material on ICT. So the control systems, the mechanisms are just not there. I would like to see structures come into place where control systems are there. You've got to have control mechanisms in place where people in senior management must know exactly what this person is doing, what is actually happening, so you have to make allowances for all that. We have to change our policy eventually, look with ICT and with technology and with cell phones et cetera, we had to come down hard on certain discipline areas where,*

> *even control mechanisms with the computers et cetera, the internet where we have a policy to say children will only be allowed to access this, this, this. [Principal – Crest Primary]*

> *Now that we are talking I see a need for it. That's what I am thinking, that is actually a policy we should look at, you see even rules and regulations concerning cell phone usage, you know what I am saying. Like basic computer skills, you know that sort of things.*
> *[Deputy Principal – Crest Primary]*

It is evident from these comments that school managers realise the value and significant role an ICT policy can play in making ICT practice a reality in their schools. Furthermore they emphasise the importance of a well-structured, functional and official school-based ICT policy as a necessary condition for ensuring that the use of ICT practice in a school is effective and productive.

4.5.2.2 Integration of ICT into curriculum

The new CAPS curriculum policy implemented by the National Department of Education, in 2012, has left many school managers questioning the role of ICT in schools. They explained that in the past a specific period in the timetable was allocated for computer literacy, however according to school managers in this study, the new CAPS curriculum policy makes no provision for ICT in schools, which implies that there, is no longer a specific period on the timetable allocated for ICT. The deputy principal and principal of Apex Primary stated respectively:

> *And then of course the department, the department in planning something like CAPS is actually suppose to make provision for computer periods and so on and they don't do it, because not all of the schools has got that facility, so that's the unfortunate thing. It seems to us that the department, although in the beginning they promoted computer centres and media centres and so on, if you look at the new CAPS, they haven't made provision for that so then the question arise, do they really want the schools to do that? The same thing is going to be with ICT, if the school wants to improve it, the school has to do it itself, because it's never going to come from the department and that we can see in the CAPS. So that's, I think that's one of the biggest barriers. [Deputy Principal – Apex Primary]*

> *With the new changes in CAPS, they don't want, they want to take the computer period away or stuff like that, so I don't know how (referring to how to implement ICT) Well, that's the future, ja to me it was strange when my HODs, came back to me and said from the CAPS training they, well there's no room for that.*
> *[Principal – Apex Primary]*

Furthermore school managers noted that their schools have invested in building computer centres and purchasing expensive ICT resources and equipment for ICT practice, but is now faced with the challenge of utilising these resources in a profitable manner. The deputy principal of Apex Primary expressed his view:

> *So what we did was previously there was a computer period or whatever for the kids and we started right from grade one to grade seven, but unfortunately with the time allocation of the CAPS for next year, which I think is twenty seven and a half hours or something, there's no time during the day to do the computer period. So we had to make other plans, because we are sitting with a newly built computer centre and I think a lot of schools has got that problem. So we had to integrate it. [Deputy Principal – Apex Primary]*

Consequently, this has influenced school managers to strategise and invest in a solution to utilise these facilities and equipment and has persuaded some school managers to make the decision of restructuring the timetable, to incorporate one period of Mathematics and one English period for ICT practices. They also negotiated that the decision of integrating ICT practice into these periods may be a step closer to integrating ICT with the new CAPS curriculum. In addition to this they believe that this can influence English and Mathematics teachers to make more regular use of ICT in their classroom practices for their respective learning areas. The principal of Crest Primary explained:

> *We are going to put it into our policy to say, you see with the new curriculum, CAPS, now they have increased the learning areas so Maths, instead of 10 has got 12 periods, so with the two periods we will make it now compulsory for all Maths educators to take the learners to the computer centre and do Maths on computers, once you make it compulsory eventually they will find that you have to do it, then they'll do it. [Principal – Crest Primary]*

Another school manager added:

> *And especially when I think about the CAPS next year, one of our twelve Mathematics periods is specifically going to be in the computer centre, just to do Mathematics and there is another period that's going to be there for the Languages, which is going to be lit, reading, because they've made no provision for computer centre, see they had to incorporate it in another way. So I think it's going to even be used much more next year than it's been currently used in the school. So we had to make other plans, because we are sitting with a newly built computer centre and I think a lot of schools has got that problem. So we had to integrate it. [Deputy Principal – Apex Primary]*

The principal of Apex Primary strongly agreed:

> *I just said there's no ways that I am going to take it away, you can't, you can't take it away. Then we sacrifice something else, but we can't take it away. [Principal – Apex Primary]*

This decision and approach could be based on school managements' beliefs, attitudes and visions for the potential of ICT practice to reform and improve the quality of education, especially in fundamental learning areas such as English and Mathematics, as the deputy of Apex Primary reasoned:

> *Okay our decision was based on the fact that we have the facility and we don't want to lose that money, so that was definitely one of the criteria's for that and then after that is the fact that we know how it benefits the children, we have seen that and we are using it ourselves. We don't want to just let go of it and the third criteria that was definitely used, is the fact that we sat down with some of the other schools as well and we heard their problems and concerns in terms of that and then everybody decided the principals and deputies from that school, that we are still going to do the computer period and so on and we are going to incorporate it in those types of periods and so on. [Deputy Principal – Apex Primary]*

The views expressed by these school managers are evidence that they realise the value and importance of integrating ICT into the curriculum. Furthermore these views represents what they prioritise as essential for ICT practice and is a reflections of their attitudes and beliefs about ICT practice in education, which could be the impetus for implementing it in their respective schools.

4.5.2.3 ICT training for school managers and teachers

School managers in this study expressed the need for ICT skills training for both teachers and school managers. The deputy principal of Crest Primary believes that training will make managers more adept at managing the process of implementing ICT. She expressed her view:

> *When you look at our HODs they are not very savvy with the computer. They are like me, you know, you just going along, coping. I think our soft underbelly is SMT, we need training, the ones under us, they are sharp. Encourage, embrace, organise programmes for ourselves and then we can lead by example. [Deputy Principal – Crest Primary].*

Furthermore, school managers also believe that ICT training is necessary to make teachers more competent and confident to utilise ICT in their pedagogy. In addition to this they expressed their beliefs that training teachers in the use of ICT could make them more willing and enthusiastic about using ICT for teaching and learning. The HOD of Apex Primary explained:

> *I think if they are more comfortable with the whole process of ICT then, because I think they are not doing it, because they are afraid of using it. So, I think if they get trained first and get more comfortable with it, then I think they would use it. [HOD – Apex Primary]*

The deputy principal and principal of Pinnacle Primary agreed and added:

> *Those who still need development it's up to the school to find ways of seeing to it that those people get development and assistance as much as possible so that at the end of the day they are able to implement whatever we need them to. [Principal – Pinnacle Primary]*

> *But if we have people who come from outside and show people how to use those things in those classes then they will be used. Number one to get those things in class, would make people at least not to be phobic to those things. And then number two, we get people to come and empower educators to use those things.*
> *[Deputy Principal – Pinnacle Primary]*

The principal of Crest primary agreed and added that if teachers are trained they will be more proficient with ICT and that this will have a cascading effect on the learners of the school. He noted:

> *Firstly further development for all our teachers. Once the teachers have knowledge, proper good knowledge of ICT it will definitely go down to the learners. [Principal – Crest Primary]*

These school managers' views are based on their beliefs and attitudes about ICT practice in schools, specifically relating to issues such as teachers competence, willingness, computer literacy, challenges and visions for ICT. From these comments and views expressed they suggest that training is the key element in ensuring that ICT is utilised by teachers in their classroom practice.

The provisions and conditions necessary for ICT practice, as mentioned by the school managers in this study, seems to be subject to and influenced by their attitudes, beliefs and visions for ICT practice in schools and could play a role in how they prioritise the implementation of ICT practice into their respective schools.

4.6 Summary

This chapter presented the findings from the data analysis of the interviews of school managers about their perceived attitudes, beliefs and visions about ICT practice in schools. The findings were categorised and presented according to themes and sub-themes that captured the central and predominant attitudes, beliefs and visions of school management, regarding ICT practice in schools as construed from the analysis and interpretation of the interview data. The findings from the analysis suggested that some school managers exerted and expressed affirmative attitudes when it comes to ICT and also had assertive attitudes about implementing ICT into teaching and learning. Contrary to these attitudes, a few school managers were also uncertain in their views of ICT and expressed tentative and apprehensive attitudes towards ICT practice. In addition to these attitudes, school managers also had strong opinions about computer literacy amongst school managers and teachers. Some school managers had compulsory attitudes towards the notion of computer literacy, as they perceived it to be a necessity

and even mandated its use in the classroom, while other school managers had non-compulsory attitudes and were more lenient in their approach.

Furthermore the findings revealed that there was a consensus amongst school managers' beliefs, in that ICT is indispensible to education, because it enhances the quality of pedagogical practices, by catering for different learning styles, which empowers teachers and learners to become more efficient in a technologically advanced society. However school managers' also reflected on their beliefs, about the challenges of integrating ICT into practice, which revealed that school managers believe that both intrinsic and contextual factors play a role in the implementation and use of ICT in teaching and learning. Findings also indentified school managers' visions for ICT, which included the transformation of education through modernising classrooms that will ensure the routine use of ICT in teaching and learning. School managers also reflected on their responsibilities for ICT implementation and the necessary conditions needed to make these visions for ICT practice to become a reality.

CHAPTER 5

Discussion of the findings, recommendations and conclusion

5.1 Introduction

This chapter attempts to present an overview of the key findings and subsequently to foreground these findings against the theoretical framework (this will be discussed in section 5.3) of this study. Significant knowledge that emerged from this study and suggestions for further research will be presented. The chapter concludes with recommendations for practice and policy in the implementation of ICT in teaching and learning.

5.2 Summary of emerging themes

An overview of the findings is presented according to the four categories, identified during data analysis. I first elucidate on the attitudes that school managers expressed towards ICT and ICT practice in schools, as well as their attitudes about the degree to which they perceive ICT practice to be useful and necessary in schools. Second, I revisit and explain the beliefs of school managers about the significant role that ICT plays in education and the challenges they believe to be encumbering their role in successfully implementing ICT into practice. Third, I reiterate the visions of school managers for ICT practice. Fourth, I present the school managers' perceptions for the provisions and conditions necessary for successful ICT practice.

5.2.1 School managers' attitudes towards ICT practice.

In examining the attitudes of school managers I found that their attitudes towards technology and ICT play an important role in the degree to which they perceive ICT practice to be useful and necessary in schools. Although the interview discussions showed that school managers possess diverse attitudes about the use of ICT in practice, findings suggested that there were commonalities and trends in these school managers' attitudes about ICT practice. It was apparent from the interviews that the majority of school managers exerted affirmative and assertive attitudes towards the use and implementation of ICT practice into schools. In further examining the attitudes of school managers I found that their attitudes towards technology and ICT play an

important role in the degree to which they perceive ICT practice to be useful and necessary in schools. Literature suggests that strong affirmative attitudes towards change are likely to be based on aspects such as the possibility of benefitting from it (Lines, 2005). These findings support this notion and revealed that school managers with affirmative attitudes were positive and optimistic about ICT practice and also confident and interested in the use of ICT. In addition to this, it was found that school managers that had assertive attitudes about ICT practice were also assertive in their expectations and behaviour towards ICT practice. As discussed in the literature study, an individual's attitude plays a significant role in accepting or resisting change (Lines, 2005; Sternberg & Sternberg, 2001). This perception could be influential in the decisions they make or actions they take. Literature suggests that "positive attitudes towards change are expected to produce behaviours that are focused, persistent and effortful in their attempts to support and facilitate the implementation of change" (Lines, 2005, p.19). Previous studies conducted revealed that there is a strong relationship between school managers' attitudes and the extent to which they promote and implement ICT practice in their schools (Bos & Visscher, 2001 ; Otto & Albion, 2003, Sang et al., 2009; Tondeur et al., 2008). School managers in Tondeur et al.'s (2007) study reported to have varying attitudes to the use of computers, ranging from supportive to negative. Similarly, Brockmeier et al.'s (2005) study found when principals are comfortable with technology; it leads to them fostering the use of ICT in the school.

These notions corroborates with the findings in this study, where school managers' exerted different attitudes about the inexorableness of the impact of ICT on society and in education. Therefore, it can be implied that school managers who perceive the use of ICT as beneficial will convey and espouse affirmative and assertive attitudes toward integrating and promoting ICT practice in their schools. However literature also claims that while positive perceptions and attitudes could be viewed as a prerequisite for taking initiative, it can also be an inhibiting factor, if these perceptions are negative (Tsayang, 2001). In relation to this, findings in this study revealed that contrary to affirmative and assertive attitudes, some school managers also had tentative and permissive attitudes about using, promoting and implementing ICT in practice. They explained that due to

inadequate skills or knowledge, they were hesitant and fearful about utilising ICT and felt less confident to promote ICT practice to the rest of the staff.

Another key finding was that school managers adopted compulsory or non-compulsory attitudes. The majority of school managers have strong attitudes about the necessity of school managers and teachers to be computer literate. As mentioned in the literature study, attitudes can be an indicator as to the degree to which an individual perceive something as important or necessary or not (Lines, 2005). Thus these compulsory attitudes of school managers is an indication of how school managers perceive and value ICT in practice and consequently how they infer the importance computer literacy in schools, as this could determine or influence how they prioritise ICT integration in their respective schools. The same is true for school managers who possess non-compulsory attitudes towards computer literacy. School managers in this study reasoned that pressure from educational authorities has caused many of them to adopt compulsory attitudes. A number of school managers believe that ICT needs to be made compulsory, by establishing a school-based ICT policy. Findings revealed that school managers believe that ICT is not implemented due to non-compulsory attitudes and lack of policy.

As mentioned in the literature study, our attitudes often determine our behaviour and actions (Baron & Byrne, 2003; Tibane, 2007). Based on this notion, the assumption can be made that school managers with a compulsory attitude about computer literacy will also make decisions or take action based on these attitudes. This was confirmed by findings in this study which revealed that school managers with a compulsory attitude, perceived computer literacy for school managers and teachers as mandatory or as a prerequisite. While school managers with non-compulsory attitudes, perceived the use of ICT and computer literacy as inconsequential and stated that they had a hands-off approach with regards to ICT practice. Therefore, it can be implied that an individual's attitude towards ICT practice in schools would be an indicator of how important or necessary they will perceive the use of ICT in schools.

Based on the findings in this study, the assumption can be made that school managers with affirmative, assertive and compulsory attitudes towards ICT practice in schools are likely to display high levels of charge taking behaviour. On the opposite end of the spectrum, tentative, apprehensive and non-compulsory attitudes towards change are likely to elicit behaviours such as non-compliance, resistance, reluctance or in extreme cases incapacity. Consequently, it can be implied that the attitudes that school managers have about ICT practice in schools and ICT competence of school managers and teachers, are significant and influential in shaping their perceptions of ICT practice and could be an indication of how they will prioritise the integration of ICT into their schools.

5.2.2 School managers' beliefs about ICT practice.

The decisions and actions of SMTs' are not only subjected to the attitudes they have; as mentioned in the literature study, Lines (2005) asserts that our attitudes are caused by our beliefs, emotions and values we hold and forms part of our perceptions that determines our behaviour. Based on the findings it became evident that there is coherence amongst school managers about the significant role that ICT plays in education. All the participants in the study acknowledged ICT as part of the future of education. Another common belief of school managers was that ICT is indispensible to education and play a vital role in the lives of learners. This finding is substantiated by school managers' beliefs, that students progressing through the education system must develop relevant ICT knowledge and skills so that they are ICT literate and proficient when they enter the work force. School managers also believe that ICT practice is instrumental in improving the quality of pedagogical practices and as a result advocated the belief that ICT practice in schools promotes independent learning and allow teachers to respond better to the different needs of the learners. The study from Bos & Visscher (2001) underpins the aforementioned findings and corroborates that, the extent to which school principals promote the use of ICT in their schools, depends on the degree to which they believe it to be useful.

In addition to these beliefs, the findings reflected on school managers' beliefs about the challenges they perceive to impact on ICT implementation and practice. As mentioned

in the literature study, both extrinsic and intrinsic barriers impact on the integration of ICT implementation (Bingimlas, 2009). Previous studies indicated that intrinsic barriers such as teachers' perceptions, teachers' attitudes and teachers' level of competence influenced the level of ICT implementation and practice (Bingimlas, 2009; Demetriadis et al., 2003; Grainger & Tolhurst, 2005). Similarly, findings in this study revealed that school managers believe that the teachers' lack of will and level of competence to infuse ICT into their classroom practice challenged the implementation of ICT into teaching and learning. This was substantiated by school managers believe that teachers tend to use traditional instructional methods with which they are comfortable and familiar and as a result the under-utilisation of ICT resources presents challenges to the integration of ICT in the curriculum.

Besides intrinsic factors, literature also indicated that extrinsic factors, such as lack of resources, support and training could impede on the implementation and use of ICT in schools (Bingimlas, 2009). Accordingly, findings in this study suggest that school managers believe that a lack of funding for ICT resources, a lack of support from educational authorities and a lack of risk management, creates challenges for school managers to implement ICT practice.

Literature and findings in this study, corroborates that school managers' perceptions of ICT encapsulates their beliefs and attitudes about the role that ICT play in teaching and learning. Thus, school managers have a definitive voice in the issues regarding ICT practice and also substantiate the significant role they could have in influencing how ICT practice is prioritised and implemented in their respective schools.

5.2.3 School managers' visions for ICT practice in education

Literature suggests that a vision can be defined as the force that creates meaning or purpose for an organisation and consists of creating a comprehensive image of what an organisation will be like at some point in time in the future (Malasa, 2007). Yee (2000) describes principals as "the keepers of the [school ICT] visions". Thus identifying the school management's vision for ICT practice in their school is warranted. Baron and Byrne (2003) assert that our visions are predisposed to our personal beliefs and

attitudes. The analysis of the interviews revealed that school managers are aware and believe in the benefits and potential of ICT for teaching and learning and these beliefs and attitudes were also prominent in their vision for ICT practice in schools. Consequently, findings also indicated that most school managers envisioned classrooms equipped with ICT and the routine use of this technology by teachers and learners, as they believe and envision that ICT will transform education. They noted that this vision is subject to teachers' compliance and competence to make use of ICT in their teaching practice.

In addition to this, literature suggests that the school's vision and mission statement expresses the school's values and beliefs about teaching and learning (Felton, 2006). Furthermore, Schiller (2002) asserts that school managers are the architects and communicators of a school's vision for teaching and learning and it is their responsibility to ensure that the role of ICT is in this vision (Schiller, 2002). Findings from document analysis showed that some of the school managements' visions were also embedded in the schools' mission and vision statements (refer to Appendix I-1 and I-2 as document evidence). The significance of evidence rests on the premise that school managers have the capacity to create a compelling vision for ICT practice in their schools (Malasa, 2007). Therefore Yee (2000) suggests that the principal should inspire a shared vision for ICT not only with the school management, but also with the entire staff.

5.2.4 Provisions for implementing and ICT practice

From the analysis of the interview data, it became apparent that school management are expected to perform different roles in the ICT implementation process of schools, as school managers expressed what they perceived to be expected from them with regards to ICT implementation and practice. Findings revealed that the majority of school managers in the study, acknowledged their role and responsibility as leaders as mentors in the use ICT in practice. They believe that this leadership prompts them to motivate teachers to use ICT in their own practice by modelling and promoting the use and advantages of ICT practice in teaching and learning. All school managers also indicated that it is their responsibility to provide support, resources and training opportunities to

teachers. The aforementioned findings are supported by previous literature. Otto and Albion (2003) and Schiller (2002) advocate that school managers with an active approach toward innovation, promote the use of ICT not only in words, but in action, which gives credibility to the school's ICT vision and culture and consequently fosters an environment that has greater benefits for staff and learners. Similar to findings from Otto and Albion's (2003) study, the critical roles of principals in supporting and guiding teaching and learning with ICT in schools, includes the development and implementation of a vision, the planning and implementation of policy, modelling the use of ICTs, managing resources; and co-ordinating staff development through training.

In contrast to Otto and Albion's (2003) study, these roles and responsibilities were not only assigned to the principal, but were shared amongst the various members of the school management team. In accordance to this Hayward (2008) suggests that leadership does not only exist in the principal's office, but can and should be given to others across the whole school. Therefore leadership responsibilities should be dispersed and roles should be given to the people who are most suited for the task. This notion was supported by the findings in this study, which indicated that some school managers prefer delegating training and the modelling of ICT practices, to experts in the field of ICT, as they believe that this will have a greater impact on ICT implementation. Davies (2010) agrees that the school management must ensure that plural voices are involved in planning effective ICT implementation and integration. A majority of the previous literature (Yuen et al., 2003; Yee, 2003, Scrimshaw, 2004; Afshari et al., 2008) have investigated the role of the principal as the agent of change in ICT implementation. Yuen et al. (2003) indicate that the principal is not solely responsible for ICT leadership. In a similar study Scrimshaw (2004) found that schools that were successful in the implementation use of ICT, followed a collaborative leadership approach, supported innovation and included others in the decision-making process. It was evident from the school managers' responses in this study that they view ICT implementation as a collaborative approach.

Furthermore, school managers elaborated on the necessary conditions needed to realise their visions for ICT practice. Some school managers claimed that establishing a school-

based ICT policy will mandate the use of ICT in teaching and learning and motivate teachers to make routine use of ICT in their practice. Findings in this suggested that due to the lack of a school-based ICT policy and the non-compulsory attitudes of school managers about ICT practice in schools, the integration of ICT into curriculum mainly depends on the commitment and vision of the school management and teachers in the school. Similarly, principals in Tondeur et al.'s (2008) study also noted that a lack of a functional ICT policy, was one of the barriers impacting on the successful implementation of ICT. A number of school managers also expressed concerns about the absence of ICT integration in the national curriculum policy and perceived this to be one of the necessary conditions for realising their visions and the school's vision for ICT. This prompted school managers restructuring their timetables to integrate ICT into the curriculum. Interview data revealed that some school managers took a strategic initiative and decision to adapt their timetables to accommodate the integration of ICT into the new CAPS curriculum, as they explained that no provision was made for ICT integration by the educational authorities. In making this decision to incorporate ICT into the curriculum, substantiates that ICT practice requires visions, commitment and strong leadership from school managers. This notion is supported by literature, as Brockmeier et al. (2005) asserts, the challenges does not lie in the lack of resources, infrastructure or lack of recognising the powerful capabilities of technology, but in the lack of expertise necessary to be technology leaders, equipped to facilitate the use of technology in practice.

Consequently, school managers also conveyed that there is a need for ICT skills training for both school managers and teachers. Findings indicated that school managers believe that training will make them more adept in managing the process of implementing ICT into practice. Furthermore they also believe that ICT training is needed to ensure that teachers are more competent and confident in utilising ICT in their pedagogy and will ultimately motivate them to use ICT more routinely. These aforementioned findings are supported by the body of literature (Afshari et al., 2008; Brockmeier et al., 2005; Felton, 2006), which corroborates that there is a strong correlation between formal training and proficiency in modelling the practice of ICT. Similar to previous studies (Afshari et al., 2008; Brockmeier et al., 2005; Felton, 2006) on principals and ICT practice, school

managers in this study believe that formal training will equip them with necessary skills to demonstrate and promote the use of ICT in practice. As mentioned in the literature study, findings from Brockmeier et al.'s (2005) study, indicated that when principals are comfortable with technology; it led to them fostering the use of ICT in the school. Afshari et al. (2008) agrees that school leaders and managers' awareness, understanding and use of ICT themselves, is an effective way of modelling the practice to the rest of the school staff.

Consequently, Bialobrzeska and Cohen (2005) states that the level of ICT implementation depends on the school's and specifically school managers' needs and vision for ICT practice. Based on this premise, Bialobrzeska and Cohen's (2005) study identified various levels or stages of ICT implementation. Findings from this study seems to suggest that schools' are at the "entry" level of ICT implementation, as reflected by the beliefs, and attitudes of school managers in this study. In order to reach the adoption, adaptation, appropriation and innovation level of ICT implementation, school managers need have a vision and make the necessary provisions to achieve this vision. These provisions include taking responsibility in the implementation of ICT, developing and implementing a school-based ICT policy that will mandate and promote the integrating of ICT into the curriculum and creating ICT training opportunities for all stakeholders.

Thus, I put forward the view that school management's perceptions (beliefs and attitudes) and visions for ICT practice in education could influence the level of ICT implementation in their schools, as it is subject to the perceived necessary provisions needed to make these visions a reality.

5.3 Significance of the study: Linking the theoretical perspective to the findings

The significance of the findings that emerged will be discussed against the backdrop of the theoretical framework for the study. The "theory of action" centres on how theories of actions inform professional practice (Agyris & Schön, 1978). In the context of this study, school managers' beliefs and attitudes can be seen as the cognitive reflection they have about ICT practice, which influence their theories of action for ICT. School

managers' espoused theories about ICT practice, can be described as their attitudes, beliefs and vision for ICT practice (what they say or think). Whereas their "theories in use" can be explained as their overt behaviour, decisions and actions they take. The focus is on what they do in practice, as a result of their espoused theories.

Consequently, I identified significant and consistent espoused theories about ICT practice in schools, as pronounced beliefs and attitudes of school management. First, the majority of school managers advocate that ICT is indispensable for teaching and learning, as it enhances the quality of pedagogical practices. Second, they espoused that ICT in teaching and learning should be mandatory practice. Third, majority of school managers were adamant that teachers and school managers should be ICT literate. Fourth, school managers believed that ICT implementation should be a collaborative process. Fifth, school management's vision for ICT should be aligned with the school's vision for ICT. Sixth, school management believed that ICT should be an integral component of the curriculum and policies. These espoused theories about ICT practice in schools are subject to the necessary provisions that have to be in place to ensure the success implementation of ICT into practice.

5.4 Recommendations

Many school managers have expressed their visions, beliefs and attitudes about the need and desire for ICT practice in their schools to enhance the quality of teaching and learning and to integrate ICT into the curriculum. However, how do school management teams translate their beliefs, attitudes and visions about ICT into an observable influence on teaching and learning? If schools and school managers want to capitalise on the benefits that ICT has to offer and ensure the use of it in teaching and learning, will require the blending of vision, skills and leadership. Thus school managers must assume responsibility as leaders in the implementation process of ICT and take appropriate and neccessary actions, which include:

- Establishing and communicating a school-wide ICT vision by infusing it into the school's vision and mission..
- Strategising, budgeting and investing in ICT resources to modernise classrooms.

- Developing and implementing a school-based ICT policy that will mandate the use of ICT in teaching and learning.
- Organising and faciliating regular training opportunities for all stakeholders to develop ICT skills.

5.5 Suggestions for further research

The following suggestion serve as prospects for future research:

- How do school management's perceptions about ICT influence teachers' pedagogical practices?
- How do school management teams promote, foster and mentor good practice in the use of ICT for teaching and learning?

5.6 Conclusion

With today's technologically advanced society, the importance of computer literacy and ICT is emphasized in every institution (Nawaz & Kundi, 2010). Consequently ICT practice in schools has become the cornerstone of innovation and reform in education and modern society. However the effective and successful implementation of ICT in practice is yet to be accomplished. Keeping in mind that the school management team may have considerable influence on teaching and learning practices, the onus is on them to become leaders in initiating, modelling and promoting the implementation of ICT practice in schools. Gaining insight into school managers' perceived beliefs, attitudes and visions for ICT practice, could contribute in understanding how these perceptions could influence the infusing of ICT practice into teaching and learning. Subsequently, these espoused beliefs, attitudes, visions and perceived necessary provisions, could establish the ethos for ICT practice within a school.

> *"An important indicator of whether or not ICT will be successfully integrated into the school context is the attitude of leaders in the school towards ICT. Leaders' perceptions of the importance of ICT, their own use of ICT, and their ability to create a supportive and enabling environment for effective use of ICT in the school are critical." (GDE, 2011, p. 26)*

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APPENDICES

Appendix A:

Requesting permission: Letter to Gauteng Department of Education

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Department Science, Mathematics &
Technology Education

RE:
APPLICATION FOR CONDUCTING RESEARCH IN THE GAUTENG PROVINCE

FOR ATTENTION: Head of Department: Education

Dear sir/madam

I, J. Botha, hereby request to apply for permission to conduct research in the Department of Education: Gauteng. I am a registered student with the University of Pretoria for MEd (Computer integrated education). I am at present completing the empirical part of my study entitled: "*The influence of school management on information and communication technology practice*". The aim of the study is to investigate the school management's beliefs, attitudes and visions with regards to ICT practice in schools.

The research will be conducted in three primary schools in the Tshwane District. The three schools that were purposefully selected are Apex Primary, Crescent Primary and Pinnacle Primary.[23] Furthermore I request your permission to conduct interviews with the principal, deputy principal and one head of department of the respective schools.

This study has the potential to inform further research in the field of ICT and educational management, which can be used to inform policy and guidelines to assist with the implementation of ICT in schools. The research will be done in accordance to ethics, values and norms supplied by the faculty of education of university of Pretoria. The study will be carried out under the supervision of Doctor Thiru Vandeyar at the University of Pretoria (Department of Mathematics, Science and Technology).
Thanking you in advance for your cooperation in this regard.

With regards,
Joalise Botha
Contact number: 083 5011524 E-mail: joalise_botha@yahoo.com

[23] Pseudo names given to schools for confidentiality purposes.

Appendix B:

Gauteng Department of Education research approval letter

education
Department: Education
GAUTENG PROVINCE

For administrative use:
Reference no. D2012/196

GDE RESEARCH APPROVAL LETTER

Date:	12 December 2011
Validity of research Approval:	6 February 2012 to 30 September 2012
Name of Researcher:	Botha J.
Address of Researcher:	77 Rose Street
	The Oak, Number 7
	Riviera
	Pretoria
	0084
Telephone Number:	012 344 5549 / 083 501 1524
Fax Number:	012 343 0235
Email address:	joalise_botha@yahoo.com
Research Topic:	The influence of the attitudes and beliefs of school management on information and communication technology practice in schools
Number and type of schools:	THREE Primary Schools
District/s/HO	Tshwane North, Tshwane South and Tshwane West

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.

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:

1

Making education a societal priority

Office of the Director: Knowledge Management and Research
9th Floor, 111 Commissioner Street, Johannesburg, 2001
P.O. Box 7710, Johannesburg, 2000 Tel: (011) 355 0506
Email: David.Makhado@gauteng.gov.za
Website: www.education.gpg.gov.za

Appendix C:

Requesting permission: Letter to principal

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Education
Department Science, Mathematics
& Technology Education

FOR ATTENTION: The Principal

RE: Permission for conducting research.

Dear sir/ madam

I, Joalise Botha, am a registered student with the University of Pretoria for the Masters in Education degree, specialising in computer integrated education (MEd (CIE). I am at present completing the empirical part of my study entitled: *The influence of school management on information and communication technology practice*". The aim of the study is to investigate the beliefs, attitudes and visions of school management with regards to ICT practice within a school context.

I hereby humbly request for your permission to conduct an interview with you, your deputy principal and a head of department. Your assistance in granting me an interview and allowing me to interview your staff in relation to the study will be highly appreciated. Interviews will be arranged in advance to suit you and your staff's schedules. Interviews conducted can be arranged to be done after school, so as to avoid any interruptions of the normal school programme. The research will be done in accordance to ethics, values and norms as applied by the Faculty of Education of the University of Pretoria. The study will be carried out under the supervision of Dr. Thiru Vandeyar at the University of Pretoria (Department of Mathematics, Science and Technology Education - thiru.vandeyar2up.ac.za).

This study may contribute to educational debates and has the potential to inform further research in the field of ICT and educational management, which can be used to inform policy and guidelines to assist with the implementation of ICT in schools.

I have already requested and received permission from the Gauteng Department of Education to conduct research. (Attached to this letter is the GDE research approval letter.) Also please find attached my proof of registration as a student for 2012 at the University of Pretoria.

Thanking you in advance for your cooperation in this regard and considering my request.

With regards,
Joalise Botha

_____ _____

Signature Date

Contact number: 083 5011524 E-mail: msjbotha@yahoo.com or joalise_botha@yahoo.com

Appendix D1:

Informed consent information

INFORMED CONSENT FORM

UNIVERSITEIT VAN PRETORIA
UNIVERSITY OF PRETORIA
YUNIBESITHI YA PRETORIA

Faculty of Education
Department Science, Mathematics &
Technology Education

Name: Ms. Joalise Botha

Organisation: University of Pretoria

Supervisor: Dr. Thiru Vandeyar

Department: Science Maths Technology Education

This informed consent form is for **principals, deputy principals and heads of department**, as part of the school management team, who are requested to participate in the study titled: **"*The influence of school management on information and communication technology practice.*"**

This Informed Consent Form has two parts:

- Information sheet (to share information about the study with you)
- Certificate of consent (for signatures if you choose to participate)

You will be given a copy of the full Informed Consent Form

INFORMATION SHEET

Background

I am a registered student with the University of Pretoria for the Masters in Education degree, specialising in computer integrated education (MEd (CIE). As part of the programme, I am required to carry out field research and I am at present completing the empirical part of my study. I am requesting for your consent to participate in my research study. Before you decide to participate in this study, it is important that you understand why the research is being done and what it will involve. Please take the time to read the following information carefully. Please ask me if there is anything that is not clear or if you need more information.

The purpose of this study

This study intends to identify the perceiverd beliefs, attitudes and visions of school management with regards to ICT practice and to gain a deeper understanding about the way ICT and school management coalesce to influence ICT integration and practice. In other words how do the personal beliefs and attitudes of the school management team contribute in encouraging or dispiriting the use of ICT in practice? The use of ICT and computer technology within a South African school context is still a

reasonably progressive conception. This study may present the opportunity to study the influence of school management on ICT practice within a South African perspective. Furthermore this study has the potential to inform further research in the field of ICT practice and educational management.

Participant Selection

You are requested to take part in this study based on your position as a member of the school management team within your school. Your experience and knowledge as a school manager can add value to gaining a deeper understanding of ICT practice and educational management within schools.

Study Procedure:

This research will involve you participating in one interview (face-to-face) that will take about 30-45 minutes on the school premises at your convenience. During the interview you will be asked a set of questions based on your beliefs, attitudes, views and opinions on ICT and school management. Interviews will be audio recorded, so that I capture our discussion effectively, but this is with your consent. I will make notes, for further probing or clarification issues, during the interview process. Interviews will then be transcribed by me. Transcripts of the interview could be given to you to proof read to determine whether I captured our discussion accurately. I may request for you to comment or view over transcripts, if necessary, to clarify issues or make further input.

Risks:

The risks of this study are minimal. These risks are similar to those you experience when disclosing work-related information to others. You may decline to answer any or all questions and you may terminate your involvement at any time if you choose.

Benefits:

There will be no direct benefit to you for your participation in this study. However, I hope your participation in this study may contribute to not only improving ICT practice within your school but may contribute to individual or staff development and provide institutional feedback or inform policy.

Anonymity:

I cannot guarantee your anonymity in this study, since your principal and other participants will be aware of your involvement.

Confidentiality:

For the purposes of this study your comments will be confidential and every effort will be made by the researcher to preserve your confidentiality including the following:

- Assigning pseudo names or code numbers for participants that will be used on all researcher notes, transcripts and documents.
- Notes, interview transcriptions, and transcribed notes, as well as the audio recordings and any other identifying participant information will be kept in a safe place in the personal possession of the researcher, as well as at the University of Pretoria.
- The information collected from this research will be used solely for the purpose of this study and remains the intellectual property of the University of Pretoria.
- All participants and schools involved in this study will not be identified in the final report and their confidentiality will be maintained.
- Each participant has the opportunity to obtain a transcribed copy of their interview. Participants can request a copy of the interview transcript from the researcher for clarification.

Voluntary Participation:

Your participation in this study is voluntary. It is up to you to decide whether or not to take part in this study. If you do decide to take part in this study, you will be asked to sign a consent form. If you decide to take part in this study, you are still free to withdraw at any time and without giving a reason. You are free to not answer any question or questions if you choose. This will not affect the relationship you have with the researcher or institution where you work.

Compensation:

There is no monetary compensation to you for your participation in this study.

Person To Contact:

Should you wish to lodge a complaint about any unethical infringements that I may have transgressed, you may contact my supervisor (thiru.vandeyar@up.ac.za) or the ethics assistant, Dr. F. Omidire (Funke.omidire@up.az.za).

Should you have any questions about this research or any related matters, please contact the researcher at:

Joalise Botha
Contact number: 083 501 1524
Email: msjbotha@yahoo.com

Appendix D2:

Certificate of consent

CERTIFICATE OF CONSENT

Principal/ Deputy/ HOD

By signing this consent form, I confirm that I have read and understood the foregoing information and have had the opportunity to ask questions. I understand that my participation is voluntary and that I am free to withdraw at any time, without giving a reason and without any consequences. I understand that I will be given a copy of this consent form. I consent voluntarily to be a participant in this study.

Name of School: (Print):_____

Name of Participant (Print): _____

Designation: _____

Signature of Participant _____ Date _____

Year/month/day

Statement by the researcher:

I have accurately read out the information sheet to the potential participant, and to the best of my ability made sure that the participant understands all the information:

Name of researcher (Print):_____

Signature of researcher: _____ Date: _____

Year/month/day

Supervisor's signature_____ Date_____

Year/month/day

Technika Building, Room 1-13
Groenkloof Campus, University of Pretoria
PRETORIA 0002

Tel number: 012 4202372
Fax number: 012 420 5621

E-mail address: thiru.vandeyar@up.ac.za
msjbotha@yahoo.com (Student)
Website: www.up.ac.za/education

Appendix E1:

Socio-economic context of pilot school and demographics of participants

Table 3.3: Socio-economic context of the pilot study school

PILOT SCHOOL				
Type of school	**Social status**	**ICT resources available**	**Staff according to race**	**Number of participants**
Former model C school	Low- Middle class	Computer centre: 35 computers. Most educators have access to laptops. Access to internet. Data projectors.	Predominantly white	2 SMT[24]

Table 3.4: Demographics of participants in the pilot study

PILOT SCHOOL SMT		
Designation	**Principal**	**Deputy Principal**
Race	White	White
Gender	Male	Female
Teaching experience	30 years	30 years
SMT experience	21 years	16 years
Academic & Professional qualifications	BA degree Higher Education Degree Further Diploma In Education (FDE)	BEd (Foundation phase) Specialised Education degree (remedial teaching)

[24] HOD withdrew from the study due to time constraints, therefore not included in study (refer to journal entry 3 in Appendix I)

Appendix E2:

Pilot study interview protocol

Date: _____ **Time of interview: _____**

Name of School: _____ **Name of Interviewee:_____**

RESEARCH SITE:	SCHOOL A	SCHOOL B	SCHOOL C

PARTICIPANT:	PRINCIPAL	DEPUTY PRINCIPAL	HOD

Introduction: Introduce myself. Thank the participants for their time. Ensure trust. Make participants aware of right to withdraw. Remind them of consent to record conversation. (*Please take note the questions in bold are the main questions (prompts) Questions that are not in bold will be used as probes or to support main questions)*

SECTION A: LIFE & TEACHING HISTORY
1. Can you give me a brief introduction of your teaching career? (Life history, teaching experience, designation, qualifications (ICT, professional, academic)
SECTION B: PARTICIPANT'S BELIEFS & ATTITUDES
1. What words come to mind when you hear the words information communication technology? 2. Would you consider yourself a "technophile" (positive) or "technophobe" (negative)? Why do you say so? 3. Do you think ICT has a place in teaching and learning? - Why do you say so? - What is your personal experience? 4. What potential does ICT have for developing learning or teaching? - What are the strengths of ICT in terms of a) teaching and b) learning c) admin? - What are the shortfalls or challenges of ICT? a) teaching and b) learning c) admin? 5. Do you think that ICT improves learning and teaching? - Can you mention any examples/ what is your experience? 6a.Has ICT made significant inroads (impact/changes) in the school? 6b. What significant changes/impact have you noticed in the school as a result of ICT? - In curriculum integration - Staff organisation - Teacher use > for teaching/admin) - Learner use 7a.Teachers are often willing to use ICT, but are looking for role models or mentors. Who should lead the way for use of ICT in the school? Teachers themselves or HOD or Senior management

7b. Has this taken place (happened) in your school? 8. What do you think are some of the problems you experience as a member of the SMT with regard to getting teachers to use ICT in their classroom practice? 9. Has there been any form of reaction/plans to address these concerns that you raise?
SECTION C: PARTICPANT'S PRACTICE IN USE OF ICT
1. Do you use ICT in your professional work? How? - Teaching (can your provide examples) - Administrative related tasks? - Communicating with teachers, parents, SGB? 2. What ICT resources/tools do you use the most? Why? 3. How well equipped is your school to meet the ICT demand of teachers/learners?
SECTION D: PARTICIPANT AS LEADER/POLICY IMPLEMENTER
1. What is the school's policy/strategy on ICT practice? 2. Do you feel pressured or inspired to use ICT? How? Why? By Whom? 3. What kind of support do you need in terms of ICT? 3a. What kind of training do you need in terms of ICT? 3b. What kind of training do your teachers need in terms of ICT? 4. What kind of support is given by your school to teachers to develop ICT skills? 5. What kind of ICT in-house training options or opportunities are or were offered to the staff? 6a. What expectations do you have of the deputy principal and HODs in terms of ICT development? 6b. What expectations do you have of the teachers in terms of ICT development? 7. Have the teachers been forthcoming/ enthusiastic on the use of ICT for teaching and learning? 8. How often is ICT discussed in staff meetings? 9. How effective has ICT training and staff development been? 9a. What principles guide the use of ICT in your school? 9b. Who determines these principles?
To conclude interview: Describe in a few words how you think ICT will be used in schools in five years from now? Thank participants for their participation and time. Inform them again about confidentiality and informed consent.

Appendix F:

Final interview protocol

Interview Protocol

Date: _____ **Time of interview: _____**

Name of School: _____

Name of Interviewee: _____

RESEARCH SITE:	SCHOOL A	SCHOOL B	SCHOOL C

PARTICIPANT:	PRINCIPAL	DEPUTY PRINCIPAL	HOD

SECTION A: TEACHING EXPERIENCE

1. Can you give me a brief introduction of your teaching career?
   [Studies, positions held, qualifications]

SECTION B: BELIEFS & ATTITUDES

Participant's beliefs, perceptions and attitudes about ICT

1. Would you consider yourself "tech-savvy" (positive) or "techphobic" (negative)?
2. There is a lot of talk about ICT. What is your understanding of ICT? (What does ICT mean to you)
3. What would a classroom look like in which ICT is being used or implemented?
4. What role does ICT have in education?
   a. What role does ICT play in teaching?
   b. What role does ICT play in learning?
5. What potential does ICT have for developing education in terms of learning or teaching?
   5a) What are the strengths of ICT in terms of teaching?
   5b) What are the strengths of ICT in terms of learning?
6. What are the shortfalls/challenges of ICT?
7. What are the teacher's views about the use of ICT?
8. What are the SMT's views about the use of ICT?
9. How important do you think it is for a manager (SMT) to be computer literate? Why?
10. How important is it for a teacher to be computer literate? Why?
11. Do you think ICT has successfully been implemented and integrated into your school? Why?
12. What expectations do you have of the:
    a) deputy principal/principal in terms of ICT? implementation/initiating/integrating/monitoring/training)
    b) HOD in terms of ICT ? c) teachers in terms of ICT?

SECTION C: ICT PRACTICE

Participant's practice and use of ICT

1. How do you use ICT in your professional work?
2. What do you use ICT the most for? (admin/teaching/communicating) Why?

3 a. What ICT resources/tools do you use the most?

3b.What ICT resources do the teachers use the most that is available?

4. What or who influences/influenced you to use ICT?

5. How well resourced/equipped is your school to meet the ICT demand of teachers/learners?

6. How does the use of ICT get monitored in your school?

7a.What do you think are some of the problems/challenges you experience as a member of the SMT with regard to getting teachers to use ICT more often in their classroom practice?

7b. Has there been any form of reaction/plans to address these concerns that you raise?

8. What will motivate you to use ICT more often?
9. What according to you will motivate teachers to use ICT more often?

SECTION D: INFLUENCE/IMPACT OF ICT

Participant's view about the impact or influence of ICT

1a.Has ICT made significant inroads (impact/changes) in your school?

1b. What significant changes/impact have you noticed in the school as a result of ICT?

How has ICT changed your school in terms of curriculum integration, communication, budget, learning, teaching, staff organisation, ethos, mission and vision of the school, staff development?

SECTION E: ROLE IN IMPLEMENTATION OF ICT

Participant as leader/implementer of ICT

1. Does the use of ICT feature in any school-based policies/regulations/instructions to teachers?

(What is the school's policy/strategy on ICT practice?)

Follow up question: Do you think there should be a policy on the use of ICT? Why/Why not?

2. What role/part does the:

a) deputy principal/principal have in terms of ICT? (implementation/initiating/integrating/monitoring/training)

b) HOD have in terms of ICT?

c) teachers have in terms of ICT?

3. Who should lead the way for promoting/initiating/implementing the use of ICT in the school?

4. Who is the leader/initiator when it comes to ICT in your school?

Who has taken on this role in your school? (not the name, the designation)

5. How do you see your role in promoting the use of ICT?

6a. What has the SMT done to get teachers to use ICT in their classrooms?

6b. What kind of support/training (within the school) is given to teachers to use ICT or develop ICT skills? Are these support systems apparent/evident? Can you give some examples?

7a. Do you think that if ICT workshops or training/best practice demonstrations were conducted it would enhance/motivate the use if ICT? Why? 7b. Who should conduct these workshops/training? (SMT/teachers)? What more could SMT be doing to encourage teachers to use ICT? What is needed/necessary for ICT to be successfully implemented in your school?
SECTION F: VISION & GOALS FOR ICT PRACTICE
1. Wht are your future goals or vision about the use of ICT in education in terms of teaching and learning? 2. How would you implement ICT if you had unlimited resources and funds?

Appendix G

Interviewer checklist

Interviewer Checklist

Prior to interview

Introduce myself

Student at University of Pretoria. Busy with Masters degree specialising computer integrated education. I am also a Teacher. Special interest in information and communication technology.

Establish rapport:

I want to thank you for taking the time to meet with me, I understand as a principal/deputy/HOD/teachers you have a demanding schedule and your time is very limited, and therefore I appreciate you offering up your time.

Before we start there is just a few aspects that I need to discuss with you.

Introduction

Purpose of my study: To investigate the implementation and ICT practice in schools from a management's perspective.

Explain Interview process

Interview will be between 30-45 minutes. Based on questions about ICT.

Interview process > 5 Sections, each section have a set of open-ended questions based on your experience and knowledge on that topic.

Make Interview protocol available to participants prior to the interview to scan over questions.

Voluntary participation. > Make participants aware of right to withdraw. Right not to answer a question.

Ensure all participants that information will be confidential.

Name or name of school will not be used in final report.

Ask consent to record conversation. > Consent forms

Transcripts may be given for review, if necessary.

After interview

Ask for copies of Budget, LTSM, IQMS reports for document analysis. (If applicable)

Complete questionnaire. Collect questionnaire and consent forms. Thank participants!

Appendix H

Extracts from researcher journal

Journal entry 1: *Selecting the pilot school*

Date: March 2012

The school for the pilot study was conveniently sampled, due to their availability and proximity to me as the researcher. The principal was contacted telephonically to request permission to conduct interviews with the school management team. After the principal was contacted to gain permission and to get consent, the participants were contacted personally via phone or email ahead of the time to arrange a suitable time for both the participant and myself as the researcher to meet and conduct the interviews. This method of gaining access to schools and participants proved to be most effective.

Journal entry 2: *Pilot study*

Date: April 2012

During the pre-test of the interviews, I became aware of my own involvement in the research process and it also gave me an indication of my interview skills. I was very nervous t first, but relaxed as I become more confident. As interviewer I should be aware not to talk over participant. Listen more talk less! Speak slower. Probe more. Use probing questions, ask participants to elaborate. Put recording device closer to interviewee.

Journal entry 3: *HOD of Pilot school – withdraws from study*

Date: April 2012

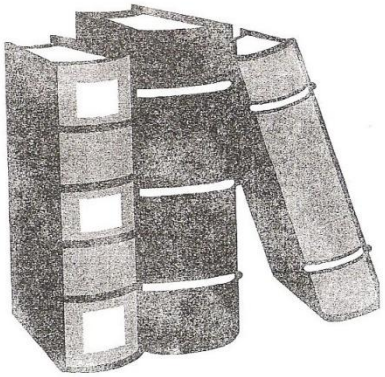
It should be noted that initially the HOD of the pilot school agreed to do the interview, but after scheduling a time to meet, she made the decision to not participate in the study, due to time constraints and her workload; and asked to be excluded from the study. I therefore could not complete the pre-test of the interview protocol with her. However, this did not affect the quality and value of the pilot study as I could use the data from the principal and deputy principal's interviews as feedback for the school management interview protocol.

Appendix I 1

Document analysis: SGB Constitution – Pinnacle Primary

PRIMARY SCHOOL

SGB



CONSTITUTION

[ ] commits itself to provide effective quality education that will enhance the learner be a critical thinker, responsible citizen, restore his self – identity and esteem , and to be economically marketable in a situation.

2. MISSION

Our mission as an educational institution is to create and provide a school with a clean, safe and intellectually stimulating environment, with a good discipline, effective and efficiency learning and teaching through modern technology

3. AIMS AND OBJECTIVES

a. To create an atmosphere and environment conductive to learners achieving their full potential
b. To foster involvement , support and loyalty from educators , learners , parents and the wider community
c. To promote interdependence between the home and school
d. To promote the best interest of the school and strive to ensure its development.
e. To create an educational system that will give a learner an equal opportunity to develop his/her talents
f. To strive to keep abreast with any democratic educational transformations and changes.

4. COMPOSITION OF THE GOVERNING BODY

4.1 MEMBERSHIP

Membership of the governing body shall comprise of:

(a) The principal
(b) Educators
(c) Non- teaching members
(d) Parents of learners at school
(e) Co-opted member

4.2 EXECUTIVE COMMITTEE

Membership to the executive committee shall comprise of elected office-bearers, chosen amongst the members of the governing body .The office bearers are:

a) The chairperson
b) The secretary
c) The treasurer

This office shall hold a term of office not exceeding 1 year.

4.3 SUB COMMITTEES AND PORTFOLIOS

The following under mentioned committee are identifies as sub- committees of the SGB:

Appendix I 2

Document analysis: School policy - Apex Primary

Rules

- 

VISION

Eqquipped for the Future

MISSION

1.To be a top school serving the community of Pretoria
2.To develop the potential of learners maximally
3.To facilitate learners in their intellectual, emotional, physical and moral growth
4.To provide a foundation for success to all [redacted] learners
5.To lead learners towards a more able joyous and self directing adult-hood

We also strive towards

- Orderly Behaviour
- Responsibility
- Co-operation
- Loyalty
- Honesty
- Ingenuity & Productivity
- Respect for Life
- Consideration of others
- Spiritual devotion
- Financial sensibility
- Excellence
- Integrity

The values of our school forms the channel for the successful conveying and instilling of culture, promoting the cultivation of body, mind and character in the acquisition of knowledge and of intellectual, practical behavioral and social skills

[redacted] LAWS

Accept responsibility for yourself.
*
Use acceptable language.
*
Meet all deadlines, appointments and commitments.
*
Follow instructions given by those in authority over you.
*
Be at the right place, at the right time, and on time, at all times.
*
Be neat on your person, your possessions and your work.
*

Show respect to others, their possessions and their privacy.

*

Do not litter.

*

Do not prevent the educator from teaching or other learners from learning.

*

Behave in an orderly and civilized manner

Code of Conduct

This Code of Conduct is subject to changes as determined by the relative principal, educators and Governing Body. Transgression of rules and repeated misconduct can led to suspension.

1.1 School rules are given to protect learners; for self-discipline and co- operation; as protection of property
and to send responsible, disciplined and balanced learners to high schools.
This Code of Conduct must at all times, on as well as off the school premises, be adhered to.
1.2 The Code of Conduct will be explained to learners by the principal
and educators during the first week of the first quarter of each year.
1.3 When a child is newly enrolled at our school, parents/guardians will receive a copy of this Code of Conduct
and by signing this document, accept liability that his/her child will keep and adhered to the school rules.
1.4 Except in cases of sickness/injury when the parent/guardian is
informed by the school of such sickness/injury, NO LEARNER IS ALLOWED to leave the school premises
during school hours without the prior written permission of the principal.
1.5 If at any time a learner is fetched during school hours by a parent/
guardian such parent/guardian must sign-off such learner at the secretary's office.
1.6 Only on receipt of prior written notice, which must be handed to the class educator, a learner will be given
permission by the principal to attend e.g. funerals etc. during school hours.
1.7 Learners must please, before and after school, make use of the pedestrian crossings.
1.8 Off-loading and fetching of learners: Please make use of the parking area in [ ] Street.
1.9 Circulars/Correspondence/Receipts/School Fee Statements: It is the responsibility of learner (s) to hand
over the abovementioned to their parents/guardians.
1.10 School hours: For ALL learners:
Mondays to Fridays STRICTLY from 07:30 to 13:45.
1.11 Cellular phones: Must be handed in BEFORE school at the Register
Educator. Phones will then be locked up for safe-keeping and again handed out by Register Educator
directly AFTER school.

DISCIPLINARY CODE IN RESPECT OF LEARNERS

The primary goal of this Code of Conduct of [ ] Primary is, to at all times, concentrate on the positive.

The goal of the Code of Conduct is:

- To ensure that learning and education are priorities at our school.

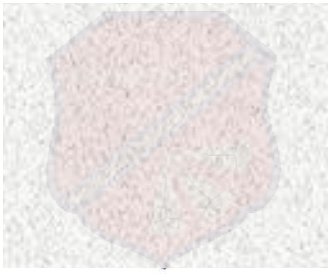
- To ensure order and discipline at our school.
- To create an orderly learning milieu.
- To provide means where educators, learners and parents/guardians can address their grievances.
- To provide disciplinary measures.
- To ensure that no suspension will take place without a fair hearing.

This Code of Conduct covers general acceptable behaviour which is acceptable or non-acceptable within the school. Certain behaviour is infringements according to the S.A. Schools Act, Act 48 of 1996, as well as the [redacted]s (see p.8), and will be enforced according to such structures which are legally established within the framework of the Law.
PLEASE NOTE: Damage to/of school property by a learner must immediately be reported and the learner's parents/guardians will be responsible for replacement thereof

Appendix I 3

Document analysis: Policy on computer technology – Apex Primary

POLICY ON COMPUTER TECHNOLOGY



Signed: Principal _____

SGB Chairperson _____

Department of Education _____

Date _____

COMPUTER TECHNOLOGY

1. **Preamble**

   In terms of the Foundation and Intermediate Phase policies of this policy has the following aims:

   - To provide the purposeful use of computers and other media by nominated educators under supervision of the principal and deputy principal, so that learners and educators can benefit from it.
   - In future: to integrate this policy with the school's policy.

2. **Planning and functioning of the computer center**

   - Appointed staff will be in charge of the center.
   - Should any learning area educator have specific outcomes that one has to do in the center, an arrangement should be made beforehand.
   - Two appointed duty council members will assist the educators as needed.
   - At no stage will the learners / class be left alone without supervision.

- The center should be locked at all times when unattended.

3. **Budget**

   Provision is been made to fulfill the necessary needs to keep the center at the top of technology and programs.

4. **Facilities**

   Needs of educators and learners have to be determined regularly to equip the center to be functional.