# Training needs of primary school principals in the use of ICTs in school management of township and rural schools

**AC Malan**

**11208651**

Dissertation submitted in fulfilment of the requirements for the degree *Magister Educationis* in Education Management at the Potchefstroom Campus of the North-West University

| | |
|---|---|
| Supervisor: | **Dr CP van der Vyver** |
| Co-Supervisor | **Dr C du Toit-Brits** |
| Assistant- Supervisor | **Dr A Kok** |

December 2014

# Training needs of primary school principals in the use of ICTs in school management of township and rural schools

**AC Malan**

# DECLARATION

## DECLARATION

**I, Annadene Charlotte Malan, hereby declare that this study is my own work for the degree**

***Magister Educationis***

**in**

**Education Management**

**in the Faculty of Education at the Potchefstroom Campus of the North-West University**

_____

**Annadene Charlotte Malan**

_____

**December 2014**

# ETHICAL APPROVAL OF PROJECT

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT

Private Bag X6001, Potchefstroom
South Africa 2520

Tel: (018) 299-4900
Faks: (018) 299-4910
Web: http://www.nwu.ac.za

**Ethics Committee**
Tel +27 18 299 4852
Email Ethics@nwu.ac.za

3 December 2013

**ETHICS APPROVAL OF PROJECT**

The North-West University Ethics Committee (NWU-EC) hereby approves your project as indicated below. This implies that the NWU-EC grants its permission that provided the special conditions specified below are met and pending any other authorisation that may be necessary, the project may be initiated, using the ethics number below.

**Project title: Training needs of primary school principals in the use of ICT in school management of township and rural schools**

**Project Leader: Dr CP van der Vyver**

**Ethics number:**

| N | W | U | - | 0 | 0 | 1 | 6 | 2 | - | 1 | 3 | - | A | 2 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| Institution | | | | Project Number | | | | | | Year | | | Status | |

Status: S = Submission; R = Re-Submission; P = Provisional Authorisation; A = Authorisation

**Approval date**: 2013/11/14 **Expiry date**: 2018/11/14

Special conditions of the approval (if any): None

General conditions:

*While this ethics approval is subject to all declarations, undertakings and agreements incorporated and signed in the application form, please note the following:*

- *The project leader (principle investigator) must report in the prescribed format to the NWU-EC:*
  - *annually (or as otherwise requested) on the progress of the project,*
  - *without any delay in case of any adverse event (or any matter that interrupts sound ethical principles) during the course of the project.*
- *The approval applies strictly to the protocol as stipulated in the application form. Would any changes to the protocol be deemed necessary during the course of the project, the project leader must apply for approval of these changes at the NWU-EC. Would there be deviated from the project protocol without the necessary approval of such changes, the ethics approval is immediately and automatically forfeited.*
- *The date of approval indicates the first date that the project may be started. Would the project have to continue after the expiry date, a new application must be made to the NWU-EC and new approval received before or on the expiry date.*
- *In the interest of ethical responsibility the NWU-EC retains the right to:*
  - *request access to any information or data at any time during the course or after completion of the project;*
  - *withdraw or postpone approval if:*
    - *any unethical principles or practices of the project are revealed or suspected,*
    - *it becomes apparent that any relevant information was withheld from the NWU-EC or that information has been false or misrepresented,*
    - *the required annual report and reporting of adverse events was not done timely and accurately,*
    - *new institutional rules, national legislation or international conventions deem it necessary.*

The Ethics Committee would like to remain at your service as scientist and researcher, and wishes you well with your project. Please do not hesitate to contact the Ethics Committee for any further enquiries or requests for assistance.

Yours sincerely

**Prof Amanda Lourens**
*(chair NWU Ethics Committee)*

# ACKNOWLEDGEMENTS

All praise to my Creator to whom I am grateful for giving me the courage to complete my dissertation to the best of my ability, You are my strength and my foundation.

I would like to express my sincere gratitude to the following people:

- My husband, Malcolm Malan, who always believed in me, thank-you for your unconditional love, support, advice - and sacrifices. Thank-you for being patient with me.
- My children, Maladene, Jamal and Aney, thank you for allowing me to sacrifice your time to complete my studies. I will always love you.
- My parents, thank you for all your love and support. Thank you for always being there for me and listening to my constant ramblings.
- My brothers and sister, thank you for your support.
- My supervisor, Dr. C. P. van der Vyver, thank you for your competent guidance, leadership, patience, support and understanding.
- My co-supervisor, Dr. C. du Toit-Brits, thank you for your motivation, guidance and advice.
- My assistant-supervisor, Dr. A. Kok, thank you for your guidance, support and advice.
- Mrs Cecilia van der Walt for the language editing of this dissertation.
- Mrs Susan van Biljon for the technical care of this dissertation.
- All the research participants, thank you for your time. Without your contribution, this research could not have been possible. I feel privileged to have had the opportunity to learn from your experiences.

# ABSTRACT

The constant and rapid change in technology is creating opportunities as well as challenges for schools. School leaders need to embrace the use of information communication technology (ICT) to enhance the effectiveness of management in a school. A great deal of concern, however, is the ineffective use of ICT in school management. Although some school leaders are aware of the multiple advantages of the use of ICT in school management, they do not incorporate it in the management of the school. Research has identified that one of the main advantages and opportunities for the use of ICT in school management is that it is less time consuming because it reduces paper work. The ineffective use of ICT in school management seems to be even more of a problem in rural and township primary schools.

The White Paper on e-Education states that "every South African manager, teacher and learner in the general and further education and training bands will be ICT capable" by 2013. The most important finding is that, despite the increase in educational and technological development of information communication technology in South Africa, school leaders are still not capable of using ICT effectively to manage their schools. Even though the use of technology is encouraged, it is not used efficiently by school leaders to manage their schools. Literature indicates that little research has been done as yet regarding the use of ICT by school leaders in school management.

In the light of the above-mentioned, the need arises to determine and understand what the training needs of school leaders are for them to effectively use ICT in managing their schools. The aim of the research was firstly, to determine the importance of the use of ICT in the management of schools. Secondly, to establish the role ICT currently plays in the management of schools. Lastly, to determine the specific training needs of school leaders for them to effectively use ICT in managing their schools.

In this research qualitative methodology was used which is embedded in the interpretive paradigm. The qualitative strategy of inquiry was phenomenological. The qualitative approach attempted to examine personal experiences and viewpoints of interviewed school leaders with regards to their training needs concerning the use of ICT in school management. The method of data collection was individual semi-structured interviews, based on the literature review. Interviews were recorded by the researcher using an audio

recorder. The trustworthiness of the collected data was ensured. Collected data was transcribed and analysed by means of the computer software programme *Atlas ti*™.

The main findings of the research include:

- Findings with regard to the importance of the use of ICT in the management of schools.

  ICT is an important tool that makes school management easier and less time consuming.

- Findings with regards to the current role ICT plays in school management.

  Even though school leaders realise the importance of the use of ICT, it does not play an important role in school management. The most important role ICT currently plays in school management is merely communication.

- Findings with regards to training needed by school leaders in the use of ICT in the management of schools.

  School leaders need ICT training starting from basic courses to more advanced ICT courses in all aspects of ICT, software and hardware included.

Finally, recommendations are made to assist school leaders to obtain the necessary skills and knowledge regarding the use of ICT in the management of schools. Training needs of school leaders regarding the use of ICT should be addressed in training programmes which are specifically designed for leadership. Courses should be short, hands-on and aimed at developing ICT skills for use in school management. Follow-up and refreshment courses need to be presented on a regular basis, while progress is monitored regularly.

**Key words**: School leader, training, education, schools, management, ICT, rural, township, professional development.

# OPSOMMING

Die konstante en vinnige verandering in tegnologie skep geleenthede en uitdagings vir skole. Skole moet die gebruik van inligting kommunikasie-tegnologie (IKT) benut om die doeltreffendheid van skoolbestuur te verbeter. 'n Groot bron van kommer is egter die ondoeltreffende gebruik van IKT in skoolbestuur. Alhoewel sommige skoolleiers bewus is van die voordele van die gebruik van IKT in skoolbestuur, gebruik hulle dit nie as sodanig nie. Navorsing het getoon dat een van die belangrikste voordele van die gebruik van IKT in skoolbestuur is dat dit minder tydrowend is, want dit verminder papierwerk. Die ondoeltreffende gebruik van IKT in skoolbestuur blyk selfs 'n groter probleem te wees in landelike en township- primêre skole.

Die Witskrif oor e-Onderwys bepaal dat elke Suid-Afrikaanse burger, onderwyser en leerling in die Algemene onderwys en opleiding- (AOO) fase asook in die Verdere Onderwys en opleiding- (VOO) fase teen 2013 bevoeg en vaardig moet wees in die gebruik van IKT. Ten spyte van die toename in opvoedkundige en tegnologiese ontwikkeling van inligting kommunikasie-tegnologie in Suid-Afrika is skoolleiers nog nie in staat daartoe om IKT effektief te gebruik om hul skole te bestuur nie. Selfs al word die gebruik van tegnologie aangemoedig, word dit nie doeltreffend deur skoolleiers gebruik nie. Literatuur dui aan dat daar min navorsing tot dusver gedoen is oor die gebruik van IKT deur skoolleiers in die bestuur van die skool.

In die lig van bogenoemde, het die behoefte ontstaan om te verstaan en te bepaal wat die behoeftes is ten opsigte van opleiding wat skoolleiers benodig om IKT effektief te gebruik in die bestuur van hul skole. Die doel van die navorsing was om eerstens die belangrikheid van die gebruik van IKT in die bestuur van skole te bepaal. Tweedens om die rol wat IKT tans in skoolbestuur speel te bepaal. Laastens, om die spesifieke behoeftes ten opsigte van opleiding vir die effektiewe gebruik van IKT in skoolbestuur te bepaal.

'n Kwalitatiewe navorsingsmetode is gebruik wat ingebed is in die interpretatiewe paradigma. Die kwalitatiewe ondersoek strategie was fenomenologies van aard. Die kwalitatiewe benadering het ten doel om die persoonlike ervarings en sienings van skoolhoofde te ondersoek met betrekking tot hul behoeftes aan opleiding in die gebruik van IKT in skoolbestuur. Die data-insamelingsmetode was individuele semi-gestruktureerde onderhoude, gebaseer op die literatuurstudie. Onderhoude is deur die navorser gevoer terwyl dit op band vasgelê is. Die betroubaarheid van die data wat ingesamel is, is verseker.

Data is getranskribeer en geanaliseer deur middel van die rekenaar sagteware program *Atlas.ti*™.

Die belangrikste bevindinge van die navorsing sluit in:

- Bevindinge met betrekking tot die belangrikheid van die gebruik van IKT in die bestuur van skole.

  IKT is 'n belangrike instrument wat skoolbestuur makliker maak en minder tyd in beslag neem.

- Bevindinge met betrekking tot die huidige rol wat IKT in skoolbestuur speel.

  Selfs al is skoolleiers bewus van die belangrikheid van die gebruik van IKT, speel dit nie noodwendig 'n belangrike rol in die bestuur van alle skole nie. Die grootste rol wat IKT tans speel in skoolbestuur is vir kommunikasie.

- Bevindinge met betrekking tot die opleiding wat skoolleiers benodig in die gebruik van IKT in die bestuur van skole .

  Skoolleiers benodig IKT-opleiding wat basiese kursusse sowel as meer gevorderde IKT -kursusse in alle aspekte van IKT insluit, sagteware sowel as hardeware.

Ten slotte, word aanbevelings gemaak om die skoolleiers te help om die nodige vaardighede en kennis te bekom ten opsigte van die gebruik van IKT in die bestuur van skole. Opleidingsbehoeftes van die skoolleiers rakende die gebruik van IKT moet aandag geniet in programme wat spesifiek vir leierskap ontwerp is. Kursusse moet kort en regstreeks wees gerig en daarop om IKT vaardighede gemik op die ontwikkeling van IKT vaardighede vir gebruik in skoolbestuur te ontwikkel. Opvolg- en opknappingskursusse moet op gereelde basis aangebied word, terwyl vordering gereeld gemonitor moet word.

**Sleutelwoorde:** Skoolleier, opleiding, onderwys, skole, bestuur, IKT, landelik, dorp, professionele ontwikkeling

# ABBREVIATIONS LIST

| | |
|---|---|
| ICT – | Information Communication Technology |
| IT – | Information Technology |
| CT – | Communication Technology |
| AO – | Area Office |
| APO – | Area Project Office |
| SGB – | School Governing Body |
| SA-SAMS – | South Africa Schools Administration System |
| IVR – | Interactive Voice Response |
| HU – | Hermeneutic Unit |
| PD – | Primary Documents |
| EMIS – | Educational Management Information System |
| IKT – | Inligtingkommunikasie tegnologie |
| AOO – | Algemene Onderwys en Opleiding |
| VOO – | Verdere Onderwys en Opleiding |

# TABLE OF CONTENTS

# LIST OF TABLES

# LIST OF FIGURES

# CHAPTER 1:
# ORIENTATION

## 1.1 INTRODUCTION

Changes are happening in all sections of life; education is not excluded. Changes as well as growth in education complicate management and governance. However this could be made easier with the use of information communication technology (ICT). ICT plays an important role and is an essential tool for effective and efficient management and administration in education (Unachukwu & Nwankwo, 2012).

This Chapter introduces the outline of the research which investigates the training school leaders need in the use of ICT to manage the school more effectively. This Chapter starts with a discussion of the problem statement and motivation for the study (§ 1.2.), followed by the preliminary literature review (§ 1.3.). The literature review further deals with the concept clarification, the use of ICT in management as well as the importance of ICT in school management by school leaders. Followed by the research questions and the research aims (§ 1.5.), an explanation and justification of the research method employed in the study is also given (§ 1.6.).

## 1.2 PROBLEM STATEMENT AND MOTIVATION

The White Paper on e-Education states *"Every South African manager, teacher and learner in the general and further education and training bands will be ICT capable (that is, use ICTs confidently and creatively to help develop the skills and knowledge they need as lifelong learners to achieve personal goals and to be full participants in the global community)* by 2013" (Department of Education, 2004). Information and communication technology (hereafter referred to as ICT) is constantly used and recognised in the management of schools (Nonyane & Mlitwa, 2008). To add to existing burdens for effective management of schools, management in organisations has supported the growth of operational management information systems. Schools and school systems increasingly make use of management information systems for planning, organising, examining, accountability, controlling and progressing. If the roles of management in educational institutions were to be carried out efficiently and effectively, it is crucial for relevant information to be available at all times to allow for informed decisions (Department of Education, 2004).

Bialobrzeska and Cohen (2005) are of opinion that school leaders ought to have the expertise and suitable training to utilize the knowledge of ICT and to understand it. School leaders therefore play a fundamental role with regard to the use of ICT in the management of schools and for this purpose they require appropriate training. One of the reasons why the use of ICT in schools is not successful is that principals are often uninformed about the possibilities of ICT use (Bialobrzeska & Cohen, 2005; Cohen, Manion, & Morrison, 2007). Ahmad, Komputer, Utara, & Kedah (2012) and the People-ICT-Development (IICD) (2007) state that the use of ICT by school leaders lead to significant changes in the school, support management and administrative procedures that would save time. If school leaders receive training in ICT use, they may be more willing to use ICT in their everyday management of schools.

Munro (2011) mentions that the use of ICT is regarded as important worldwide even though it is not utilised to its full potential. Therefore it is important for researchers to investigate and examine the use of ICT in their management of schools. For this reason the researcher attempts to understand why ICT is not used to its full potential in school management.

Munro (2011) states that ICT could also help school leaders to become adequate leaders in technology and to become more suitable role models for their staff. Munro (2011) also notes the importance of school leaders' development in ICT knowledge and skills in order to ensure educational changes. For this reason, school leaders are usually regarded as role models to provide support and encouragement in the use of ICT in schools. If school leaders use ICT themselves it could have a positive effect on their staff in their pursuit of ICT competencies (Munro, 2011). Schiller (2003) states that without the support of school leaders, the educational potential of ICT may not realise. He reveals that principals need to accept responsibility for initiating and implementing school changes through the use of ICT in management and initiate complex decisions to integrate ICT in school administration. However, little is known about the use of ICT by school leaders, their perceived competence in ICT and their preferred means of acquiring these skills and understandings (Schiller, 2003). Therefore the training needs of principals in the use of ICT in school management, specifically in township and rural schools, need to be investigated.

## 1.3 PRELIMINARY REVIEW OF LITERATURE

The preliminary literature review firstly clarifies relevant concepts used in this research. Secondly, changes pertaining to technology are necessary to enable principals to deal with the use of ICT in the management of schools which are indicated. Subsequently the role

school leaders' play with regard to leadership in ICT is established. The focus finally shifts to the utilisation of ICT in school management and the importance of training therein.

### 1.3.1 Concept clarification

Before starting with the preliminary literature review, it is important to clarify relevant concepts used in this research. Concept clarification is necessary to point out how the researcher interprets certain main concepts found in relevant literature.

**ICT**

For the purpose of this research and due to different views of terminology, it is necessary to give a short theoretical explanation. ICT is a composition that stands for information communication technology (Anon, 2012). Information Technology (IT) refers to the systems used for storing and managing information through the use of technologies such as computers. Communication Technology (CT) refers to the way we use technologies such as phones to communicate. Both these technologies are currently used to enhance learning opportunities and allow access to educational resources (NQF, 2012). ICT covers any product that will store, retrieve, manipulate, transmit or receive information electronically in a digital form, for example, computers, digital television, and E-mails. Thus ICT enables the storage, retrieval, manipulation, transmission and/or receipt of digital data. Most importantly these technologies can work together with one another in different ways (Anon, 2012). The concept ICT is described in more detail in Chapter 2 (§ 2.2.2).

**School leader**

A principal or educational manager can be seen as a person in a position of authority, performing regulative tasks in a distinct field or area so as to allow developmental education to take place (Van der Westhuizen, 2007). A principal of a school is not only an educational manager, but also the leader of the school. An important part of his/her role is to manage the school's organisational systems and physical and financial resources (Department of Education, 2007). For the purpose of this research, the term school leader will refer to the school principal, educational manager, school manager and headmaster.

**Rural schools**

Seroto (2012) describes rural and farm schools as under-resourced in terms of buildings, electricity, books and equipment. Rural areas are usually described in negative terms due to the miserable conditions under which people were living (Gardiner, 2008). The concept rural schools is described more in depth in Chapter 2 (§ 2.2.3.).

### *1.3.2. School leaders as leaders in change and in the use of ICT*

Technocratic change is changes and/or improvements in technology which require educational adaptations to accommodate these changes (Van der Westhuizen, 2007). The school leader as a change manager has to acknowledge the obligation for managing technological change in a school. School leaders as managers are expected to facilitate and to implement change. Van der Westhuizen (2007) reveals that in order for school leaders to implement and manage change successfully, they need training and skills. With the introduction of digital technology, school leaders are expected to form part of the educational change and provide leadership regarding the use of ICT in schools, and for the purpose of this research, guidance for the use of ICT in school management.

School leaders are regarded as leaders and role-models. For them to be able to lead, influence and motivate their followers to integrate ICT, Van Niekerk (2009) encourages school leaders to use ICT themselves in the management of the school. According to Van Niekerk (2009), conquering knowledge and skills regarding effective ICT usage is important for effective leadership. Van Niekerk (2009) suggests a positive approach to and knowledge of the use, integration and implementation of ICT. The use of ICT by school leaders has the ability of inspiring and motivating educators to also integrate technology effectively into learning and teaching (Munro, 2011; Van Niekerk, 2009). If school leaders as ICT leaders of the school have limited knowledge regarding ICT, this will probably lead to unmotivated educators who avoid integration of ICT into learning and teaching. If educators find school leaders' attitude to be negative, they tend to become unenthusiastic and uninspired to incorporate technology into their teaching and learning routines. School leaders' attitude towards ICT usage and integration is therefore regarded as an essential influential factor (Van Niekerk, 2009).

Introduction of ICT in schools have impacted the roles and responsibilities of school leaders in significant ways. Several school leaders have not been equipped for their roles as ICT leaders and for that reason resist developing both the human and technical resources required in the use of ICT in the management of their schools (Ahmad *et al.*, 2012). Very few school leaders (specifically in rural schools) use computers in meaningful ways and therefore lack the necessary educational vision and experience for using of ICT in the management of schools. According to Ahmad *et al.* (2012), school leaders must change the way they think, organise and plan their management in schools. Without a change in training, school leaders are expected to end up being disappointed and frustrated with the use of ICT in management of schools (Ahmad *et al.*, 2012).

The school leaders' knowledge and understanding of technology is important in order to influence followers to use and integrate ICT (Van Niekerk, 2009). Leaders that are computer literate are more aware and conscious of what ICT can do for the organisation. Learning the essentials of word processing, spread sheets, presentation software, E-mail, using web pages and the internet is crucial to improve computer skills. Leaders could form a co-operative network and obtain knowledge and training regarding the use of technology in their workplace. In order to stay at the forefront and become a competitive person, school leaders were advised to keep well-informed about the latest technology (Ahmad *et al.*, 2012). With information and material available worldwide, school leaders are able to become well-informed technology leaders (Ahmad *et al.*, 2012).

Afshari *et al.* (2012) is of the opinion that even though ICT infrastructure is essential, ICT leadership is much more needed for efficient utilisation of ICT in schools. As mentioned above, school leaders ought to be role models to that they lead, and be innovative and competent. Afshari *et al.* (2012) encourage school leaders as leaders of school development to be competent in using computers; identify the significance of new technologies and model the use of ICT to indicate how ICT could positively influence the school environment. Although school leaders might have formally authorized ICT leadership responsibilities, this can be problematic as they often do not have the training or background to feel confident in using ICT (Ndlovu, 2012). Using computers and ICT competency are essential factors that influence the role of principals in the implementation of ICT in schools (Afshari *et al*. ,2012).

### 1.3.3 Use of ICT in school management

As part of the conceptual framework, the use of ICT in school management is in this research linked to the management task-area model explained by Van der Westhuizen (2007). In this model, education management is described in terms of different management tasks (planning, organising, guidance and control). These management tasks should be applied in different management areas (financial management, management of physical resources, human resources management etc.). ICT can be effectively used in applying the different management tasks in specific management areas. Communication, for instance, is a sub-task of the management task guide (Van der Westhuizen, 2008; Van Deventer & Kruger, 2003). School leaders spend a large part of the day communicating with staff, learners, parents, the school governing body and the Department of Education. Internal as well as external communication are regarded as important to ensure the smooth running and managing of a school (Van der Westhuizen, 2008; Van Deventer & Kruger, 2003). To deal

with visits by parents and other schools, incoming and outgoing mail, telephone conversations and circulars all require planning and cannot be left to chance. This can be done with the support of ICT (People-ICT-Development (IICD), 2007). Unsystematic external and internal communication can damage the public image of the school and also reduce confidence in management and the school leader. Negative communication undermines the school leader's reputation and also has an effect on the teaching profession, seeing that the school leader is regarded as representative of the best human resource in the teaching profession (Van der Westhuizen, 2008). The use of ICT for communication could make it faster and more effective.

According to Van der Westhuizen (2008), administrative work in planning, such as safekeeping of documents and letters from and to educational authorities, parents, teachers, bodies in the community and learners, are all important administrative activities. A filing system, using ICT designed for filing purposes ensures that documents are easily traced and can ease the administrative burden of school leaders. Van der Westhuizen (2008) further states that documents such as reports, mark schedules, tests and minutes that were previously handwritten and then typed and duplicated can be replaced using computers and word processors. The purpose of ICT systems is to lighten the burden of administrative tasks and to provide the school leader as educational manager with reliable information at suitable times to assist school leaders in making decisions (Van der Westhuizen, 2008).

School leaders are encouraged to use ICT in administration to allow them to concentrate on more important aspects of managing the school (Ahmad *et al.*, 2012). The potential for managing information effectively and the rearrangement of internal administrative procedures are regarded as important encouragement for principals and administrative staff to institutionalise the use of ICT at all levels (Ahmad *et al.*, 2012). ICT reduces record keeping time in schools and streamlines frequent and routine administrative tasks. The Minister of Education had established the South African School Administration and Management System (SA-SAMS), which will be discussed in more detail in Chapter 2, for schools and the educational management information system (EMIS) and networking system as advanced methods of managing the school database (Ahmad *et al.*, 2012), which are discussed in more detail in Chapter 2 (§ 3.5).

The Asian Development Bank (Sarvi & Yao, 2009) advises school leaders to consider expanding ICT guidelines and methods through a participatory approach among school management and other staff members. ICT guidelines will define a mutual vision for ICT to enhance and encourage the School Improvement Plan (SIP). Accessed ICT equipment

simplifies mutual expectations regarding the intention and frequency of ICT use, and specifies accessible support. Sarvi and Yao (2009) recommend school leaders to constantly assess the role and usage of ICT during school tasks. Such an assessment would allow development and growth of an ICT culture (Sarvi & Yao, 2009). More effective and efficient administration and management information will motivate school leaders and administrative staff to institutionalise the use of ICT across their educational institutions.

### 1.3.4. Training in the use of ICT in school management

Given all those possible benefits, the trials and tribulations school leaders face today is not the absence of hardware, equipment and internet access, but the lack of training to manage the technology itself (Ahmad *et al.*, 2012).

In order to support school leaders to become technology leaders, principals need to realise that when creating a vision for the school, they are required to establish an ICT culture within the school (Sarvi & Yao, 2009). According to Naidu, Joubert, Mestry, Mosoge, & Ngcobo (2008) the culture of a school touches and affects every aspect of the school. Factors that are part of school culture, such as the use and training of ICT, influence the way in which a school is managed (Naidu *et al.*, 2008). Professional ICT training for school leaders includes, amongst other aspects, basic information about hardware, the capabilities of and how software applications can be applied to information management, opportunities to have learnt how to operate technologies and how to use these when carrying out their duties (especially when communicating with others), as well as the importance of planning for ICT training in the school (Sarvi & Yao, 2009).

Stuart, Mills, & Remus (2009), advise school leaders with knowledge of how to use available ICTs in schools, to use these technologies to their advantage when performing their daily tasks. Without the necessary training in the use of ICT, school leaders could be unfamiliar with these technologies and this may impact negatively on effective leadership (Stuart *et al.*, 2009). School leaders need to attain a certain level of ICT competence in order for them to be effective technology leaders in their schools. According to Stuart *et al.* (2009), research was done in New Zealand among school leaders concerning the competence of school principals. This study exposes that even though some school leaders may have some knowledge regarding the use of ICT, they do not have adequate experience to use ICT in management. This report also unveils that school principals who aided in professional ICT development programmes appear to manifest more ICT knowledge and proficiency. According to Munro (2011), certain areas of development must be taken into account when developing ICT training for principals.

Although studies (Balanskat *et al.*, 2006; Hew & Brush, 2007) reveal that the use of ICT could support school leaders, a severe lack of computer skills, knowledge, resources and even appropriate infrastructure still prevails in South African schools. Attitudes as well as insufficient skills and competency create barriers and influence leaders not to use different technologies in schools (Bingimlas, 2009). Attitude towards ICT is influenced by the perception of usefulness and the ease of using technology, which is influenced by external factors such as lack of infrastructure (Fig.1). Perceived ease of using technology has a direct influence on individuals, perceptions of the usefulness of ICT (Fig.1). Attitudes to the use of ICT are directly influenced by the perceived usefulness and ease of use. This directly influences the intention to use technology, which in turn is influenced by the perceived usefulness, and these together lead directly to influencing individuals to actually use of the technology (Fig.1). This can be explained through the technology acceptance model below:

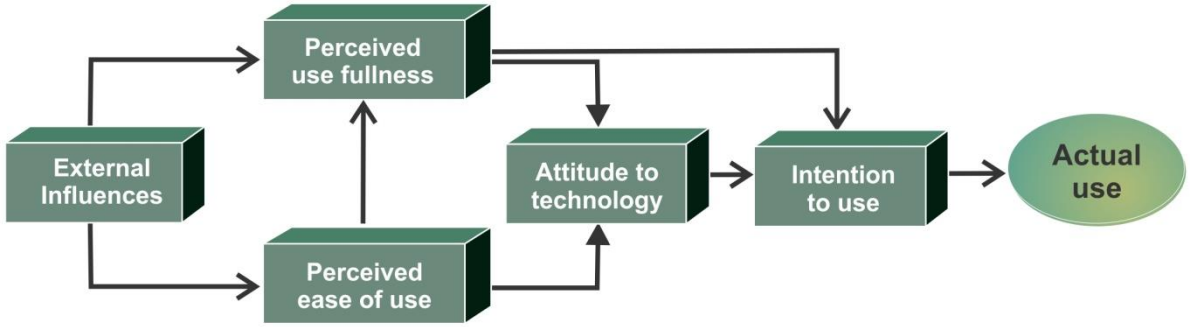



*Figure 1: Modified Technology Acceptance Model (Abbad* et al.*, 2009)*

Research was done in the pedagogical use of ICT. The SITES 2006 (Law *et al.*, 2010) study examined the ICT related pedagogical practices which participating countries have adopted. This study intensively looked at the role of the school leader in the management of ICT in the school. Research in rural education which aimed at addressing specific needs in rural schools with regard to sustainable learning environments, social justice, ICT, management and leadership have also been done (Ebersohn & Ferreira, 2012; Mentz *et al.*, 2012; Moletsane, 2012). No research has however, been done, on the use of ICT in school management, specifically in township and rural schools.

As mentioned, the management task-area model (Van der Westhuizen, 2007), was used as part of theoretical framework. It was used for establishing how and where ICT was currently used in the performance of the different management tasks and in which specific management areas. With the management task-area model as framework, the training needs

with regard to specific management tasks and within specific management areas have been established.

The researcher addressed the following main research question:

*What are the training needs of principals pertaining to the use of ICT in the management of primary rural and township schools?*

## 1.4. ANTICIPATED RESEARCH PROBLEMS

Doing research in township and rural schools may be hampered by aspects such as a lack of infrastructure, water and electricity supply, sanitation, teaching and learning material, insufficient physical facilities etc., as these may seem more important to address than the proposed research problem. This may result in reluctance to participate in this research, specifically in the data collection processes. Some of the interviewees may feel vulnerable during the interviews when enquired about their views; beliefs and attitudes concerning training required in the use of ICT in the management of their schools. Others might be unable to express themselves adequately. This might cause inadequate reflection or expression of views or facts. The previous concerns were addressed in that the researcher established a trust relationship with participants. The researcher was mindful of sensitive views which seemed personal, and interviewing was facilitated accordingly, addressing only the research aims with an applicable interview schedule. Appointments with participants as well as suitable venues for conducting interviews did not pose any problems. The researcher also had the appropriate training, under the guidance of the study leaders, to master the necessary interviewing skills. Training included interview simulations with critical feedback.

## 1.5. THE RESEARCH PURPOSE AND AIMS

The purpose of this research was to determine the training that principals need regarding the use of ICT in the management of primary schools in rural and township areas.

In order to clarify the focus and intent of this research, the following research aims were compiled:

- To determine the importance of the use of ICT in the management of schools.
- To establish the role ICT currently plays in the management of schools.
- To determine the training needs regarding the use of ICT in school management.

## 1.6. RESEARCH DESIGN AND METHODOLOGY

This research followed a qualitative research methodology in the form of a phenomenological study. Creswell (2009) describes a phenomenological study as an approach of examining the real meaning concerning a phenomenon as explained by participants. The researcher followed an interpretive design where the researcher gathered information on principals' views regarding training they need pertaining to the use of ICT in the management of primary schools in rural and township areas. The research design and methodology is described in more detail in Chapter 3.

### 1.6.1 The proposed literature study

A review of literature (Chapter 2 § 2.5.) was conducted on the training school leaders require regarding the use of ICT in the management of primary schools in rural and township areas.

Using EBSCOhost, relevant and recent associated literature was gathered through ERIC, Academic Search Premier, Google Scholar, Emerald and Science Direct. Primary and secondary sources were used, as well as national and international literature and related documentation from the Department of Education that provided information, with a view to ensure the success of the research.

The following keywords guided the literature search:

*School leader, training, education, schools, management, ICT, rural, township, professional development.*

### 1.6.2 Research design

The research was conducted where the problem was experienced; therefore a phenomenological approach, imbedded in the interpretivistic paradigm was used. In a phenomenological design, the researcher refrains from being biased by recording interviews, and constantly confronts her own opinions and prejudices and collected data on how humans make sense of a specific phenomenon, in this instance the use of ICT in the management of schools (McMillan & Schumacher, 2010). The phenomenological approach enabled the researcher to describe and interpret the phenomenon of ICT use in the management of schools, as experienced first-hand by people, in these instance school leaders in township and rural areas (De Vos, Strydom, Fouché & Delport, 2011; Nieuwenhuis, 2009).

The researcher approached the study from an interpretive paradigm. Interpretivism attends to the theory and practice of interpretation; of which the researcher reconstructed the original intention of the participants. The logic behind an interpretive paradigm is that interpretation was essential since behaviour is represented by social conventions (Ritchie *et al.*, 2009). The intention was to understand and interpret social phenomena within a particular context with consideration of the influenced social agents on the phenomena. Exploration of this paradigm reveals people's experiences and how they reflected upon these experiences apart from the critical theory concerned with conflict and inequality in understanding the dynamics of human relations (Nieuwenhuis, 2009). The researcher followed an inductive, qualitative research design that enabled the analysing and understanding of the phenomena constituted by social convention. Qualitative research design is an approach for understanding and exploring the connotation of what individuals regard as the origin of social and human complications. Hence, qualitative research enabled the researcher to gain an understanding and to explore the training which school leaders needed pertaining to the use of ICT in the management of primary schools in township and rural areas. Contradictory to quantitative research, which is a means of examining theories by looking at the relationships among variables, qualitative research was for this purpose regarded as an appropriate research method to be used (Creswell, 2009). A phenomenological study provided information relating to understanding, discovering and describing what training school principals need concerning the use of ICT in management as anticipated by principals of primary schools in rural and township areas.

### 1.6.3. Researcher's role

Throughout this study the researcher adopted the character of participant as well as observer which allowed the researcher to obtain first-hand experience of the daily lived experiences of the participants (Strydom & Venter, 2005). The researcher was directly associated with the participants to gain an extensive understanding of the collected data (McMillan & Schumacher, 2010). The researcher's role during interviews was to listen to the interviewees, to ask questions where necessary and to record the responses given by participants on audio-recordings throughout the data collection process. Cohen *et al.* (2007) reveal that the researcher should bear in mind that he / she is a data collection instrument and should try not to let his/her own bias, opinion and curiosity affect his / her behaviour. The researcher also transcribed and analysed the data herself.

### 1.6.4. Site or social network selection

The social network consisted of ten primary schools. All ten schools are located in the Matlosana Area, Dr. Kenneth Kaunda district (Southern Region) of the North West Education Provincial Department. Strydom and Venter (2005) explain that the research question is directly associated with the research problem; therefore the researcher should designate a site which is suitable for the problem identified. This province currently consists of four districts. Only ten schools of the Matlosana area, which is part of the Tswelelopele region, was used for this research. Schools were chosen using a convenience sampling method. Convenience sampling refers to the selection of a sample based on money, location, time and availability (Merriam, 1998). The researcher is situated and employed in the Matlosana area. The ten chosen schools included rural schools as well as township schools.

### 1.6.5. Selection of participants

Although the schools were selected using convenience sampling, the participants were selected purposively. Purposive sampling was used in selecting participants as they should have particular characteristics which will facilitate detailed exploration of the research problem (Patton, 2002), as this makes them holders of the data needed for the study (Maree, 2010). Particular characteristics for this study included being a primary school leader in a rural or township area, situated in the Matlosana area where the research has been conducted. For purposes of this research, the researcher conducted individual interviews with principals of ten different primary schools. The reasoning for interviewing principals in these schools was to enable the researcher to gain the best and most reliable information regarding the training needs pertaining to the use of ICT in managing schools, since the participants lead and manage the schools. Interviews were conducted on the premises of the chosen schools at an appropriate time that has prevented disturbance of learning and teaching, and which was convenient for both the participant and the researcher.

### 1.6.6. Data collection strategies

The interviewees of this study were principals of primary schools in rural and township areas. The researcher endeavoured to create meaning concerning the training needed with regard to the use of ICT in the management of primary schools. The qualitative methodology used was a phenomenological study. The reason for deciding on semi-structured interviews was that these seldom span across a long period that requires the participants to respond to a set of predetermined questions, and they also allowed for probing and clarification the questions. New perspectives and unexpected comments could clearly be considered, and added value

to the research (Maree, 2010). Semi-structured interviews directed the study so that the researcher could discover new lines of inquiry directly associated with the phenomenon under investigation.

### 1.6.7. Data analysis

Qualitative data analysis tends to be an intertwined process of data collection, processing, data analysis and reporting (Nieuwenhuis, 2009). It involved analysing the information from various viewpoints to understand and interpret the data (De Vos *et al.*, 2011). The digital recordings of the semi-structured interviews were transcribed and documented to electronic text to form part of an integrated dataset in *Atlas.ti*™ computer-based software used for qualitative data-analyses. The data was coded with reference to a method of open coding and then further evaluated according to a methodology of content analysis where phrases of explanations formed the basis of coding and categorizing (Nieuwenhuis, 2009). This was preceded by a process of axial coding where the concepts were reassembled according to the participants' responses to the training needed by principals with regard to the use of ICT in managing primary schools. Attention was given to the use of concepts, constructs, methodological issues, the role of the researcher, and to the control of biases. In the study the researcher described these steps to ensure consistency and accuracy during the research process (Creswell, 2009).

The researcher adhered to issues to support the validity and trustworthiness. Various methodologies were suitable in different situations. To endorse the study the researcher furthermore described the situation in adequate thick detail (thick description) and sought opinions from the study leaders to establish whether they agreed with the transcribed interviews as conferred by the researcher (McMillan & Schumacher, 2010).

### 1.6.8. Trustworthiness

Trustworthiness in qualitative research refers to the appropriateness, correctness, meaningfulness and usefulness of the specific inferences researchers make based on the data they collect (Fraenkel *et al.*, 1993). Trustworthiness of this research was ensured through the following (Fraenkel *et al.*, 1993):

- Data was collected by means of audio–recordings of individual semi-structure interviews.
- The researcher made use of an interview schedule where pre-determined semi-structured questions were asked. Answers have been recorded. The recordings

helped the researcher to make sense of answers recorded and helped to prevent / clarify confusion that might occur at a later date.

- Coding of interviews was done with the assistance of the study leaders, who coded the first few and from where the researcher did the remaining coding herself.

- Completed coding of interviews was double-checked and evaluated by the study leaders for final approval of coded interviews.

- The researcher drew conclusions based on understanding of the situation being observed and acted on these conclusions.

## 1.7. ETHICAL ASPECTS OF THE RESEARCH

The following ethical considerations were taken into account and were adhered to (Fraenkel *et al.*, 1993; McMillan & Schumacher, 2010):

- Consent to conduct the research was obtained from the relevant parties. Permission was granted by the North-West University to conduct research. The official ethical clearance number which has been received for this purpose is NWU-00162-13-A2 (ii).

- The researcher requested permission from the North West Regional Education Office of the Department of Education (Addendum A).

- The researcher obtained permission from the principals of the participating schools to conduct the study (Addendum C).

- Before they participated, the researcher established a clear and fair agreement with participants that stipulated the responsibilities of each party.

- The researcher also honoured all promises and commitments included in the agreement with all parties.

- Participants' involvement was voluntary, and they could withdraw at any stage during the interview (Addendum B).

- The responses of the participants were considered confidential and their identities were not revealed during the report writing process. The names of the schools were

also kept confidential to ensure that participants' trust would not be lost during the research process (Cohen *et al.*, 2007).

- Participants were ensured of protection against any harm that may come from their participation in this research.

- Before the data was collected, the researcher provided all participants with information about the nature of the study and did her utmost best to clarify any misconceptions that could occur.

## 1.8. CONTRIBUTION OF THE STUDY

This proposed research falls under project 2 of the subject group Educational management and leadership: School leadership and the management of diversity. The aim of this project was to explore and develop contemporary theories, approaches and strategies in relation to context-specific needs for effective educational leadership and management practices. The use of ICT in management relates to effective educational leadership. The findings of this study can make a significant input to the training principals need pertaining to the use of ICT in managing primary schools in township and rural areas. To ensure realistic and comprehensive clarifications for policy makers, it was imperative that the training required by principals in primary schools in township and rural areas be explored, described and understood.

## 1.9. CHAPTER DIVISION

Chapter 1: Orientation

Chapter 2: The use of ICT in school management

Chapter 3: Research design and methodology

Chapter 4: Data analysis and discussion of results

Chapter 5: Summary, findings and recommendations

**CHAPTER 2:**

# THE USE OF ICT IN SCHOOL MANAGEMENT

## 2.1. INTRODUCTION

The rationale for this study is to determine the training needs of primary rural and township principals regarding the use of ICT in the management of the school (Chapter 1§ 1). The main theme of Chapter 2 deals with the use of ICT in school management.

The first section pays attention to the clarification of concepts (§ 2.2) of the terminology used throughout the Chapter. This is followed by a theoretical framework which holds and supports this research (§ 2.3.). Attention is given to the different management tasks as well as the management areas in which ICT can be used. Furthermore a discussion is given regarding the use of ICT in the management of schools internationally and in Africa, specifically South Africa.

## 2.2. CONCEPT CLARIFICATION

In order to have an understanding of ICT and management in schools it is necessary to clarify a number of relevant terminologies that will be used throughout this study. The following concepts are relevant within this research and therefore their meaning will be further explored. The concepts being discussed in this section are education management, ICT, township, rural, training as well as professional development.

### 2.2.1. Education Management

Education management can be seen as a field of learning and practice which is involved with the function of the educational organisation (Aduwa-Ogiegbaen & Iyamu, 2005; Bush, 2007). Van Deventer and Kruger (2003) claim education management to be a specific type or kind of work in education. Education management can be seen as tasks or behaviour performed by a person or a body in a position of authority in a particular field to permit formative teaching and learning to take place effectively (Van der Westhuizen, 2007).

Education management as defined by Van Deventer and Kruger (2003) consists of the management of different areas in education in which management tasks known as planning, organising, leading and controlling are executed. These management tasks are performed by a person with authority, for example a principal of a school within a specific management

area. These management areas may, to mention but a few, include learners, staff administration, physical facilities, finances and the school community relations (Van Deventer & Kruger, 2003). According to Kimani (2010) and Sharma (2009), education management refers to the use of theory and procedures of management, which involves the decisions on the aims of an educational organisation as the core of education management.

In relation to the above explanations given, educational management thus refers to a field of study which is concerned with carrying out organisational tasks by the school leader (principal) with a view to obtain educational goals and objectives in an educational organisation.

### 2.2.2. ICT

The White Paper on e–Learning states that ICT is "a sequence of systems, hardware (equipment) and software (computer programmes) as well as the methods of communication, cooperation and assignation that enables the managing, processing and exchange of data, information and skills" within organisations. In contrast to the White Paper, ICT is technologies used to manage information (Elston, 2007), yet ICT supports activities that have to do with the establishment, storage, management and communication of technology simultaneously with interrelated techniques, functions and applications (Bialobrzeska & Cohen, 2003; Okereke, 2007). Regardless of the various point of views on the explanation of ICT, Okereke (2007) agrees with the White Paper that ICT entails modern technologies such as computers, telecommunications, facsimiles as well as modems. Out-of-date technologies are seen as record filing systems, mechanical accounting devices, printing as well as cave images. The Information Technology (IT) part of ICT allows us to acquire, save, assemble, group, control and present information electronically, whereas the Communication Technology (CT) component on the other hand points to telecommunication tools through which information can be searched for, sent and retrieved. Similar to Mohanty (2011), Okereke (2007), Lepičnik-Vodopivec and Samec (2012) state that ICT is universal perception which includes the entire communication devices of the contemporary society and their usage, with the intention of mediating information and enabling the route of communication.

From the above explanations, ICT can be seen as a sequence of hardware and software systems through which information can be searched for, sent and retrieved, which addresses the need to record, process, store and share information quickly and efficiently.

### 2.2.3. Township and Rural schools

A township is a suburb or city of mainly black occupation, formerly officially designed for black occupation by apartheid legislation (Soanes, 2002). In addition, the legal meaning of the term township in South Africa can also mean a designated area or district (Qabaka, 2013). A township is also referred to as a South African town where black people lived during apartheid (Dictionary.com, 2012). Yet, a township is also defined as an area selected under apartheid legislation for exclusive occupation by Africans, Coloureds and Indians (McCullough, 2009).

Edmondson (2005), Givehope (2012), as well as Qabaka (2013), are also of opinion that the concept township refer to an underdeveloped urban residential area in South Africa in which the non-whites (mostly black, coloured and Indian working class) used to live during and until the end of Apartheid.

These townships have been built at city outskirts (Givehope, 2012). Furthermore, Statistics South Africa (South Africa, 2004) regard a township to be an urban residential area, made for black migrant labourers on the outskirts of towns or city limits, in contrast to the white population which would be situated within the towns. Even though there is no recommended definition for the concept of rural, the Rural Development Framework (RDF) of 1997 defines rural as lightly populated areas in which people live, farm or depend on natural resources. These areas include villages as well as small towns that are distributed through the world. These areas also include large settlements formerly known as homelands which were created by the “apartheid” government, which depend on travelling and remittances for survival (RDF, 1997).

In view of the above argument given, and for purposes of this research, a township school can be regarded as a school in an urban residential area, in many instances underdeveloped and occupied mainly by non-whites. A rural school can be regarded as a school in a lightly populated area in which people farm and depend on natural resources.

### 2.2.4. Training

Training can be defined as a learning process that involves the gaining of knowledge, sharpening of skills, thoughts, rules, or changing of attitudes and behaviours to improve the performance of employees (Kitching & Blackburn, 2002). Training also involves the gaining of knowledge, skills and ability through professional development in a specific organisation. Training is defined as a culture of learning of how to be more effective in a specific

profession (Batool & Batool, 2012). However, training is also an organised activity that aims at improving employees' performance or with a view to assist them to accomplish needed knowledge and skills (Kitching & Blackburn, 2002). Training is finally interpreted as educational processes through which individuals can learn to improve themselves in order to strengthen and support existing knowledge and skills (Salvi, 2012).

Hence, from the above argument, training can be defined as an educational learning process by means of which individuals can gain knowledge and skills through professional development for purposes of improving performance, which involves the change in knowledge, attitudes as well as performance.

### 2.2.5. Professional Development

Professional development is seen as the process and development to obtain skills, qualifications and experience that allow one to make progress in one's career (ACCD, 2010). The report on teacher professional development (OECD, 2010) characterises professional development as actions that broaden an individual's skills, knowledge, expertise and other characteristics as a teacher (within the school context). In view of this report the concept professional development is commonly used for constant professional development in schools and refers to the systematic activities to train teachers for their profession which include orientation courses, in-service training as well as continuous on-the-job training in school situations.

Correspondently to the report on teachers' professional development, Edmondson (2005) refers to professional development as an on-going, intentional, systematic education and training opportunity. Professional development can also be regarded as a continued process of reflecting (where you are now and where you want to be), planning (plan activities to help achieve goals) and doing (carrying out activities and reflect on achievements and future activities) (Edmondson, 2005) .

In addition, Chamber-Macmillan Dictionary (1996) refers to professional development as obtaining the skills, qualifications and experience which allows a person to progress in his / her career; while Mizell (2010) regards professional development as the strategy which schools and school districts use to ensure that educators continue to strengthen their practice during their profession. Professional development is also regarded as the skills and knowledge employees gain in order to optimize their personal development and job growth (Ferguson, 2012). Furthermore, professional development is also seen as the development of a person in his or her professional role (Villegas-Reimers, 2003).

Professional development can thus be regarded as a continuous process of activities which involve the development of skills, experience and knowledge of a person to optimise their personal development, and ensure strengthening of their career practice in a professional field.

## 2.3. SYNTHESIS

The above concepts form the core of the study and the conceptual framework of the study. These concepts cover the relevancy within the research regarding the use of ICT in managing of the school.

The use of ICT as hardware and software systems is for purposes of this research seen to be important in education management which includes carrying out of organisational tasks in township and rural schools. Principals can acquire the skills of using ICT in education management through the necessary training, which could form part of professional development.

The next aspect in this literature review is to indicate and elaborate on the theoretical framework that will be used to explore the uses of ICT in educational management as well as the training of managers in the use of ICT in educational management in schools. A general discussion of different general management models as well as educational management models then follows. The current uses of ICT in schools, internationally and in Africa, are discussed. The section is concluded with the training needs in the use of ICT in the management of a school.

## 2.4. THEORETICAL FRAMEWORK

A theoretical framework is a collection of interrelated concepts, such as a theory (Bogatti, 1999; Buton *et al.*, 2008). Ocholla and Le Roux (2011) mention that a theoretical framework provides the structure that supports and holds the theory of research. McGriff (2012) goes further, indicating that a theoretical framework includes identifying a core set of connectors in a relevant field of enquiry and showing how they fit together or are related in some way to the subject. The theoretical framework needs to correlate with the management theory which relates with the topic under investigation.

Moyle (2006) points out that the principal should have the ability to select an appropriate management style. This ability includes to choose from a variety of management styles suitable for a given context and to be capable of applying that approach (Moyle, 2006). Consequently the appropriate management / leadership style for leadership is important for

principals to perform their work as both a school leader and ICT leader. To conceptualise a theoretical framework for this research, different management and leadership models were reviewed, with the aim of identifying one or more models / theories as a point of reference for this study. Theories, models and approaches to management and leadership are summarised in the following table.

The following are general management models and theories associated with leadership:

### 2.4.1. General management / leadership models:

| THEORY | SOURCE | CHARACTERISTICS |
|---|---|---|
| **Taylor's Scientific Management Approach** | Hissom (2009) | This approach identifies beliefs and values that provide managers with building blocks. Managers should possess the necessary skills and knowledge to perform their supervision duties. Work should be shared evenly between management and workers with the workers doing the work and management performing the instructional duty. Each person doing the work best suited for. |
| **Weber's Bureaucratic Approach** | Hughes (2003) | A well-defined line of authority is addressed with clear rules and regulations which are strictly followed. Delay in decision-making can be caused by too many rules and regulations. Leaders maintain an impersonal relationship with employees so that favouritism and personal biases do not form of decisions. |
| **Hersey-Blanchard Approach** | Bolden et al. (2003) | This model takes a situational perspective of leadership by means of which the leader chooses the best direction based on the situation. This theory is based on the amount of direction and socio-emotional support given by the leader which depends on the level of maturity of the followers. |
| **Contingency Approach** | Simbarashe (2012) | Managers use a flexible approach based on a variety of theories and experiences while they evaluate many |

| THEORY | SOURCE | CHARACTERISTICS |
|---|---|---|
| | | options for solving problems. It depends on the experience and judgement of the manager in an organisational environment. Management or organisational actions are regarded as based on the behaviour of action outside the system so that the organisation is integrated with the environment. |
| **Chester Barnard Approach** | Skaik (2008) | Employee job satisfaction is increased by offering incentives in the workplace. Acceptance of authority is based on free will and outside forces as an application of respect and competence. Principals don't make decisions based on their own personal desires but on the interest of their staff. Therefore, many important management principles and techniques may be overlooked. This approach regards organising as important management function; therefore an leader has to organise in order to obtain results. |

A review of the education management / leadership models briefly follows on the next page.

### 2.4.2. Education management / leadership models:

| THEORY | SOURCE | CHARACTERISTICS |
|---|---|---|
| **Mintzberg's Role approach** | Van der Westhuizen (1991) | This approach is a representation of the manager's task as an integrated whole. In this approach the education manager fulfils different roles in management, namely interpersonal roles (connected with employees), informational roles (monitor internal and external information) and decision-making roles (make decisions based on gathered information). A manager's performance is influenced by his understanding the job and how he responds to the pressures thereof. |
| **Management task-area model** | Van der Westhuizen (1991) and Van Deventer & Kruger (2003) | In this model different management tasks are identified (how to manage) which should be performed in different management areas (what to manage) by the education leader. These tasks include: Planning, organising, guiding and controlling. The amount of time a manager spends on each task depends on both the level of management and the specific organisation. Finances are an example of a management area. |
| **Bush's Management models** | Bush (2011) | These models consist of six management models which offer an insight into the different approaches to the nature of management in education. Relevance of each model varies according to the context. Main aspects of management addressed in models are goals, organisational structure, external environment and leadership. |

| THEORY | SOURCE | CHARACTERISTICS |
|---|---|---|
| **Bolman and Deal's Theory** | Stadtländer (2007) | This approach identifies four frames namely: structural, human resource, political and symbolic, indicating that the same situation can be viewed from four different perspectives. If used together it helps the leader to form a complete picture of the organisation. Leaders and managers can use these frames for identifying what is wrong in an organisation and what can be done to correct it. In this approach leaders regard management as a moral and ethical responsibility and combine organisation realism with passionate commitment to values and purposes. |
| **Morgan's metaphorical theory** | Holt (2011) | This theory is used to explain organisational behaviour and leadership. They provide perspectives on how managers see and act in their organisation and why they act the way they do. In this approach leaders use metaphors to analyse and diagnose organisational problems which improve the management and design of organisations. Decisions are taken based on metaphors applicable to education. |

From the models described above, the management task–area model is chosen as the lens through which the phenomenon of ICT use in management will be viewed, because in all areas managers need to manage, they make use of specific management tasks (Diagram 1). In any organisation, management tasks such as planning, organising, controlling as well as leading are needed in order to succeed. ICT will allow leaders to perform these duties easier, faster and more accurately. ICT can support management tasks and management areas which are discussed in the subsequent paragraph.

Certain matters in the school must be managed by means of management tasks (Diagram 2, p.34). These matters are known as management areas (Van der Westhuizen, 2008).

Management tasks are applied in specific management areas and never occur in isolation, as illustrated in Diagram 1. Prokopiadou (2011) points out that technology information systems enable the improvement and immediate execution of administrative tasks. Technology information systems also assist in the management tasks such as planning, organising and controlling resources in the management of general school-related issues and administrative information (Prokopiadou, 2011). The Australian Department of Education, Employment and Workplace Relations (DEEWR, 2012) states that ICT can support administration staff by improving efficiency and enable more effective decision making based on accurate data. Therefore ICT is an effective way of facilitating administrative services and reinforcing communication channels within the school community. Hepp *et al.* (2004) mention that information systems make management tasks easily accessible and are user friendly. Management can handle administrative transactions such as communication between schools, parents and principals easier which improves effective duties of the school management (Hepp *et al.*, 2004). Duties related to management areas can be performed by using of ICT. ICT can be used by principals to communicate with staff, parents, SGB members, etc. by means of e-mails, SMS's, and intranet. Stakeholders and community members can make use of websites to access information concerning the school and its activities (Gauteng Department of Education, 2011). These technologies can also be used to communicate with other schools and districts when needed.

Diagram 1 indicates the interactive and interrelated nature of educational management (adapted and modified from Van Deventer and Kruger (2003).

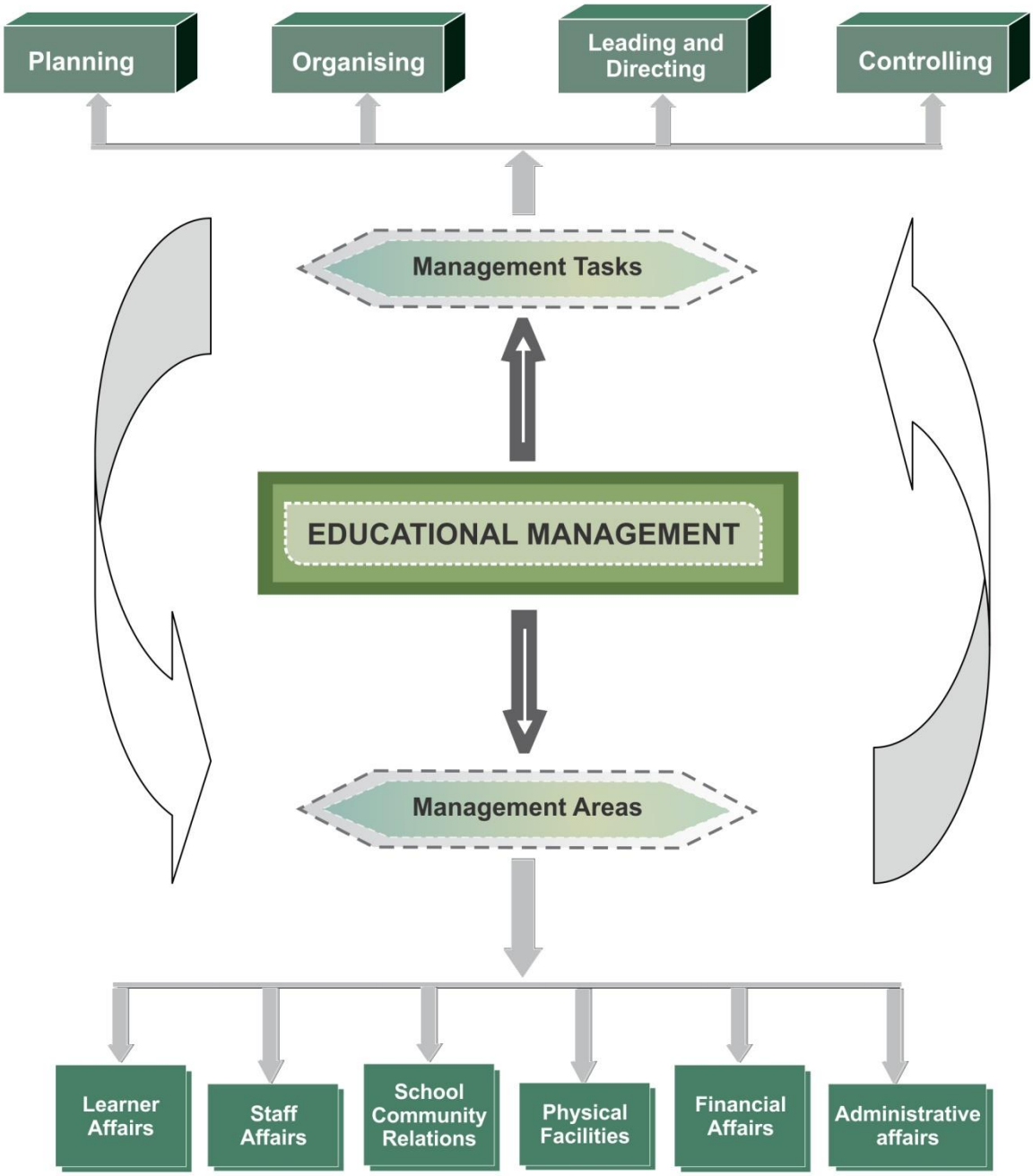



*Diagram 1: The interactive and interrelated nature of educational management*

### 2.4.3 Management task-area model

As seen from Diagram 1 the management tasks and management areas interrelate with one another. Management consist of different management tasks which in turn are made up of various management areas or activities. Management tasks are carried out in relation to the different management areas which are carried out by the school principal.

The management task-area model (Van Deventer & Kruger, 2003) evaluate and describe the management activities according to the various tasks involved (functions, activities or management acts) which have to be monitored (management area model). The management task-area model is also used to evaluate and describe the activities performed by the manager such as planning, organising, leading and controlling (Van Deventer & Kruger, 2003). In the following paragraph specific management tasks (Diagram 2, p.34) are discussed briefly to clarify their importance.

### *2.4.3.1. Management tasks*

Different researchers have classified different management tasks. Koontz and O'Donnell (1972) list five functions of management i.e. planning, organising, staffing, directing and controlling. Henri Fayol identified five managerial functions as planning, organising, commanding, co-ordinating and controlling (Anupkumar, 2005; Wren *et al.*, 2002). In this research emphasis is placed on the four most commonly accepted management tasks, namely planning, organising, leading and controlling (Hissom, 2009; Rothbauer-Wanish, 2009; Van der Westhuizen, 1991; Van Deventer & Kruger, 2003) as displayed in Diagram 2.

#### **Planning**

According to Van Deventer and Kruger (2003), planning involves people, delegating, co-ordinating as well as controlling, therefore it forms an integral part of all management tasks where each management task affects all the others. Various sub-tasks should be utilized to be able to plan. These tasks include formulation of goals, policy making, decision making and problem solving.

Planning forms the basis of all management tasks and is the first step in creating an effective and well-run school (Clarke, 2007). Planning is a purposeful and intellectual action that involves the thinking processes with the future as pre-enacted (Van Deventer & Kruger, 2003). This includes what is going to be done, who is going to do it and when is it going to be done (Adeoti-Adekeye, 1997; Litman, 2012; Lunenburg, 2010), with a view to achieve effective organisational goals (Clarke, 2007; Farooq, 2012). Yet, effective planning is viewed as taking into account different views and different effects to make decisions by implementing the most effective way to achieve organisational goals (Litman, 2012).

Planning involves selecting tasks and objectives as well as the action to achieve goals, which requires decision-making such as choosing future courses of action (Van Deventer & Kruger, 2003). However, no real plan can exist until a decision has been made (Olum, 2004) . What

is more, planning can be structured, formal, top-down and even non-participatory in some cases (Picciano, 2011). In fact, planning can also be unstructured, informal, bottom-up or even highly participatory in some cases. The importance of planning as a function of management is highlighted by Kimani (2010) and Litman (2012). Planning is a way of helping in goal setting (Litman, 2012) while Kimani (2010) claims goals to be an organisational outcome which can be applied as performance criteria. Furthermore, the output of an organisation can be assessed if an intended output exists at the beginning of the planning process (Kimani, 2010; Litman, 2012).

In addition, planning is a mental tendency to do things in a systematic way where you think before acting and proceed in the light of reality rather than guessing (Edgell, 2012). In view of this, planning bridges the gap between where we are and where we want to go while it makes things possible to occur which would not otherwise be the case (Koontz & O'Donnell, 1972). Furthermore planning is deciding on the best alternative between a variety of alternatives to carry out various managerial functions in order to achieve predetermined goals (Edgell, 2012). Planning is also a social activity which involves people, while successful planning requires effective involvement of stakeholders (Litman, 2012).

Planning includes setting up the systems, policies, procedures and timetables necessary to efficiently improve organisational goals in schools (Clarke, 2007). It also provides staff members with a sense of direction and purpose, and states the tasks they have to perform and explains how it contributes to organisational goals (Lunenburg, 2010) . Without planning, staff members would respond to their job responsibilities randomly, without prioritizing, and rather wasting valuable human resources. Without planning, staff would not know precisely how to use their time (time management) and energies efficiently and effectively (Lunenburg, 2010). A principle of good planning is identified as individual, short-term decisions which should support strategic long-term goals (Litman, 2012). In addition, planning forces the educational leader to look ahead at what will happen from the view of current information. Organisational plans and goals give purpose and direction to the school, staff members and stakeholders. In fact, planning helps to minimize the cost of production and maximize performances in an organisation (Moses, 2009). The purpose of a school plan is to support school effectiveness and school improvement (Clarke, 2007). The aims and objectives of a school can be realised through a school plan which will help to ensure the quality in teaching and learning throughout the school, but will also direct attention towards areas which are essential in ensuring effectiveness of a school (Clarke, 2007). One of the areas ensuring effectiveness of a school is the financial matters of a school.

ICT will help to improve matters relating to financial planning and budgeting in schools, as ICT is a helpful tool in supporting the planning of management functions (Moses, 2009) (Hepp *et al.*, 2004). Several factors such as maintenance, costs, furniture, electrical power system, local area network as well as environmental conditions need to be considered when planning technology implementation in schools (Hepp *et al.*, 2004). The school leadership needs to commit to a budget, training and management support programme to ensure that ICT's are used effectively for managing of schools (GDE, 2011). Plans to develop principals, office staff and SMT members' skills to use ICT's can be added to the school's development plan so that they can support and use the technology.

Once planning is completed, plans have to be put into practice, which is done during the course of the organising task (Van der Westhuizen, 1991).

## Organising

Organising is similar to planning which involves the preparation of future events to ensure the successful implementation of plans (Anupkumar, 2005). In contrast to the above, organising is seen as the phase of managerial authority and responsibility division as well as choosing people and ways of accomplishing organisational activities (Antić & Sekulić, 2005). Organising refers to the relationship among people, work and resources used to achieve a common goal (Akrani, 2011). Another way of viewing organising is by seeing organising as a purposeful structure of roles which people occupy in an organisation . Organising is regarded as making sure that everyone knows what is expected of him/her (Clarke, 2007). Also, organising is the process of determining the activities to be performed, arranging these activities to administrative units, as well as assigning managerial authority and responsibilities to people employed in the organisation (Ezzat, 2007). Organising resources can mean that the manager is in charge of organising human resources, ensuring that the appropriate employees are hired and have the necessary skills for the workplace (Rothbauer-Wanish, 2009).

The purpose of organising is to assist in making objectives meaningful and to contribute to a good organisation (Weihrich & Koontz, 2008). The purpose of organising can be explained as to create an environment for human performance (Olum, 2004) . Organising involves the development of organisational structure and development of human resources as well the establishment of mutual patterns and networks (Lunenburg, 2010). The purpose of organising is also seen as to assist in the process of meaningful objectives and to contribute to the effectiveness of an organisation (Weihrich & Koontz, 2008). This is seen as a daily,

weekly and yearly task for most managers while ensuring that the necessary resources are available to meet organisational goals (Rothbauer-Wanish, 2009). A basic purpose of organising a task is to carry out the task effectively and to ensure the development of learning and teaching environment. Management becomes effective when systems are put in place to ensure every one (staff members) knows what is expected of them, what relevant policy documents are and to ensure systems are implemented to ensure the school operates according to policy (Clarke, 2007; Van Deventer & Kruger, 2003). Organising therefore is the process of determining the activity, arranging these activities and assigning managerial authority and responsibilities (Ezzat, 2007). Determining the activities includes the distribution of duties and responsibilities to staff members concerning when, where and how resources can be used in an organisation.

After organising, the third management task follows, namely guiding / leading which is discussed in the next paragraph.

## Guiding / Leading

Once plans have been formulated and activities organised, the next phase is leading staff members to achieve the school's goals where interaction with people takes place (Van der Westhuizen, 2008). Other than planning which updates principals on what to do and organising which notifies principals on how to do it, the third function is leading which informs principals why the staff member should want to do it (Lunenburg, 2010). Besides, guidance must be given in order for all the efforts in the school to be directed correctly. For this reason, leading and guidance in a task have to be given by a person in control of other people's activities, including decision- making and steps to achieve goals. Leading is seen as motivating, negotiating and guiding in order to resolve conflict and strive towards achieving the goals of the school (Van der Westhuizen, 1996; Van Deventer & Kruger, 2003). Leading is regarded as a very delicate and sensitive function of management, because it deals with the human element; therefore managers are advised to take extreme care when dealing with human elements (Kimani, 2010). Leading is the shift of emphasis to the interaction between the principal and the people involved in the task that have to be put in motion and is the third management task in which interaction with people takes place (Van de Westhuizen, 2008). In addition leading influences people so that they may add to organisational goals which mainly have to do with the relational aspects of managing a school.

A principal can get results with effective planning, organising and controlling, but even better results can be achieved with effective leadership which will also give staff members the

confidence to follow the example set by their leader (Bisschoff & Mestry, 2003). Therefore, principals must lead and influence the behaviour of stakeholders in a certain direction to perform at a high level considering that leading means motivating staff members towards obtaining goals as noted by (Lunenburg, 2010). Principals need to discover what motivates their employees and inspire them to reach organisational goals (Rothbauer-Wanish, 2009). Bisschoff and Mestry (2003) claim that leadership comes down to three aspects namely a) positive relationships; b) motivation of the people concerned with the school; as well as c) internal and external communication with stakeholders. Leading can therefore be regarded as influencing or motivating people intentionally towards achieving organisational goals. The role of a principal is to give instructions, offer inspiration, build teamwork, use set examples and gain the respect of others (Whalley, 2011).

Principals need to develop their skills and effectively use technology while these principals must utilise ICT in the management of their schools (Ahmad *et al.*, 2012). In fact, principals need to perform duties by effectively making use of ICT and need to be competent users of ICT to realise their vision and those of the school (Olum, 2004). Leaders play an important role in developing of shared visions and cultures, and ensuring an effective use of resources as well as co-ordinating activities accurately (Gronow, 2007). Leaders are therefore vital for the effective implementation of e-strategies. Computer literate principals are more effective as a leader and are more aware of their staff members' needs (Ahmad *et al.*, 2012). It is found that basic word processing; spread sheets, making use of web pages and the internet can boost leaders' computer skills and will enable principals to keep up with the latest technology. As a user of ICT, the principal is a role model to the school community by demonstrating the importance of ICT. Hay (2001) concludes that information leadership involves managing people as well as possessing knowledge of curriculum, administration and know how to approach ICT-related issues.

In order for principals to perform their duties effectively, they need assistance in using ICT in schools. Principals should use ICT in their day to day activities in schools (Mingaine, 2013). In fact, principals should know how to use ICT because basic ICT skills are valuable in managing a school. However, their basic understanding of and competency in the use of ICT should be enough for basic application in the management of their school. A study done in Australia reveals that some principals are not competent in ICT and need basic skills (Bishop, 2002). For this reason, principals should have a basic understanding and ability to use ICT in order to perform their daily tasks effectively (Gurr, 2001). In order for principals to perform their role as technology leaders well, they need to have command over a level of ICT competence and in so doing, result in being effective implementers of new ICT (Stuart *et al.*,

2009). In fact, ICT competence can help principals to be effective technology leaders, which is an essential leadership responsibility for principals (Flanagan, 2003; Schiller, 2003). As a result, having basic technology competencies can assist leaders in being better role models for the organisation and staff (Stuart *et al.*, 2009).

After leading / guiding people to reach organisational goals, the next management task is to control (as seen in Diagram 2, p.34) whether activities or duties have been performed.

## Control

As soon as guidance is given and on completion of planning and organising, a principal exercises control seeing that management tasks cannot be executed effectively without proper control (Van der Westhuizen, 2008). Control is the task that enables the actual implementation of plans and is therefore complementary to planning (Van Deventer & Kruger, 2003). Control is also noted as the task that managers carry out to regulate the work in progress by ensuring that each person is performing duties at the right time and place (Van der Westhuizen, 1991). Control can be seen as the function that makes things happens, whereas command means 'ordering about' (Anupkumar, 2005). Control is determining accomplishments, evaluating performance and applying measures to allow goals and objectives to be reached according to the original plans (Kimani, 2010). Control is regarded as assessing performance against goals and plans and correcting of subordinates to ensure plans are being followed and accomplished (Lunenburg, 2010). Monitoring or controlling can consist of the principal walking around to see how things are doing, chatting to learners, visiting classrooms or may also involve a formal information system to check on quality performance (Lunenburg, 2010).

The importance of control is regarded as updating plans to protect organisational assets from inefficacy and waste and to appraise employees' performance. The process of control is important because it ensure that failure of planned activities are kept to a minimum (Van Deventer & Kruger, 2003). During the process of control, if it is found that activities proceed according to plans, then plans can simply continue. But, when activities do not proceed according to plan this may force one to adjust the plans (Van Deventer & Kruger, 2003). Furthermore, control ensures the quality of work and performance and enables the management team of a school to cope with change and uncertainty. As principals sometimes make poor decisions and commit mistakes, effective control should identify errors before becoming serious.

Steps in the process of control are regarded as important to ensure effective control over planned activities. The first step in control is establishing the standards and methods for measuring performance (Van Deventer & Kruger, 2003). Types of standards include efficiency of the work, the amount of time required as well as the financial inputs. The second step is to measure the actual performance of activities. Measuring performance refers to a continuous activity with reliable reports. The third step is to evaluate the performance, which includes the evaluation of the difference between the actual performance and the standards set. The final step is to take corrective action where required and to improve on performance and ensure that differences do not occur again. By controlling what people do, principals will determine the organisational outcomes (Kimani, 2010). Without an adequate control system in place, managerial tasks of principals cannot be carried out effectively.

Principals need to keep and control an Attendance Register of his / her staff and can therefore use a biometric recording system. The biometric recording system is a fingerprint-based system used for identification which stores attendance electronically in a database (Shoewu & Idowu, 2012). This system scans staff members' thumb prints. This way, leaders can regulate the time at which staff members arrive for duty. The principal accesses the database to complete the list manually by adding absent staff members for the day. This will also allow him / her to reschedule and arrange for a substitution timetable. If a school does not have a biometric system, the principal can use an online register where the principal logs onto the system and records the daily attendance and absenteeism of staff members. Reports such as educators' timetables, class timetables as well as educators' utilisation report can also be controlled and printed from the computerised system.

In the above paragraphs the four management tasks were described, Diagram 2, p.34 illustrates how the management tasks connect with one other.

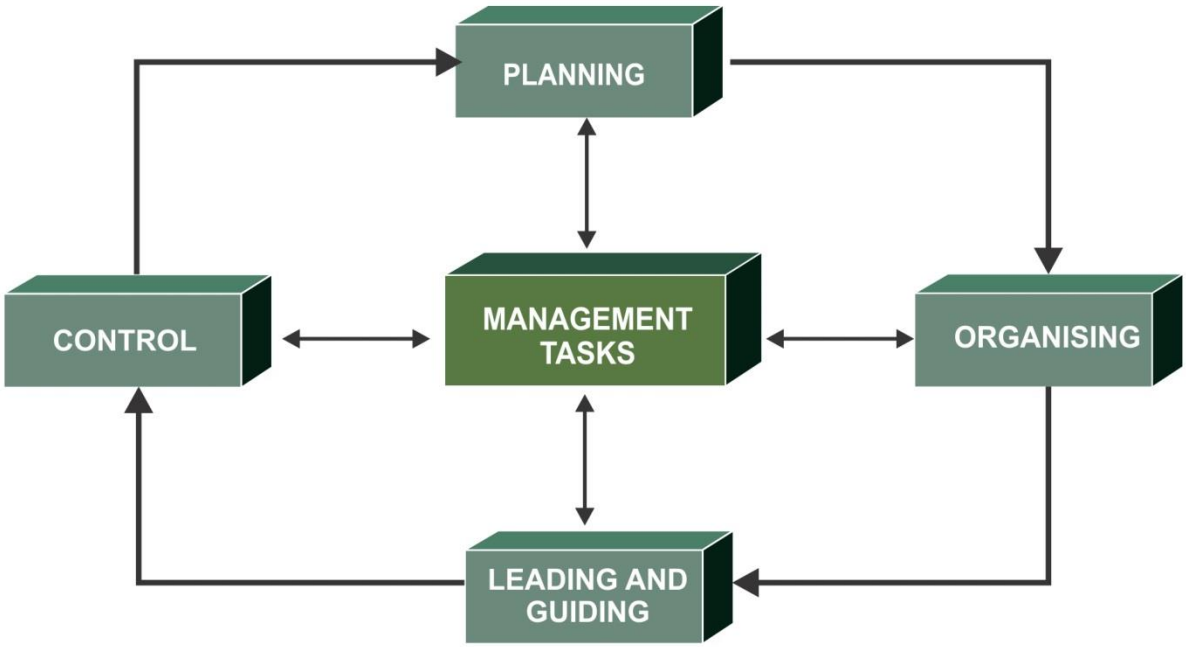



*Diagram 2: Flow of the different management tasks*

*(Adopted and modified from Van Deventer and Kruger (2003)*

In the next paragraph management areas (Diagram 3) are discussed in order to form a clear understanding of the importance of the use of ICT in management.

### *2.4.3.2. Management areas*

Management focuses on the execution of the four main tasks of management namely planning, organising, leading and controlling which include sub-functions, namely communication, motivation, delegation and conflict resolution which are integrated into specific management areas such as human resource, financial, facility and strategic management (Van Rooyen, 2012) (Diagram 1). Management tasks (Diagram 2) are applied in specific management areas (Diagram 3, p.42) and never occur in isolation. The areas in educational management are: administration affairs, financial affairs, physical facilities, school community affairs, staff affairs and learner affairs (Diagram 3, p.42). These management areas are subsequently discussed.

## Administration Affairs

Administration, as noted by Du Preez *et al.* (2003) refers to matters of a school which involve paper work. Administration affairs also involves the process of helping the organisation to achieve its goals (Van der Westhuizen, 1991).

At management level of the school ICT can be used to manage educators' information and class registers (Hoque *et al.*, 2012). ICT helps school management team (SMT) in keeping track of both of learners' progress and educators' work (Hoque *et al.*, 2012; Maki, 2008) The use of ICT will also allow principals to evaluate learners' productivity based on educators' input. A school management system is according to Hoque *et al.* (2012) an effective tool for improving and developing planning, organising and monitoring processes. It is important to use ICT in the workplace for managing information in an organisation (Adeoti-Adekeye, 1997). In fact, the use and development of information management systems through ICT is concerned with the use of information that will lead to better planning as well as better decision making in an organisation. The purpose of the use of ICT is to gain support for the effective management of schools, which increases the effective management of the school, saves time and facilitates the development of alternative solutions for sophisticated problems (Demir, 2006). It ensures that activities are arranged correctly and on time. In addition, information systems such as computers and other technologies provide school management with up-to-date information which enables principals to make effective decisions in planning, directing and controlling the activities they are responsible for (Demir, 2006; Karim, 2011).

ICT plays a vital role in stream-lining the administration in a school and making it less burdensome (Hepp *et al.*, 2004). Management functions such as E-registration of attendance enables the principal to use the analysis of data which can be supported by communication to parents via text messaging and e-mailing (Moses, 2009). Moreover, ICT offers possibilities which improve and develop administration and strengthens their capability of handling administrative work (Moses, 2009). Given that the school is formal, accurate, timely, sufficient and relevant, information is needed at all times and should be kept in the form of records which provide information on the past, present as well as the future activities of the school organisation (Asiabaka, 2008). Therefore ICT becomes essential for administration due to the large volumes of information in printed media that has failed to facilitate work in the school system (Asiabaka, 2008).

Schools using ICT to manage data have more effective timetabling as well as allocation of staff, monitoring and managing performance, handling changes as well as learner transfers. It also assists in targeting, setting and monitoring the achievements of the learner (Condie *et al.*, 2007). Intranets have been developed to assist the staff in schools to manage administrative activities, such as attendance, assessment records, reporting to parents, and sharing information among staff members (Condie *et al.*, 2007). Information technology also assists principals in the form of accessing, managing and presenting information faster and easier while still providing telecommunication networks with important information and

sources that will be used to improve the school. This is done via e-mails and word processors (Asiabaka, 2008). School information systems impact on the efficiency positively, since it increases the efficiency of school management through data processing activities by increasing the availability of learner personal information and school libraries (Asiabaka, 2008). The information system SA-SAMS can be used effectively in the administration of a school. However, school management can only be successful through human resources with expertise needed to run the school.

## Staff Affairs (Human Resource Management)

Human resources refers to the staff members of an organisation while management refers to the method and resources the leaders use to achieve organisational goals (Azaria, 2012). Human resource management also refers to the manner in which leaders use staff members with a view to achieve organisational goals. Human resource management deals with people in their work environment and how they are managed (Ramcharan, 2004). However, it can also be seen as the process which deals with the use and integration of employees in an organisation in order to achieve organisational goals (Azaria, 2012). This has to do with the coordination of activities and hard work of the employees, which includes the motivation of workers so as to achieve organisational goals (Azaria, 2012).

Principals can motivate staff members to achieve e-capacity by sharing their resources (Van der Linde & Van Braak, 2010). However, the need for training is one of the challenges faced by principals regarding human resource management (Moloi, 2007). In fact, when staff members' morale or motivation regarding the use of ICT or any other issues is low, it is expected from principals to demonstrate greater responsibility; if not, teaching and learning will also suffer (Lumby, 2003). In addition, principals can learn by using ICT research, how to achieve personal as well as organisational goals (Fourie & Krauss, 2010). The development of ICT skills of human resources will improve organisational effectiveness (Higa, 2007).

It is found that humans' willingness and motives determine the actual use of ICT (Jain, 2006). For this reason it is important that employees need to be motivated and trained to use ICT. In fact, principals as well as administrative staff members are constantly involved in managerial processes such as academic programmes and activities, maintenance of physical facilities as well as staff and learner services (Asiabaka, 2008). By using ICT schools can be assisted in the administration of educators' information in the process of administration of absenteeism, leave, appraisals and other human resource processes (Department of Education, 2013). Consequently collaboration with staff, parents and other stakeholders of

the institution is necessary. The duties of the administrative staff involve the use of ICT, therefore the administrative staff need to understand and be competent in using ICT (Gurr, 2000). Some administrative staff members are the least informed of ICT in some schools (Bishop, 2002). These administrative members of staff thus need a basic understanding of ICT to be able to perform their duties competently (Gronow, 2007; Gurr, 2000). The administrative staff as well as the principal as ICT users are role models to the school community and should indeed stress the importance of ICT.

In the previous paragraph it was highlighted how ICT could be incorporated into Human resource management. The next management area that can benefit from the use of ICT is the management of physical facilities.

## Physical facilities

Facilities management refers to the use of different methods in the planning, organising, decision-making, co-ordinating and controlling of the physical environment of learning to obtain educational goals, which includes maintenance of all facilities as well as evaluation of school management practices and processes (Asiabaka, 2008) The proper management of existing physical resources is an important duty of a principal (Van Deventer & Kruger, 2003). Management of physical resources can be simplified by using ICT.

Practising control over physical resources includes maintenance and improvement of school property and buildings, but also purchasing textbooks, educational material as well as school equipment (Education, 2007), not overlooking paying of services to the school such as water and electricity services which can be done by using ICT via internet banking.

Physical resources can be categorized as fixed resources and moveable resources, as discussed in the next paragraph:

### Management of fixed (immovable) resources: (buildings & school grounds)

Management of fixed resources refers to the maintenance and improvements of the schools' buildings and property as well as the security of the buildings. Fixed resources include all classrooms, the administration block, storing facilities as well as grand stands (Joubert & Bray, 2007). It is the duty of the principal to ensure the maintenance and operation of school buildings which contributes to a sound culture of learning (Van Deventer & Kruger, 2003).

The maintenance and improvement of immoveable resources can be performed using ICT as this involves decisions regarding finances. The budgeting process and involving immoveable

resources can be done using spread sheets and software programmes such as MS Excel. Except for immoveable resources, a school also consists of moveable resources as described below.

**Management of moveable resources** (computers, books, tables, chairs, etc)

Moveable resources consist of learning material and educational equipment, information technology and services such as water and electricity (Choonara, 2005), additional to this: furniture, photocopying machines, telephones, computers and overhead projectors (Joubert & Bray, 2007). In reality reporting damaged school buildings and broken furniture (moveable resources) is the responsibility of the principal and staff members (Van Rooyen, 2012). By reporting these defects, expenditures on maintenance will be minimized (Van Rooyen, 2012).

The purchasing of textbooks and other educational equipment can be managed and made easier by using ICT through sending and receiving e-mails, catalogues and brochures. Furthermore, the use of ICT can assist principals in managing both moveable and immoveable resources effectively, which can help with in storing and retrieving such information. All these purchasing items and dates can be kept on a computer and printed or opened whenever necessary. Due to the Internet, this information can be sent to the district offices or other stakeholders whenever queries arise (Asiabaka, 2008). The maintenance of moveable and immoveable assets affects the financial affairs of a school as described in the next paragraph.

## Financial Affairs

Financial management is yet another management area in which ICT can be incorporated. Botha (2012) argues that financial management is a process that involves planning, coordinating, organising, monitoring and controlling financial resources in education. Financial management requires the management of cash, ordering and payment of goods and services, compiling a budget, as well as auditing and reporting on a budget. Botha (2012) regards a budget as the most important planning tool in financial management. A budget is a management tool by means of which a principal can plan and evaluate the school's resources (Van Deventer & Kruger, 2003). Furthermore, a budget consists of sub-budgets which reflect the different activities in a school. Van Rooyen (2012) points out that financial management is the function associated with the management of an organisation's resources which includes the acquisition of funds, assets and their management. A school's budget can easily be compiled through the use of computer programmes such as MS Excel. These programmes simplify the typing of a lot of numbers on one sheet. The reports of a

budget will be easier as it shows each amount in its own separate column. Furthermore, storage, retrieval and capabilities of the computers can ease the weight of routine tasks and speed up the budget process so that time can be used for other tasks (Bisschoff & Mestry, 2003). Therefore the use of ICT is less time-consuming. ICT can make life easier by enabling principals to prepare and record school financial statements, employment contracts; track online purchase requisitions and ensure best budget utilization (Dynamics, 2011).

Krishnaveni and Meenakumari (2010) point out that a computer can be a vital time-saver and financial increaser which eventually reduces recording time for monthly transactions. ICT in the form of computers can also be used for educational, general, and financial purposes such as pay rolls and student administration. In fact, Bisschoff and Mestry (2003) mention that it is important for an educational organisation to equip its financial department with more modern information systems in order to increase the productivity of employees in their financial department. In doing so, ICT software and hardware used must be appropriate to the school's needs as well as the needs of the staff using the computer system (Bisschoff & Mestry, 2003). However, using a stand-alone computer at school has no guarantee of the security of confidential information. For this reason a computer should be accessible with a password to obtain information by certain people. Secure computers allow entry into specific parts of the financial management system only by authorised users with the right password and denies access to all others (Bisschoff & Mestry, 2003; Demir, 2006).

It is imperative to handle finances of a school accurately in order to provide learners with quality education. The next management area discussed is learner affairs.

## Learner affairs

Mdlongwa (2012) states that, loads of information in the form of paperwork were previously kept in files and had to be looked at physically to find specific information. With ICT, accessing learners' records can now be done faster and easier. Records which were kept manually in the past and got lost due to the filing process, can be filed more conveniently through ICT (Mdlongwa, 2012).

Computers can be used to type, store and keep learners' records safe from unauthorized users by using a password (Moses, 2009) and can group learners according to classes or hostels (Makhanu, 2010). ICT can assist schools with the biographical data of learners as well as parents' information. This could help with the administration of attendance, disciplinary and extra-mural activities of learners and with the promotion and placement of learners in different classes. By using ICT, principals are now able to browse through e-

books, search for sample examination papers, previous year examination papers etc. and can also have easy access to resource persons, mentors, experts, researchers and peers across the world (Noor-Ul-Amin, 2012).

Learners' records, managed by the administrative staff, including the management of learner reports and the communication between educators and learners can be done using ICT such as MS Office software programmes. Open source programmes and other specialised programmes such as the South African Schools Administration Management System (SA-SAMS) (GDE, 2011) are discussed in more detail in § 2.6.3. Record keeping of learners is made easier by ICT, which reduces loss of examination question papers as well as learners' results (Moses, 2009). Condie *et al.* (2007) note that ICT allows schools to interact and inform one another about how to improve learners' progress.

The next management area discussed is community affairs.

## Community Affairs

The school is an organisation which is established to meet the academic needs of a community which operates in a social and cultural context (Van der Westhuizen, 2007). The school cannot function effectively and be able to achieve organisational goals without the support of stakeholders such as the parents, churches and businesses. Mitrofanova (2004) states that principals, as well as businesses, should realize that schools and the community should work together to meet mutual goals. Schools can provide learners and their families with available computer classrooms, while businesses on the other hand can provide actual training to the schools and families (Mitrofanova, 2004). A school-community relationship can be enhanced by the appropriate choice and use of communication media such as radio, television, the newspaper, but also through mimeographed notes to parents or school letters (Lucas & Thompson, 2012).

By using ICT, communication with the community is made easy with the principal being able to inform not only the teachers and parents but also members of the school governing body, donors, and school district officers as well as other schools about school related information. ICT allows the school community to access information regarding culture and history (Makhanu, 2010). Technologies such as cell phones, e-mails and websites provide schools with new ways of communicating with parents to keep them informed about their children's progress as well as new development that will help in improving their child or children's progress (Rogers, 2007). ICT can be used to support professional development opportunities for the school community, providing access to internet, resources and communities to share

information at school and at home (Briscoe & Lee, 2005). For this reason, schools need to communicate effectively with stakeholders. In this way, instead of information to parents being on white paper, it is done electronically via SMS or e-mail or through a website or social network (GDE, 2011). Gurr (2001) is of the opinion that e-mail has the potential to give the school community sufficient access to the principal. Principals can send e-mail notices and agendas to the community instead of printed notices (Krishnaveni & Meenakumari, 2010).

Principals should possess adequate skills to be able to use technology whenever possible for carrying out their duties, especially when communicating with others (Gosmire & Brady, 2007). Principals deal with their community on a daily basis and should have the skills to communicate effectively regarding education (Fiore, 2011). In addition, ICT is an excellent measure for informing community members (parents, politicians, and researchers) about their concerns regarding educational news and policies (Hepp *et al.*, 2004). Principals should know how to use ICT in general in order to communicate adequately with staff members and the broader community (Afshari *et al.*, 2012).

The Internet provides schools with a new and revolutionary means of communication. Through the use of e-mails, it is now possible to send messages containing text, pictures and sound videos to the school community. It is also possible for children to videoconference with their peers in other schools anywhere in the world. However, due to the lack of internet facilities at the interviewed rural and township schools, videoconferencing is not available. The Internet also provides access to a range of online collaboration tools, including e-meetings and discussion boards, which teachers can use to collaborate with colleagues in other schools as well as other people in the external communities (NCCA, 2012). Another way of communication is through Facebook where principals can communicate with parents and relevant stakeholders regarding important events and meetings. Facebook is also a social media where events of a school can be posted which can create loyalty and respect towards the school.

The following diagram is a representation of the management areas (the actual work areas) in a school as described in foregoing paragraphs.

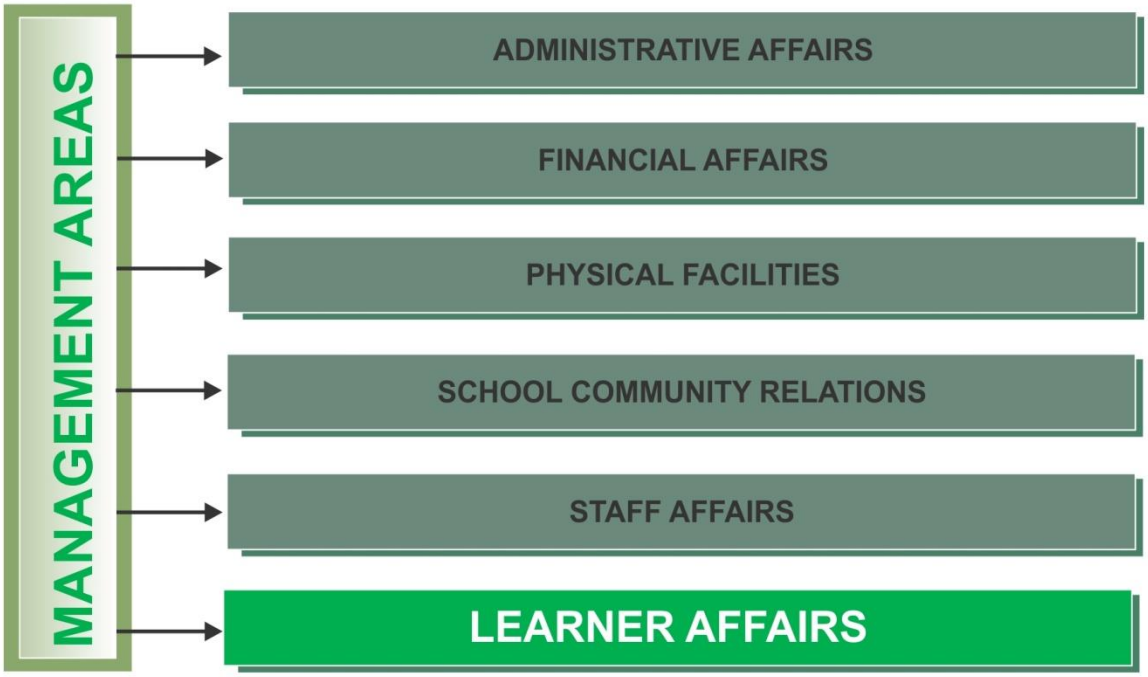



*Diagram 3: Representation of the different management areas (Adopted and modified from Van Deventer and Kruger (2003))*

In the next paragraph uses of ICT currently in school management are discussed, internationally as well as in South Africa.

## 2.5. CURRENT USE OF ICT IN SCHOOL MANAGEMENT

Not much research has been done on how principals can manage their school effectively through the use of ICT (Becta, 2006). Benefits for principals by using ICT include a better insight into how a school functions; better use of resources as well as an improved evaluation of school performance and planning (Becta, 2006). According to Botha (2012), ICT can be used for managerial functions such as coordination of statistics as well as extra-mural activities; management of school finances; preparation of timetables; and administration such as staff and learners' attendance records. The area where computers are commonly utilized in managing a school is writing letters and reports, doing statistics, handling financial records and sending messages anywhere in the world (Ogbomo, 2008). Currently ICT is already utilised in many schools in management. In the following paragraph international tendencies are discussed with regard to the use of ICT in management in general and particularly school management.

### 2.5.1. International tendencies in developed countries

In this paragraph, developed countries have been selected for this research discussion. The reason for choosing developed countries is that these countries are more advanced concerning the use of ICT and the researcher attempts to gather information regarding a variety of developed countries. The following countries in Europe were selected, Cyprus as well as England in the United Kingdom. Canada, Australia and South Korea were also among the selected countries. The first developed continent discussed regarding international tendencies is Europe, followed by a discussion on the countries.

#### *2.5.1.1. Europe*

The European Commission's strategy guarantees the effectiveness of European education systems and the competitiveness of the European economy through the use of ICT (Vassiliou, 2011). Most European countries have successfully made investments ensuring worldwide access to ICT (Vassiliou, 2011). However, progress has been uneven, e-maturity within and between countries as well as between schools within countries is different (Balanskat *et al.*, 2006). In fact, management of educators' information through the use of ICT is widely used by European schools, which is confirmed by Vassiliou (2011). ICT applications are being used in sixteen European countries for the recording of continuing professional development of educators (Vassiliou, 2011). Even though some schools in Europe do have access to ICT, many educational organisations do not make use of their ICT facilities, while using ICT can make a positive impact on education systems (Durando *et al.*, 2007). For this reason European schools have to reach maturity in their use of ICT (Durando *et al.*, 2007). The use of information technology for financial management, monitoring of learner progression and managing teacher information are some of the ways in which European schools have achieved efficient school administration (Vassiliou, 2011). In twenty-five European countries, information systems for the registration of learner records and progress have been implemented or are presently being developed. These systems are being used for transfers to another school and in some countries to record learner certificates or diplomas (Vassiliou, 2011).

A brief overview of South East Europe and The United Kingdom (Great Britain) follows. Cyprus follows as the first discussion under South East Europe.

## South East Europe

South East Europe is a geographical and political region located primarily in the Balkan Peninsula.

Even though some South East European countries acknowledge the use of information systems in education, they still financially depend on donors and creditors for developing of educational management information systems (Scepanovic, Lazarevic & Wassenmiller, 2010). While developing countries of South East Europe make use of management information systems, to build and maintain one that is functional and sustainable is still a challenge (Scepanovic *et al.*, 2010). Additionally, other factors that hinder efficient implementation of information systems in South East Europe schools are a lack of management and of human resources. South East European schools have realized the importance of an educational management information system and are still in the process of developing such a system (Scepanovic *et al.*, 2010). The following two countries are further discussed under Europe, namely Cyprus and England.

## Cyprus

Cyprus is a sovereign state located in South East Europe. A study done by Papaioannou and Charalambous (2011) in Cyprus reveals that even though primary principals have a positive attitude towards the use of ICT for management and administrative purposes they still need more training in order to apply themselves in practice. Furthermore, a difference between the existence of a computer in the principal's office and the principals' computer skills was also visible. Based on these research findings, it appears that school principals of Cyprus do not use ICT for administrative purposes due to the lack of software programmes designed for administrative purposes as well as some principals' resistance to change (Papaioannou & Charalambous, 2011). ICT equipment such as printers and scanners are available in Cyprus schools (Charalambous & Ioannou (2008). Professional development is done regarding development needs in various aspects, ICT included. However, some school leaders do not participate in professional development due to a lack of information about professional development, place of development activities or unsatisfactory level of professional development (OECD, 2010). Another sovereign state situated in Europe is the United Kingdom, which is discussed in the next paragraph.

## United Kingdom

The United Kingdom is commonly known as Great Britain and located off the north-western coast of Europe. The country discussed under United Kingdom is England. The United

Kingdom (UK) comprises four countries of which England's' schools are discussed briefly (OECD, 2010).

## England

England is a country that forms part of the United Kingdom that shares the border with Scotland and Wales. Schools in England have put together an ICT system to support principals in their management of the school (Briscoe & Lee, 2005), namely the Online Matrix. The Online matrix is a tool which supports principals on issues such as links with other schools to obtain information needed (Briscoe & Lee, 2005). Professional support for principals regarding the use of ICT is also available in England to improve their ICT leadership capability. This supportive programme also builds principals' skills regarding and knowledge and understanding of, the use of ICT for management purposes (Briscoe & Lee, 2005).

According to Cook and Greenwood (2008), educational organisations in England strongly rely on ICT as their primary medium of distribution to send information. Not only through the use of e-mail for one-to-one communication, but information is also distributed via e-mail lists, policy documents, manuals and other forms of practical information are further made available to staff through intranets (Cook & Greenwood, 2008). The next country discussed in the following paragraph is South Korea.

### *2.5.1.2. South Korea*

South Korea's education system is technologically higher developed and also the first country in the world to convey fibre-optic broadband internet access to every primary and secondary school in South Korea (Lepi, 2013). Fibre optic broadband is a method of transmitting information from one place to another by sending pulses of light. In fact, South Korea created a system called the National Education Information System (NEIS) for purposes of assisting with school administration such as payments of salaries, school admissions, personnel information, as well as academic affairs (Severin & Capota, 2011). In addition, the NEIS system links information between primary and secondary schools in South Korea (Lepi, 2013). Sixteen different municipal education offices are also linked to this system. Above all, the Minister of Education, Science and Technology (MEST) and other educational organisations are also linked to this system to ensure effective administrative educational tasks (Severin & Capota, 2011).

South Korea also makes use of an Education Information Disclosure System where the entire learners' information is accessible to parents and learner at all times via online system (Severin & Capota, 2011). The school information disclosure system includes information with regard to academic results, school regulations etc (Lepi, 2013). What is more, through this disclosure system relationship between stakeholders is being strengthened. Learners' information is stored online on a database which can follow them to any school they attend. In the next paragraph, Canada is discussed.

#### *2.5.1.3 Canada*

Canada, situated in North America, is the world's second largest country by total area and found in the northern part of the continent. Canada is also ranked the fourth largest country by land area.

Significant investments have been made in Canada to connect schools to the internet. Most schools in Canada are connected to the internet and make use of the "Always-on" connection. This connection does not have to be reconnected when one wants to connect to the internet (Plante & Beattie, 2004). ICT is persistent in social and economic life with Canada being one of the most internet-connected countries with a population that rapidly appropriates new technologies for personal use. The issue of high-speed broadband width access to the Internet in remote and rural communities is not yet solved (Milton, 2003). However, some rural schools still use modems and dial-up connections to access the internet, whereas urban schools use fixed wireless devices (Milton, 2003). The accessibility of ICT throughout the education system was slow, putting pressure on school organisations for operation in schools. Financial challenges using ICT in schools was inevitable and a widespread challenge to use ICT in schools (Plante & Beattie, 2004).

Canadian principals do make use of ICT technology in school management. Even though principals do use ICT in school management, they face many challenges. Challenges include lack of network infrastructure as well as slow or unstable wireless access (Milton, 2005). Financial constrains also negatively influence the use of ICT in school management. Some schools make use of out-dated technology which frustrates principals and hinders them from using ICT in management (Chen *et al.*, 2014). Several schools do not have the bandwidth to support a huge amount of internet activities in schools. Even though some principals do use internet to communicate with stakeholders they still send out paper copies to parents who do not have internet facilities to get information through. In the next paragraph the country Australia is discussed.

#### *2.5.1.4 Australia*

Australia is a developed country and one of the wealthiest in the world, even though it is ranked the sixth-largest country by total area.

Australian schools make use of a variety of technologies which are supported through online networks and databases (Baskin & Williams, 2006). This includes record keeping (learner, finance and asset management); information (newsletters); communications (e-mails); online matters (internet accessible) as well as library borrowing. Demir (2006) noted that the use of management information systems by primary principals has reduced their workload and also made management processes more effective. In addition, some schools in Australia are connected to the internet via telecommunication services through wireless technologies such as notebooks and laptops. Software such as information systems has also added to the quality of in-school communication, and helped with decision-making and control in Australian schools (Demir, 2006). In the next paragraph tendencies are discussed regarding the use of ICT in developing countries.

### 2.5.2. Tendencies in developing countries

In the following paragraph, the developing countries discussed are Brazil, countries in Eastern and Southern Africa as well as South Africa.

#### *2.5.2.1. Brazil*

Brazil is the fifth largest country by geographic area in South America and the fifth most populated country.

A large part of Brazilian communities do not have access to ICT such as Internet, telephones and computers. In fact, the biggest problem is that the flow of ICT was affected and hampered mostly by the uneven income distribution of the country. The Internet in schools is still underutilized and is mainly used as a research tool by staff members and principals (UNESCO, 2012). Also, integration of ICT in schools in Brazil is a challenge. Brazilian schools face ICT challenges such as basic access to technology and technological skills (Trucano, 2011). In the light of these challenges, there is an inevitable barrier towards the development of technology skills. The next discussion is on Eastern African Countries.

### *2.5.2.2. Eastern African Countries*

Eastern African countries are located at the eastern part of Africa. East African countries discussed below are Rwanda, Tanzania, Uganda as well as Kenya.

The Eastern African Countries, namely Kenya, Rwanda, Tanzania and Uganda have each formulated national policies to guide ICT implementation (Hennessy *et al.*, 2010). As stated by Hennessy *et al.* (2010), all four countries have developed ICT strategy at different times from 2000 (Rwanda) to 2007. Although rooted in the national ICT policies of the East African countries, the formulation of ICT policies in education is seen as important in an attempt to prove ICT usage in east African schools. These countries have developed an educational ICT policy which is guiding the investments in ICT education (Hennessy *et al.*, 2010). Kinuthia (2009) noted that African countries experience a gap in their implementation of ICT which continues to broaden the digital and knowledge divides. Another eastern African country discussed is Tanzania.

**Tanzania**

Tanzania is the thirteenth largest country in Africa by area and is boarded by Kenya.

Tanzania developed an ICT policy aimed at implementing it in the education sector. This policy takes into consideration matters such as infrastructure, administration as well as management issues (Nyirenda, 2013). An ICT programme has been developed for schools with the intention to provide schools with ICT equipment as well as Internet access. The adoption of an educational management information system has been started with a rollout of schools nationwide (Nyirenda, 2013).

According to Isaacs (2007), the minister of education of Tanzania has implemented an education management information system (EMIS) to produce and manage educational data and information. They expect this EMIS to collect, process, utilise and distribute education data to stakeholders on a regular basis by school principals to improve management in schools. In fact, ICT is mainly used in education for skills training (Swarts & Wachira, 2010). The next country under discussion is Uganda.

**Uganda**

Uganda is a landlocked country, like Lesotho, and boarded by Kenya and Tanzania.

Uganda as a developing country is experiencing challenges such as lack of resources, poor ICT infrastructure, unreliable electricity supply and high cost of bandwidth. Despite these

challenges, Uganda adopted ICT in education. Uganda has developed an ICT policy in schools and has distributed resources to maintain implementation of ICT strategy (Farrell, 2007).

The Education Management Information System (EMIS) is the Ugandan government's most important investment in education which aims at providing quality education in a timely, cost-effective and sustainable manner to assist principals (Hennessy *et al.*, 2010). This is done through data capturing on school facilities and pupils' details which is co-ordinated at district level and loaded to the system for national collection and processing of data (Hennessy *et al.*, 2010). Kenya, as another east African country is discussed next.

**Kenya**

Kenya is a country that lies on the equator with the Indian Ocean on the South East.

Even though Kenya is in the process of implementing ICT in schools, they experience challenges that hinder the effective implementation of ICT, including school leadership challenges (Mingaine, 2013). Principals' interest, their commitment as well as their implementation of ICT programmes in schools negatively influence the process (Mingaine, 2013). According to Mingaine (2013), management skills should be incorporated to train principals in Kenya and all principals should think about using ICT in their day-to-day activities in managing their schools. The lack of ICT infrastructure in Kenya is also a serious obstacle to the implementation and use of ICT in schools and school management (Mingaine, 2013). In the next paragraph the West African region is discussed, specifically the country Nigeria.

### *2.5.2.3 Western Africa countries*

The country discussed below in West Africa is Nigeria which is also the largest country on the African continent.

**Nigeria:**

One major policy in enhancing the deployment of information and communication in Nigeria was the Nigerian National Policy on the adoption of ICT in schools (Yusuf, 2005). In enhancing this policy the national policy on education emphasised the role and utilization of ICT.

Adeyemi and Olaleye (2010) pointed out that principals of Nigeria do not make much use of ICT to manage their schools. In order for principals to effectively use ICT for management in

schools they should show interest through improved usage of computers and other ICT materials (Agyeman, 2007). Furthermore, the administrative functions of Nigerian schools are becoming complex, which requires the effective use of an administrative tool, such as a computer, ensuring effective communication, efficient operations and better personal service (Adeyemi & Olaleye, 2010).

Many educational organisations still keep records in files and filing cabinets whereby they take up space and collect dust (Aduwa-Ogiegbaen & Iyamu, 2005). The information in these files gets lost due to rodents and cockroaches eating these files, which makes the information irretrievable. Furthermore, a lot of administrative work is still done manually without showing any consideration for using ICT. This slow pace of work in educational organisations can be managed better with the use of ICT, which will result in faster and speedier management. Educational administration includes all the management tasks performed and management areas covered by the principal, such as budgeting, finance, infrastructure, etc. (Bisschoff & Mestry, 2003).

Over all, most principals in Nigeria still go through the lengthy and tiresome process of registering learners manually, maintaining educator and learners' records, keeping inventory listing of school equipment, manually cost counting and budgeting and paying school accounts (Adeyemi & Olaleye, 2010). A large number of working hours are wasted due to this time-consuming process of school management, which can be tremendously reduced by considering the use of ICT in managing their schools. Using ICT in management of schools will be an advantage as ICT is a faster system for storing and retrieving information which can be done on disks or tapes (Ololube, 2006). By using ICT, information will not be destroyed by rodents, take up filing cabinet space or gathered dust and is more cost effective.

Nigeria is still living in an ancient era compared to developing countries in Africa, such as Kenya, Uganda, Tanzania and South Africa regarding ICT applications in the management of their schools (Agyeman, 2007). Regardless of its status on the continent and its enormous material resources, Nigeria is not seen as an expanding nation regarding the use of ICT in school management since ICT became an important tool for reaching success in education (Bassey *et al.*, 2009).

The next African countries discussed on the next page are Lesotho and South Africa.

### *2.5.2.4 Southern Africa Countries*

## Lesotho

Lesotho is a country which is completely surrounded by South Africa. Even though Lesotho has a national ICT policy in place, it is difficult for them to incorporate ICT in their education sector as the lack of national infrastructure seriously hampers its use in Lesotho education . Lesotho faces various challenges in the roll-out of its ICT policy such as ICT training, infrastructure, extreme weather, lack of electricity as well as areas that are difficult to access (Thite, 2012).

Lesotho schools are also part of the School Net, Microsoft STIC and the NEPAD e-School projects providing computers and equipment to schools to develop ICT in education (Kalanda, 2012). Some private organisations assist schools to make ICT more accessible. Even though these projects and organisations assist schools there are not adequate professional development programmes available to assist staff members and principals. In fact, a major part of Lesotho consists of rural areas which are underdeveloped and lack ICT as well as modern technology facilities (Sefika *et al.*, 2013). Some of the barriers in the use of ICT in Lesotho rural schools are; infrastructure such as lack of proper roads, water supplies and electricity (Sefika *et al.*, 2013). For these reasons, the use of technology such as the internet are in their early stage in education (Kalanda, 2012). South Africa, as the country that surrounds Lesotho, is situated at the southern tip of Africa and is discussed in the next paragraph.

## South Africa

In South Africa all ICT initiatives are lead through the Department of Communication and guided by the Electronic Communications and Transactions Act (2002). They aim at enabling and facilitating electronic transactions in public interest, including the education sector (Department of Education, 2004). Evidently ICT is considered a priority at national government policy level, as mentioned by Isaacs (2007). ICT policies have been launched in South Africa by the department of education together with other stakeholders introducing new technologies in the educational system (Department of Education, 2004; Khanya, 2009). Consequently the Department of Education published the White Paper on e-Education (Department of Education, 2004) to ensure the optimal use and availability of ICT in the education sector. According to the White Paper on e-Education principals must be capable to use ICT by 2013. Furthermore, the White Paper on e-Learning envisages children to be computer literate and for this to be true the schools need ICT resources in order for the

principal and staff to become computer literate. The implementation of the targets set by the Education White Paper is still in progress (Dlodlo, 2009).

South Africa is considered to be one of the more developed countries in Africa (Mentz & Mentz, 2003) even though there are many schools within the country that are situated in poor areas and are lacking basic ICT necessities (Du Plessis, 2012). Du Plessis (2012) mentions that even though there is progress in the education system within poor and rural areas, they still do not have resources more privileged schools in the urban areas have. Although rural schools have some technologies such as fax machines and telephones they still remain 'digital immigrants' as they have little to no access to computers and the Internet (Mdlongwa, 2012). Conradie and Jacobs (2003) agree with Herselman and Jacobs (2005) that developing countries such as South Africa experience various problems such as a lack of computer skills and technological knowledge, which creates barriers to people using ICT.

Although ICT needs to be spread across South Africa there are many challenges that may hinder this objective. Fourie and Krauss (2010) note that, many challenges exist in training a developing country such as South Africa, especially in rural areas and townships. Challenges include basic infrastructure for sanitation, water, roads, electricity and ICT (Fourie & Krauss, 2010). Major obstacles to implementing ICT in schools are the expenses of setting up management information systems based on information technology. Furthermore, the fear of change and the fear of inability to cope with technological change may also hinder the effectiveness of principals and their ability to manage their school. Although English is not the mother tongue of many South Africans it is the most dominant language on the Internet which can prevent principals from effectively using the software available (Tinio, 2002).

The level of implementation and use of ICT in South African schools differ from province to province (Isaacs, 2007). Implementation depends on the leadership, skills as well as availability of human resource capability in the provincial department of education (Isaacs, 2007). The lack of leadership and of human resources to manage and to maintain ICT programmes is seen by as a hampering factor to successful ICT implementation and ICT use by principals in the provinces. Technologies that support school management are not abundantly available in South Africa (Mentz & Mentz, 2003).

The Department of Basic Education embarked on a computerised educational school management system known as the South African Schools Administration Management System (SA-SAMS) (Department of Education, 2013). However, this management system is not compulsory for schools. Although Botha (2012) observes that some provincial education departments supply schools with the school management software SA-SAMS, there are

some that prefer to buy their own. The SA-SAMS software assists with administration such as leave, absenteeism and the training of staff members (Department of Education, 2013).

The objective for developing SA-SAMS was that several schools were using different applications for different school functions, meaning that schools were using a financial package to manage school finances, another additional package for time tabling, and a third additional package for assessment. Consequently, the same data has to be entered into about three or even four separate systems and be updated whenever changes are made. For this reason SA-SAMS was developed to supply schools with a more effective and easy to use system which consists of all aspects of school management obligations.

The South African School Administration and Management System (SA-SAMS) is a management system designed by the Department of Education to assist principals with different management tasks. It is designed to simplify workload of a principal in all sections of education (Department of Education, 2013). SA-SAMS assists with administration of biographical data of parents and learners' information. It also helps with administration of attendance, disciplinary cases as well as extra-mural activities of learners. Furthermore, SA-SAMS improves the placing in different classes and promotional procedures regarding learners. It also allows for effortless administration of staff and educators' leave, training, absenteeism, and other human-related information and procedures (Department of Education, 2013). This package is, however, provided on a voluntary basis and schools are not obligated to use this tool, but allowed to use a School Management Information System (EMIS) of its choice. SA-SAMS are provided to schools at no cost to allow all schools equal opportunity to make use of a computerized system. Other school management information systems used by fewer schools are Microscope and Edupac, which schools have to pay for themselves whereas SA-SAMS is free for all public schools. Training that is needed to use ICT in school management is discussed in the next paragraph.

## 2.6. TRAINING NEEDS IN THE USE OF ICT AS IDENTIFIED FROM LITERATURE

A study conducted by Stuart *et al.* (2009) reveals that it is important for principals to be ICT knowledgeable as it is important for principals for the effective management of their school. Principals should not only have the knowledge but should also be competent to use ICT (Stuart *et al.*, 2009). As ICT training is important, Schiller (2003) notes that certain aspects must be considered when creating ICT training programmes for principals. In fact, principals' ICT programmes should be short, hands–on and preferably a one-on-one approach.

Commitment of time and resources from principals as technology leaders is also required while professional development is needed in order to develop skills (Flanagan, 2003). The school district also has a responsibility to provide on-going professional development for principals in the area of the use of ICT in the management of schools (Flanagan, 2003).

### 2.6.1. Skills (Abilities)

ICT and school management is seen by Passey (2002) as important because principals have an impact on the use of ICT on all aspects of the school. Principals have not been equipped for their role as technology leaders and therefore have been struggling to develop the human and technical resources and skills needed to realise ICT outcomes in schools (Flanagan, 2003). In fact, a computer literate and skilled principal is more aware of the ICT training needs of his staff members (Ahmad *et al.*, 2012). Moreover, if principals are not comfortable using ICT themselves, they will not be capable of ensuring effective ICT development in their school (Gronow, 2007).

Principals should be equipped for a fast changing world of technology to effectively perform their day-to-day duty in managing the school using ICT (Afshari *et al.*, 2012). Good, skilful principals realise that the use of social media as a channel of communication with stakeholders and the wider community is an effective means of communication (Ahmad *et al.*, 2012). Principals should work towards their role as ICT educational leaders and update their ICT skills and ICT knowledge (Stuart *et al.*, 2009). ICT integration brings change; if principals use ICT in management it will also be implemented in teaching and learning, which will lead to the smooth running of a school. It is clear that the Department of Education should therefore implement an ICT training programme that will train principals on how to use ICT in the management of their schools.

As far as technology is concerned, ICT can assist principals with effective leadership and school management. In order for this to happen principals should change their mind-set and views regarding the use of ICT (Makewa *et al.*, 2013). For this reason it is important for principals to develop skills in the use of ICT in school management. Computer competency has a positive correlation with the level of computer use by skilled principals and influences indirectly the changing role of principals as technology leaders in their schools (Afshari *et al.*, 2012). Claimed by Afshari (2012), continuous professional development in the use of ICT will increase the professional level and skills of computer use and will assist to understand the importance of the use of ICT in educational management.

Besides knowledge of the advantages of ICT, professional development is also important for ICT training and skills by principals (Afshari *et al.*, 2012). Training is important for principals and is usually given by people experts from outside (Selwood, 2005). Training usually only focuses on teachers for the use of ICT in teaching and learning in the classroom. Unfortunately this training is not designed for the day to day management duties of a principal. Principals need to use professional development as part of their leadership of the school. Principals should receive training to develop personal skills in the use of ICT as leaders (Schiller, 2003). Again, they should understand and appreciate the value of improving their skills and knowledge concerning the use of ICT in education, which can assist in the management of the school (Afshari *et al.*, 2012). Many principals do not have appropriate training neither the background to use ICT with confidence even though the technological responsibility has been given to them (Stuart *et al.*, 2009). Stuart *et al.* (2009) mention that a study shows that an important factor that influences the role of principals in implementing or integrating the use of ICT in schools is the regular use of computers (ICT).

In this time and age of technology it is a must that principals acquire the skills and competence to use ICT (Makhanu, 2010). They must understand how it can be an advantage to be used in the administration / management of the school. A study done by Schiller in 2003 indicated that principals use ICT at school and at home for sending and receiving e-mails, going online (web page / Internet ) and for word processing. This study also showed that constructing a database, spread sheets or a presentation was not so commonly known by school principals. This is proof that principals need on-going development by professionals to boost their skill levels regarding their use of ICT in the management of their schools (Schiller, 2003). School leaders need guidelines to make more effective use of ICT in school management. School leaders can be provided with professional development programs which will develop their knowledge and skills about ICT in their management duties. Specific technology tools such as e-mail, databases, the Internet, word processing, and simple spread sheets can be used to the advantage of the principal in performing his managerial tasks (Gosmire & Brady, 2007). Gosmire and Brady (2007) agree that It is advisable for principles to have a bit of knowledge about technology tools for use on administrative and managerial tasks as well as hardware capabilities and software instruction which are set for certain applications. Principals that make use of technology on a daily bases for their daily duties are able to help others based on their own knowledge of technology.

Furthermore, this study showed that principals that underwent professional ICT skills training or skills development prove to have a higher competence level and use it more than those

that did not have a professional development activity - this could be seen in their confidence level in applying these skills (Stuart *et al.,* 2009). Principals did not show much confidence while constructing a spread sheet, database and a presentation or using the web (Internet). It seems that a formal professional ICT training course can only help with the development of ICT competence and ICT skills. It is therefore recommended that principals should be provided with professional development and skills training in the latest software programmes and hardware to help them improve their skills and competence in the use of ICT in the management of their schools (Afshari *et al.*, 2012). Knowledge concerning ICT is discussed in the next paragraph.

### 2.6.2 Knowledge

Principals need knowledge of integrated management systems or ICT programmes to be able to access statistics in order to make informative and effective decisions (Botha, 2012). As noted by Botha (2012), it is important for management and principals to have knowledge of software such as a word processor, spread sheet and presentation programmes to record data as well as numbers and perform calculations. It is important for principals to choose the right software because the wrong decision will have a long-term effect and can be costly (Bisschoff & Mestry, 2003).

Principals need knowledge to model and use technology themselves (Makhanu, 2010). This can be done by using ICT technology in making use of the technology tools that are available, at home as well as at the office, by using a Google synchronized app. “Time” is an important and valuable resource in a school: therefore if principals focus on the use of ICT, especially during limited time available for staff meetings, the rest of the staff will understand the value of ICT and can make use of a function called “conference call” to have the meeting (Noor-Ul-Amin, 2012).

### 2.6.3. Computer Software

Computer programmes and software are currently used in school management. Several reasons are proffered why principals need knowledge to make the right choice for selecting software. School principals can make use of the learner information system which helps them to track the daily routines of the school through readily access schedules/time tables, attendance records, health records, disciplinary incidents, grades as well as online teacher grade books (Mohanty, 2011). Principals can obtain this information from their educational management information system (EMIS) if they make use of this technology system (Krishnaveni & Meenakumari, 2010). This can be used daily to stay in touch with the

academic, behavioural, administrative and supervisory aspects of the school. Principals can also make use of Google apps calendar for staff and educators to post information on the calendar. Principals need knowledge of the technology standards and can use these as a basis for ICT action in the school (NCCA, 2012).

There are various software packages on the market that can be obtained for school administration. One of the benefits of using school management system software is that it helps schools to decrease financial expenses by reducing the use of paper (Prokopiadou, 2011). The system assists with management tasks for instance decision making tasks such as salary of staff members, school timetables etc. Each and every school is unique and it is important for principals to determine the correct needs and what they expect from a management system before purchasing any hardware and software. SA-SAMS is a software program used by most South African schools to simplify administration and management in schools.

Many different types of education management software are available. These educational applications provide spread sheets and enable users to produce charts and graphs (Krishnaveni & Meenakumari, 2010). Such software is usually PC-based and work with applications such as Microsoft Excel. On the other hand, Web-based educational management software is intended for use in browser or with handheld appliance. Educational management software also contains functions and programmes for administration. Interactive voice response (IVR) software is also available in education management which permits telephone users to obtain information on attendance policies, school fees, and past notices even when a school is closed.

Principals can explore multimedia capabilities by using common tools such as e-mails programmes to send information to staff members. E-mail messages can be represented with picture or videos inserts in information. Graphic saying can be used to thank educators via e-mails or a link to a video showing your appreciation towards staff members for work well done. Other additions include the use of PowerPoint presentations which can be used directly into an e-mail via website slide share for management. Another option for using ICT creatively by a principal is by inserting a poll (ballot) in educator's e-mails where they can cast their votes on important issues relating to school management (Krishnaveni & Meenakumari, 2010). Principals as well as educators will be more committed to ICT, which will reduce the number for staff meetings and will lead to making better use of time. Social media such as Twitter and Facebook also play an important role in communication in schools. Principals can post positive messages to inform parents about important events

such as parent meetings and other important school events by using these media (Lepičnik-Vodopivec & Samec, 2012).

Showing educators or other stakeholders that as a principal you are not comfortable using ICT can be a great challenge to principals (Hennessy *et al.*, 2010). To avoid this, principals can be trained to use the different ICT software available to make their duty as principals much easier. Educators that observe their principal being comfortable using ICT in school management will encourage themselves to use ICT in teaching and learning. As a leader principals must lead the use of technology in order for it to be effective (Gronow, 2007).

Numerous school principals still use paper and pen to give feedback to educators. Instead of using this old-age form of feedback, educators can consider using software, the cloud which will enable them to give feedback electronically and send it immediately to educators. This will in turn enable educators to log into their e-mails and view feedback instead of waiting for paperwork to be completed. Using the cloud will make a principal's work much easier and more professional and effective while showing his belief in technology. This can have a positive impact on the management of a school. A few of the problems that administrators face with regard to not getting the right ICT software for the job at hand is damage to hardware, interruption to the power supply and a software virus. The right software will improve the working environment (Makewa *et al.*, 2013). In the next paragraph the training opportunities regarding ICT are discussed.

### 2.6.4. Training

Training opportunities and the role of the Department of Basic Education: The role of ICT in South African government policy has become important and strategies have been put in place to promote ICT in South Africa (Isaac 2007). Strategies include setting technology standards for the use of refurbished Personal Computers (desk top) in public education organisations at all levels. Furthermore, an Edunet and "e-rate" has been established that would support access to network at all public schools and educational organisations (Isaac 2007), not forgetting the White Paper on e-Education of which goal includes qualified and competent principals that use ICT for planning, management and administration (Department of Education, 2004).

Effective management by a principal means that the principal himself should engage in professional development (Steyn, 2009). Training should come from the Department of Education, but principals should take responsibility on themselves to develop themselves personally by taking on courses or workshops in the development of ICT skills. The

Department of Basic Education has developed a professional development instrument named IQMS with the purpose of identifying training needs of principals and of teachers for support and development and of providing support and training for continued growth (Nkonki & Mammen, 2012). In the next paragraph infrastructure concerning ICT is discussed.

To utilise the potential of ICT the attitude of school principals are important. Attitude towards ICT can affect the use of ICT (Papaioannou & Charalambous (2011). A positive attitude towards ICT will enhance the regular use of ICT for management duties (Selwood, 2005). Even if school principals do have a positive attitude towards the use of ICT they still need some training to transfer their enthusiasm into practise (Papaioannou & Charalambous (2011). The challenge is for school principals to use ICT in ways which change their attitude so that ICT could effectively be used in management duties.

### 2.6.5. Infrastructure concerning ICT

The Infrastructure for the use of ICT in a school requires continuance and frequent maintenance as well as upgrading. This also means that software and hardware needs to constantly be updated or upgraded. This includes understanding what is new on the market. Poor road infrastructure remains an obstacle for ICT development as well as ICT infrastructural structure (Sarvi & Yao, 2009). Due to South Africa's position on the African continent, South Africa is supposed to be ahead concerning ICT infrastructure. However, to provide schools in South Africa with ICT resources remains a challenge. A lack of ICT infrastructure is a major constraint. ICT infrastructure needs to improve by support of a ICT technical support and maintenance system.

## 2.7 SUMMARY

In this Chapter the uses of ICT in school management were discussed. The main theme of this Chapter dealt with the use of ICT in school management. This Chapter started with clarification of concepts used followed by a theoretical framework used throughout the Chapter. Attention was given to the different management tasks as well as the management areas where ICT can be used. Furthermore the use of ICT in the management of schools internationally as well as in Africa and specifically, South Africa was discussed (§ 2.5). This Chapter concluded with training needs of principals regarding the use of ICT in school management (§ 2.6). In the next Chapter the research design and methodology of this study will be discussed.

# CHAPTER 3:
# RESEARCH DESIGN AND METHODOLOY

## 3.1 INTRODUCTION

The aim of this Chapter is to elaborate on the research design as well as the research methodology. Attention will be given to the research paradigm as well as the selected qualitative design, population, data collection and data analysis applied in this study. A qualitative research design was chosen to obtain descriptive and explanatory information by conducting semi-structured interviews with principals regarding training needs in the use of ICT in the management of their school. Another section of this Chapter deals with an explanation of trustworthiness of the qualitative data as well as ethical considerations relevant to this study.

## 3.2. RESEARCH DESIGN

Different authors (Creswell, 2009; Mouton, 2006; Nieuwenhuis, 2009) view a research design as a plan, an action plan or blueprint of how a researcher intends to undertake a research task. It's a strategy that progresses from the underlying philosophical assumptions to specifying the chosen respondent, the data gathering techniques to be used and the data analysis which needs to be done (Nieuwenhuis, 2009). The research design therefore implicates the junction of philosophy, research techniques and specific research methods (Creswell, 2009).

### 3.2.1 Research Paradigm

A paradigm is regarded by Creswell (2009) as the theoretical lens (philosophical bases) of a study; whereas (Kinash, 2012) views a paradigm to be a pattern of beliefs and perceptions. This set of beliefs represent the researcher's ontology (the nature of reality what there is to know about it), epistemology (where the researcher stands in relation to reality) and methodology (how to find out about reality) (Fraenkel & Wallen, 2008). These assumptions guide the approach of the research and are related to the views concerning the nature of the reality and the process of the research (Fraenkel & Wallen, 2008). Different research paradigms can be distinguished, namely Positivism, Post-positivism, Interpretivism, Critical and Postmodern paradigms. The Positivistic paradigm focuses on the objectivity of the research whereas the Post-positivistic follows the same principle but allows for more interaction between the researcher and the participants (Willis, 2007). The interpretive

paradigm enables the researcher to build an understanding of the life-world experiences and at the same time stimulates critical paradigm and critical thinking of social issues and beliefs. Followers of the postmodern paradigm believe in a world created by discourses (conversations), meaning that to understand the world we operate in, we need to understand the conversations within it (Willis, 2007). The interpretive paradigm was chosen as research lens, for in the research the researcher aims to understand and interpret the experiences of school principals as participants.

The interpretive paradigm deals with the theoretical and practical understanding of interpretation, which is rooted in hermeneutics (Maree, 2010). Consequently, researchers interpret what they see, hear and understand (Creswell, 2009). By using the interpretive paradigm it allows the researcher to see (face-to-face interview) hear (recording) and understand (Smith, 2009) the training needs of principals regarding the use of ICT in the management of their school. This research is therefore situated in the interpretive paradigm. The interpretive paradigm seeks to understand the subjective world of human experience.

By following the interpretive paradigm the researcher aimed at entering the world of principals to understand and interpret how they apply ICT in the managing of their school. The interpretive paradigm is concerned with understanding the world as it is from experiences of individuals (Joubish *et al.*, 2011). In this case the experience of principals regarding the application of ICT for managing their school. The interpretive paradigm relies on methods such as interviews. The interpretative approach aims at explaining the reasons and meaning that lie behind social actions (Joubish *et al.*, 2011) and therefore the aim of this research is to determine the perceptions and experiences of knowledgeable people, in this case principals with regard to the application of ICT in managing their school. Adopting an interpretive framework is suitable for this study whereby knowledge is gained through a description of principals' beliefs and understanding. The qualitative research methodology was selected, within the interpretive framework.

An interpretive point of view is based on certain assumptions (Maree, 2010). One of these assumptions is that human life can be understood from inside and cannot be observed from certain external realities. When researching for a topic, techniques are applied to help us understand how people interpret and interact inside their environment. In this research the researcher focuses on the individual personal experiences of principals in their work environment on the use of ICT in school management.

Another underlying interpretive assumption is that social settings are unique (Maree, 2010). There is a greater opportunity to understand perceptions when people are placed in their

social context. It is important to understand and interpret the meaning constructed, since a particular context is unique. By placing principals in their management environment there is a more favourable opportunity of understanding their perception which they have regarding the training they need concerning the use of ICT to manage their respective schools.

Maree (2010) acknowledges that the origin of how meaning is constructed lies in the human mind. By revealing how meanings are communicated by people we need to understand the events as they happen in our world. Through uncovering how principals use ICT to manage their schools, we will be able to gain a better understanding of what training is needed so as to improve the application of ICT in school management. This will not only improve school management, but will also contribute to the professional development of principals. Possessing the necessary ICT skills and ICT knowledge through professional development is the key to important school leadership.

The assumption is therefore that the behaviour of a human is controlled by his/her knowledge of the surroundings. The behaviour of a principal is thus influenced by the knowledge he/she has of ICT and that will impact on what he/she will do with ICT concerning the management of his/she school on a day-to-day basis. The more knowledge he/she has of and training in ICT, the more he/she will apply it for management tasks and vice versa.

Through the interpretive paradigm the qualitative method of research approach was chosen to obtain descriptive information with regard to the use of ICT in the management of a school. In the following paragraph, qualitative research is unpacked and applied to this specific research.

### 3.2.2. Qualitative research

In the previous paragraph, attention was given to the epistemology, specifically the interpretivistic paradigm in which this research is located. Methodology is the manner in which the researcher approaches the process of selecting, gathering and investigating the phenomena. Furthermore, it explains the how, why and what of a research problem (McMillan & Schumacher, 2010).

Qualitative research is seen as a concept covering a variety of forms of investigations that assist to understand and explain the meaning of social phenomena with little disturbance of the natural setting (Merriam, 1998). Qualitative research can also be defined as a multi-perspective approach to social interaction which aims to describe and make sense of this interaction (Fraenkel & Wallen, 2008). Qualitative research is a means of exploring and

understanding the meaning individuals attribute to a situation or an individual problem and is both exploratory and innovative (Creswell, 2009).

De Vos *et al.* (2011) acknowledge a qualitative design as flexible and unique. Also, procedures followed in qualitative research are not as strictly formulated as in quantitative research, which is consistent with the research design of this study. Furthermore, Maree (2010) and Creswell (2009) argue that the researcher attempts to gain a holistic understanding of a phenomenon by using qualitative research methods. Another consideration for using a qualitative approach is that qualitative research is a powerful tool for learning more about the lives and the social-holistic context in which people live (Merriam, 2009). The qualitative research approach was therefore found to be appropriate for this study which takes place in the field of education, specifically the management of schools by principals. Education is believed to be a process as well as a lived experience (Merriam, 1998). Therefore this research approach is best suitable as the participants are individuals that form part of the educational process and have lived experiences concerning the school (Moriarty, 2011). The researcher also intends to understand human behaviour in their natural environment, in this case the school environment. Qualitative research assists us in understanding and explaining the social phenomena as viewed from the participant's perspective and experience (Merriam, 2009). In contrast to Merriam ( 2009), Moriarty (2009) mentions that the starting point in qualitative research is based on the social action of the subjects' perspective as they will be studied. In this research the insiders are the principals of the chosen schools, as they are the people responsible for managing their respective schools.

Another reason for applying a qualitative approach in this study is that the kind of data needed for this research is descriptive, and also reflective of participants' opinions. In a qualitative approach, as affirmed by (De Vos *et al.*, 2011), the researcher constrains descriptions of a social reality through the use of inductive logic. It is not possible to interpret the descriptions of the training needs of principals with regard to ICT and the opinion of participants in interviews quantitatively. In this study, data was collected and analysed in the form of words (qualitatively) instead of numbers or statistics (quantitatively). Mills (2007) and Mertler (2009) point out that an advantage of using qualitative research design is allowing the researcher to adjust and refine according to the understanding of the phenomena. Furthermore, it allows the researcher to gain reliable data from the knowledge and experience of the participants, while focussing on ordinary events occurring in natural settings, as it is one of the characteristics of qualitative research (Creswell, 2009). In this study, the researcher focuses on knowledgeable participants concerning the use of ICT in

their day-to-day activities in the management of their school. In this study, the natural setting was the school environment and interviews were conducted at the school at a convenient time for the principals in order to minimise possible disruptions. To be able to get a clear understanding of participants' views, collected data must be described in detail as the aim of qualitative research is thick description of data (Creswell, 2009; Maree, 2010; Merriam, 1998; Merriam, 2009).

The use of a qualitative design also enabled the researcher to collect data non-numerically, to be immersed and involved in the changing real-world situation and to record these changes in the real-life context of the participants (Nieuwenhuis, 2009). In applying this approach, the researcher attempted to increase her ability to understand, interpret and describe the phenomenon, in this instance, focusing on the training needs of principals for being able to apply ICT for the management of their respective schools. An inductive strategy refers to a logical method of qualitative data analysis which is guided by specific goals.

Qualitative research is based on beliefs that view reality and truth as subjective, multifaceted and a shared social experience (McMillan & Schumacher, 2010). Its aim is to understand the situation from participants' perspectives. The researcher believes that human life can be understood from within and that the human mind is a source of meaning (Nieuwenhuis, 2009). The researcher does not believe in systematic and theoretical answers to complex human behaviour. This is one of the reasons for this research to be of a qualitative nature. The focus of this study is therefore principals' subjective (individual) experiences and how they share these experiences concerning the use of ICT in the management their respective schools.

In this research the researcher allows for a rich understanding of social reality by using the context of principals which allows them to share their experience regarding the use of ICT in school management. As mentioned by Nieuwenhuis (2009), knowledge should come from the context and should benefit the voice of the participant taking into account what people say, do and feel, and how they shape meaning of the phenomenon under investigation. In the context of school leadership the researcher attempts to understand principals' thoughts from their point of view.

Within the qualitative research a phenomenological study design as method of approach was chosen for this study, which is discussed in the next paragraph.

### 3.2.3 Strategy of enquiry: Phenomenology

Phenomenological research can be described as an approach of investigation in which the researcher identifies human experiences or perceptions as described by participants (Creswell, 2009; Fraenkel & Wallen, 2008). The researcher aims at gaining insight into the everyday life of participants in order to describe individual's perceptions regarding the phenomenon under investigation (De Vos *et al.*, 2011; Fraenkel & Wallen, 2008). The aim is to describe the phenomenon rather than to explain it (Merriam, 1998). The focus is therefore on the core meaning or structure of an experience (phenomenon) (Merriam, 1998). Consequently the term *phenomenological* has to do with the study of personal lived experience from the perspective of the respondents, meaning what is in / on someone else's mind.

This study represents phenomenology which focuses on individuals' own perceptions and experiences. As described by Creswell (2009), the researcher stays as close as possible to the individuals' experiences while setting aside her own beliefs in order to understand those of the participants. This "setting aside" is done throughout the research process. The phenomenological researcher therefore needs to be neutral and open to the participants' views in order to prevent being biased while interacting with participants' experiences. Therefore it is important for the researcher to understand the theoretical perspectives behind the phenomenological approach, in particular the view of studying how people experience a phenomenon (Creswell, 2009).

A phenomenological approach was found suitable for the study because the investigator can identify human experiences or perceptions as describe by the participants, since this study is based on principals' lived experiences of their training needs regarding the use of ICT in school management. The study was conducted based on the experiences reported by the principals with regard to their use of ICT to manage their school.

### 3.2.4 Population and Sampling

The population refers to the group of individuals with certain characteristics and are of interest to the researcher for the study under investigation (Fraenkel & Wallen, 2008). Fraenkel and Wallen (2008) define the population as the group of interest from which the researcher intends to simplify the results of the study. This group is also referred to as the target population or the universe (McMillan & Schumacher, 2010). The population or group of interest was a group of principals of primary rural and township schools situated in the Matlosane area of the Twelelopele region of the North West Education Provincial

Department. Only ten primary rural and township schools of the Matlosana area were used for this research.

Sampling is defined by various authors (De Vos *et al.*, 2011; Maree, 2010; Merriam, 1998) as a process used to select a portion of a population to be included for a study. Two basic sampling techniques have been identified by Merriam (1998), namely a probability and non-probability sampling. Qualitative research is usually based on non-probability and purposive sampling instead of probability or random sampling (Maree, 2010). Purposive sampling is a method used in special situations where the sampling is done with a specific purpose in mind (Maree, 2010).

In this research the specific purpose is to target only principals of rural and township primary schools to establish their experience regarding the use of ICT to manage their respective schools. Probability sampling generalizes results of the study. However, generalization is not the aim of qualitative research (Merriam, 1998). For this reason probability sampling is not acceptable for this qualitative research (Merriam, 1998). The assumption of purposeful sampling is that the researcher wants to discover, understand and obtain insight and therefore chooses a sample from which the most information can be discovered (Merriam, 1998). Therefore non-probability sampling in the form of purposive sampling has been chosen for this research as the researcher attempts to discover what is experienced by the chosen rural and township primary principals regarding the use of ICT in the management of their school.

Even though purposive sampling is not restricted to the selection of participants it also involves the settings, events and activities to be selected for data collection (Maree, 2010). In purposive sampling participants are selected according to preselected criteria applicable to a particular research (Maree, 2010). For purposes of this research participants were selected according to the following criteria: type of school (farm and township primary schools), designation (principals) as well as the availability of ICT at their schools. Chosen schools needed to have ICT available such as a telephones, computers, fax machines, etc. Due to the allocation of rural and township schools all of these selected schools had less than 500 learners. Information such as the type of school was obtained from the area office of the Matlosana area. Purposeful sampling was used to enable the researcher to obtain relevant and valuable information from the participants.

A sample is the size of the sampling to be used for a research (Maree, 2010). The purpose of a sample is to gain a better understanding of the population from which it was drawn (De

Vos *et al.*, 2011). The sample for this study included ten primary school principals; five from rural primary schools and five from township primary schools in the Matlosana area of the North West Education Department. One township principal refused to be interviewed or to participate in this research. Therefore, an additional township principal (whose school also met the selection criteria) was approached to maintain the original count of ten principals. Only ten primary school leaders were interviewed because it was small scale qualitative research. Seven school principals' interviews were recorded. Three school leaders did not want to be recorded at all. Even though these principals did not wish to be recorded, they allowed the researcher to take notes during the interviews. As participants were ensured of voluntary participation, these participants did not provide any reasons why they did not want to be recorded. The information gathered during these interviews was still used for this research as notes were taken during these interviews. Participants have been identified to be interviewed according to the information needed from them (Boyce & Neale, 2006).

The reason for using principals is that they are the participants that would be able to provide the best and most reliable information pertaining to the training needs with regard to the use of ICT to manage the school as they are the participants that lead and manage the school. The schools have been selected in such a manner that they are easily accessible to the researcher and the researcher does not have to stay overnight in the township or rural areas.

## 3.3. DATA COLLECTION

Data collection is the gathering of information needed for one's study (Creswell, 2009). Data collection methods relevant to qualitative research are observation, interviewing, audio-visual materials, artefacts and documents (Maree, 2010). For purposes of this research interviews were used as a qualitative method of data collection. An interview is a conversation between two people (two-way dialogue) whereby the one is regarded as the researcher that asks participants questions to collect data, the second person is regarded as the participant who is answering the predetermined questions which will allow the researcher to discover knowledge concerning the views and opinions of the participants (Maree, 2010). The objective of a qualitative interview is to view the situation through the eyes of the participant (Maree, 2010). Due to the personal interaction with people, cooperation is an essential element of the interviews. On the other hand, participants may be unwilling or could feel uncomfortable sharing what the researcher hopes to discover and they might not be honest in their responses (Maree, 2010). Interviews also provide more detailed information than what is available through other methods such as surveys. Interviews as qualitative methods

are seen to be offering a deeper understanding of social phenomena as gained from quantitative methods such as questionnaires.

An advantage of semi-structured interviews is that intensive individual interviews can be conducted with a small number of participants. The advantage of semi-structured individual interviews is that it also provides a more relaxed atmosphere where participants may feel more comfortable having a one-to-one conversation and this was one of the reasons why semi-structured interviews were selected. Semi-structured interviews can also allow the researcher and participant to follow up on possibilities that come forward from the interviews (De Vos *et al.*, 2011) seeing that the participant might have information that the researcher did not think of, which may add to the richness of information emerging from the conversation during the interview. Whereas the disadvantage is that one is inclined to get distracted by aspects that are not related to the research (Maree, 2010). However, this was dealt with by directing participants back to concentrate on the issue addressed during the interview. The aim of individual interviews was to gain an understanding of the training needs of principals regarding the use of ICT in management.

Interviews were set up with principals. The purpose of the interview, reason for selecting participants as well as the expected duration of the interview was communicated with each participant. Principals have also been informed that interviews will be recorded and the information provided will be utilised for research purposes only. Ten principals agreed to be interviewed and also signed the consent letter (Addendum C). Three principals did not want to be recorded at all due to fear of possible victimisation or exposure, even though confidentiality has been communicated while only seven of these principals agreed to be recorded.

Certain steps were followed before interviews took place. Firstly, the aim and objectives of individual interviews were identified. Secondly, questions for the individual interviews were formulated. The aim of the questions asked during each interview was to determine the training needs of principals regarding the use of ICT in the management of schools. Questions were predetermined (See interview schedule: Addendum D) and all participants were asked the same questions. Even though recordings added to the richness of data, it can also be intimidating to the participant. In this study the training needs of principals in the use of ICT in school management of primary rural and township schools were the phenomenon and the in-depth understanding and knowledge of this phenomenon is what was required. For this reason the researcher investigated the views, beliefs and experiences

of the selected principals which enabled the researcher to explore their training needs regarding the use of ICT in the management of their respective schools.

An appointment was arranged with each principal two days prior to the actual interview. When meeting the principal to be interviewed the researcher introduced herself and thanked the participant for agreeing to be interviewed. The purpose of the interview was explained as well as the information as stated on the consent letter. A permission letter from the Department of Basic Education (Addendum A) was handed to each participant as well as the consent letter (Addendum C). The participants were granted a few minutes to familiarise themselves with the content of these letters stating how the interview would be used. The researcher together with the participant read the consent form (Addendum C) after which the participant signed the form giving permission to the researcher to use the interview in the research study. Permission was asked by the researcher to record the interviews and to take written notes before the interview was conducted. This assisted the researcher to remember key aspects of the conversation. Even though most interviews were recorded, hand-written notes were also taken during the interviews. After the interview, the researcher thanked the participant for allowing to be interviewed and left the premises.

Once the participants had given their permission, the interviews were recorded. An interview schedule (Addendum D) was used. The following procedures were followed during the individual interviews:

1. The researcher introduced herself and explained the purpose of the interview as well as the importance of the participants' answers. This gave them an opportunity to really think about the questions and their answers.

2. It was also explained that participation was voluntary and anonymous, and that they could withdraw from the interview at any stage. The confidentiality of the interview and secrecy of the participants were emphasised.

3. Participants were informed that the interview may last up to 30 minutes.

4. Participants were informed that data collected will be used for research purposes only.

5. The researcher obtained permission from participants to record the interview using a voice recorder. Participants were informed that this was done for analytical purposes. The recorder was tested before the interview to ensure the good quality of the recording.

6. To ensure accurate recording of information the researcher determined that the physical setting lent itself to audio taping. A quiet location, the principal's office, was used to conduct these interviews as it was free from distractions.

7. The participants were asked to fill in a consent form (Addendum C) to give their informed consent for the interview to take place.

8. The interviewer proceeded in a friendly and polite manner with the interviewer using the interview schedule (Addendum D) that guided the interview.

9. During the interviews, the researcher stuck to the questions. The researcher was rather a listener than a speaker during the interview to ensure not being biased and to afford the participants the opportunity of stating their views.

10. Participants were asked whether they were ready for the interview.

11. Notes were also taken during the interview in order to ensure that no vital information will be missed out on. Also, in case the audio recorder suddenly stops functioning.

To ensure consistency throughout the interviews, it was important for the researcher to follow the above-mentioned procedure, keeping to a specific sequence of events. This procedure also contributed to the trustworthiness of the research.

The interview schedule (Addendum D) consisted of a topic and 9 questions related to the main research question and objectives. The first question was an icebreaker to make the interviewee feel at ease and to warm up the conversation between the interviewer and the participant. The second question was followed by 5 sub questions. The interviews were concluded with a last and final question about participants' own and personal needs regarding ICT training.

## 3.4. DATA ANALYSIS AND TRANSCRIPTION

The researcher transcribed the conversations after each individual interview. It was then given to two independent individuals to verify the correctness and completeness of the transcriptions. Notes taken during the interviews were used to define information more clearly. Transcriptions were then analysed by the researcher and two independent individuals. Coding of individual interviews in *Atlas.ti*™ was done by the researcher and verified by the independent individuals. *Atlas.ti*™ is a computer and software programme used for analyses of qualitative data, which supports qualitative research (Flick, 2006).

*Atlas.ti*™ supports the process of qualitative research while the memo-function makes it possible to start answering the research question during the analysis process. Text sections can be marked by the user and coded as computer items.

*Atlas.ti*™ is also environment friendly meaning it ensures less printing. An advantage of *Atlas.ti*™ is that it gives an overview of your documents as well as your codes. This software and its various tools such as coding and network diagrams were used for analysis of the recorded and transcribed interviews with the principals. This eases the process of analysing interview data and ensures that the text and data correspond. Analysis and coding of qualitative data includes a range of activities during which parts of information are identified and categorised into themes with in mind, the purpose of the research.

The interpretive or hermeneutic approach to data analysis was followed where the researcher interprets the words of the text to understand the meanings (Morrison, 2007). The qualitative data analysis was done according to the guidelines as stated by Creswell (2009). These guidelines consist of the researcher reading through all transcribed data of recorded interviews as well as the notes taken from the interviews which were not recorded to form a holistic understanding of the content. Each interview's answers were studied individually to identify specific words for which themes could be identified. This formed a frame for further analysis of information. Words that have been repeated have been identified from individual interviews. The coding process was the next step in the analysis to generate a description of the categories and themes. Data based on the codes assigned were compared and the primary documents, codes and memoranda were organised by networks named families. Networks consist of created codes. The final step involved interpretation or making meaning of the data (Creswell, 2009).

- The researcher used the guidelines (Du Toit, 2011) as stated by Anderson and Arsenault (2000), Creswell (2009) and Litosselitti (2003) regarding qualitative data analysis:

- Transcripts were read to form a holistic understanding of the content which was obtained during the interviews with the principals.

- Each description was studied individually from which main categories were identified. Similar concepts were written in columns in the participants' own words. This formed a framework for further processing of information. Key questions were used as main categories.

- General impressions were written down such as repetitive presentation of information in transcripts which could show possible data saturation as well as repetitive patterns in the individual interviews. Transcriptions were repeatedly decomposed until data saturation was reached, meaning no new information had emerged. This was confirmed by the existing information and the current classification of coding. Data collection reached a point where no new information could contribute to a better understanding of the information of new theory delivery.

- Themes from each transcription were identified, brought in relation with one another and presented and tabulated as subcategories in accordance with Chapter 4 (§ 4.2.).

- An agreement with two independent individuals the researcher had identified the same categories and themes.

- A brief summary of each theme was formulated. Actual quotes of participants were identified to illustrate each theme (§ 4.2.).

Through the collected data, the researcher looked for specific training which principals need with regard to the use of ICT in school management. The researcher did this through different kinds of questions and put them together in a meaningful way. This was done by looking for certain patterns in the answering of questions by principals and for correlations between two or more categories of these questions. Finally the researcher developed acceptable overviews from analysing the data, realising that principals do have certain needs regarding the use of ICT in school management.

The data collected from the interviews and notes was organised, typed and sorted for data analysis. Coding and transcriptions of the interviews was done in Atlas.ti™ by the researcher. The coded data as well as the transcriptions were given to two independent individuals to verify the correctness of the transcribed data. Themes for analysis were generated from the coding process. The data was then given to a group of independent researchers to verify the correctness and trustworthiness of the data. The coding of the individual interviews was done by the researcher with the help of the *Atlas.ti*™ tool.

The following steps were followed during the data analysis process using *Atlas.ti*™ as summarised in Figure 3.1:

- A hermeneutic unit (HU) was created. The HU name was ICT training needs.

- Primary documents were assigned (Onwuegbuzie & Leech, 2007). Ten transcribed interviews were assigned.
- Selection of relevant quotes and notes. Selected notes revealed information regarding the research question.
- Codes and memos were created. Word codes were created which described the notes. Word codes with the same meaning were merged into a one-word code.
- After analysing the codes, a number of categories were gathered and grouped under themes or patterns.
- Visual networks were then created which guided the writing of the findings.

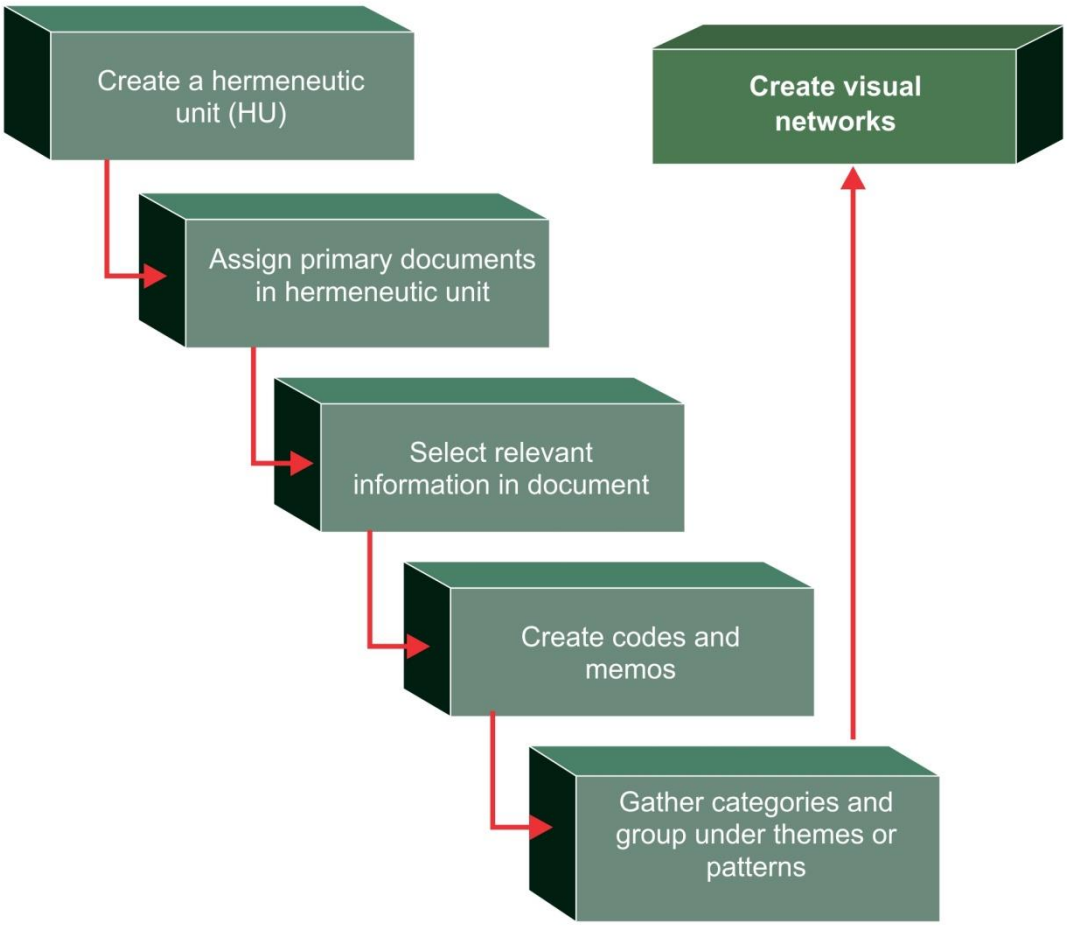



*Figure 3.1: Steps of* Atlas.ti™ *data analysis*

(Adopted and modified from Du Toit (2011))

An important aspect of qualitative research is ensuring trustworthiness. In the next paragraph the method incorporated to ensure trustworthiness are discussed.

## 3.5. TRUSTWORTHINESS

Trustworthiness in qualitative research refers to the appropriateness, correctness, meaningfulness and usefulness of the specific inferences researchers make based on the data they collect (Fraenkel & Wallen, 2008).

Trustworthiness was ensured through the following (Fraenkel & Wallen, 2008):

- Obtaining an external audit (individual outside) to review and evaluate the report. This auditor looked over many aspects of the study such as accuracy of transcription and the level of data analysis from the raw data through the interpretation.
- Interviews were recorded in order to obtain a full record of the interviews.
- Notes taken during the interviews were also used to ensure correctness during transcribing of data.
- Thick description was used by describing the context in which questions were asked.
- Codes generated from data were cross-checked by two independent people.
- The researcher drew conclusions based on the understanding of the situation observed and acted on these conclusions.

Qualitative data (e.g. interviews) was collected and presented to give as much information possible about the results to the reader to allow him/her to evaluate its credibility.

## 3.6. ETHICAL CONSIDERATIONS

Ethical considerations are critical in conducting qualitative research. Permission was obtained from all parties involved to conduct this research. The nature and approach of this study was approved by the North-West University's Ethics Committee before the study commenced. The official ethical number received from the North-West University for the purpose of this study is NWU-0016-13-A2. Permission was also granted by the district director (Addendum A) to conduct the research in rural and township primary schools located

within the boundaries of the particular education district. The researcher began the data collection process after permission was granted.

One of the key principles of ethical considerations is the well- being of participants which is very important in research (De Vos *et al.*, 2011; Fraenkel & Wallen, 2008). Research should under no circumstances threaten the lives of participants. The dignity of participants must be respected and should not simply be seen as a means of achieving research objectives. To ensure respect, a letter of consent (Addendum B) was given to participants to make sure they know what the research entails and to then decide whether or not to participate.

It is important not to compromise the confidentiality of the participants when conducting qualitative research. Confidentiality and anonymity of each participant was respected. Confidentiality was also ensured by only the researcher, study leaders and an independent transcriber that had access to the audio recording. As part of confidentiality no names were recorded during interviews. The location where the interviews took place was not made public as a method of confidentiality. Care was taken that participants did not feel threatened in any way and that their rights to security, privacy and human dignity were not to be violated.

Different authors (De Vos *et al.*, 2011; Fraenkel & Wallen, 2008) agree that it is important for the researcher to take responsibility and to ensure that participants are protected against physical and emotional harm or discomfort or any danger which may occur due to the research process. Principals were informed about all aspects regarding the research. The researcher first considered whether any possibility of risk was involve, which was not the case. Full consent was given by principals after information regarding the research and research process was communicated. Principals were informed that participation is voluntary and they have the right to withdraw from the research at any stage, or request that data collected concerning them may not be used. The researcher assured the confidentiality of information collected from or about principals while no names of participants or schools would be mentioned.

The researcher obtained permission from the principals to conduct research at their schools, and to interview them. Before the interview was conducted the purpose of the research and other information was communicated with the participants. The assurance was given that all participants would remain anonymous and that collected data would be treated confidentially. Participants were assured that the interview would not harm them and that they were under no obligation to participate in the interview or the research. Due to informed communication participants agreed to participate in the research.

All interviews took place on the premises of the participant's workplace; in this case it took place at the school where the participant is the principal. The researcher introduced herself and explained the objectives of the study in more detail, as well as the procedure that would be followed during the interview. Interviews were audio-taped with the permission of the participants. Although not all participants agreed to be recorded they did allow the researcher to take notes at all times. Even though the researcher explained the purpose of the interviews and ensured confidentiality they still feared possible exposure.

The following ethical measures in this qualitative phenomenological study were implemented (Creswell, 2009):

- Respondent

  There was respect for the authority of the respondents and participants. Freedom of choice was always maintained. Participants could withdraw from the interview at any time and reserved the right to answer which any questions they want to answer. If she / he did not want to answer all the questions, it was his / her right.

- Human Rights

  Respect for the basic rights of the individual was essential.

- The ethics of justice, fairness and objectivity.

  The researcher protected the dignity of the people involved. They were not exposed to motives that were not directly related to the research.

- Capability

  The researcher led the research herself. The researcher acted professionally and is qualified to do so. Professional standards, as laid down by North-West University were consistently maintained.

- Integrity

  Honesty and fairness were promoted. The researcher was honest about her own limitations and abilities.

- Sensitivity

  The researcher kept a balance between scientific interests and common values and norms that could affect human dignity.

- Confidentiality

  Confidentiality is protected under all circumstances. Documentation is kept secure. No information to a third party was disclosed without the consent of the participants themselves. Confidentiality was assured by ensuring that no information could be linked to any participant.

- Demarcation of roles

  There was a clear understanding of the role of both the researcher and the participants.

- Respect

  Participants were always treated with respect.

- Communication

  The aim of the researcher and how the information will be used was available to the participants in writing. The instruments for collecting data and processing were also communicated to the participants.

The personal role of the researcher was discussed in Chapter 1 (§ 1.6.3.).

## 3.7. SUMMARY

In this Chapter the research design, research methodology and paradigm was discussed. The qualitative research, phenomenology, sampling and the processes of the data collection, data analysis as well as the transcription have also been given. Ethical aspects as well as the trustworthiness have also been explained.

In the next Chapter 4 the researcher addresses the process of data analysis and presents the results of the analysis.

# CHAPTER 4:
# DATA ANALYSIS AND DISCUSSION OF RESULTS

## 4.1. INTRODUCTION

The previous Chapter described the qualitative research design and the methodology used in this study, as well as the method of data collection. As seen in Chapter 3, ten individual interviews (§ 3.4) were conducted with rural and township primary school principals. All the interviews were transcribed and the data analysis was done using *Atlas.ti*™ (Chapter 3 - § 3.4).

This Chapter discusses the analysis of data as collected from individual interviews. The qualitative data discussion (§ 4.2.) offers a methodological report in § 4.2.1 of the research analysis of the training needs of primary school principals in the use of ICT in school management of rural and township schools. This has been presented in graphical networks made possible using the computer software *Atlas.ti*™*.*

## 4.2. DISCUSSION OF DATA

In § 4.2 an account is given of the analysis of the data. The data described below includes the voice of the participants in the form of direct quotations which is the basic source of raw data and evident in a qualitative analysis. This data is rich in information and gives the reader a direct feeling of the participants' views, experiences and perceptions. The data analysis of the individual interviews is presented in the subparagraphs. Data analysis was done through the eight themes identified, using the computer software programme *Atlas.ti*™ and guidance of my two supervisors. These themes are supported by codes and quotations which provide basic ideas on the research problem. A graphical presentation of the network hermeneutic followed as generated by *Atlas.ti*™ with a discussion of each network. Furthermore, a report of the analysis (with verbatim quotations from interviews of participants) is regarded as important. The reports of the verbatim quotations form part of the researcher's own personal and subjective report of the participants' needs and use of ICT in school management.

The researcher presents the analysis with regard to the identified principals' perceptions, knowledge, experiences, opinions and beliefs which were gathered during the individual interviews. The analysis of the data from individual interviews contributes to the identification of training needs of school principals in rural and township primary schools. The personal

voices of the participants enriched the conversations, but also helped to justify the importance of this research.

The following table indicates the identified themes which will be discuss:

**Table 4.1: Themes identified from individual interviews**

| THEMES IDENTIFIED FROM INDIVIDUAL INTERVIEWS | |
|---|---|
| 1. | ICT concept |
| 2. | Uses of ICT in management tasks and management area |
| 3. | Training needs of principals |
| 4. | Uses of ICT computer software |
| 5. | Communication |
| 6. | Lack of infrastructure |
| 7. | Attitude of principals towards the use of ICT |
| 8. | Quality of Management |

### 4.2.1. Themes identified from individual interviews:

The purpose of the presentation of themes below is to affirm the training needs of primary school principals with regard to the use of ICT in school management. The first theme, namely the ICT concept, will be discussed in the following paragraph.

#### *4.2.1.1. ICT Concept*

The identified theme, ICT concept, as illustrated in Figure 4.1, is stated as the first main theme of training needs of school principals in the use of ICT in school management.

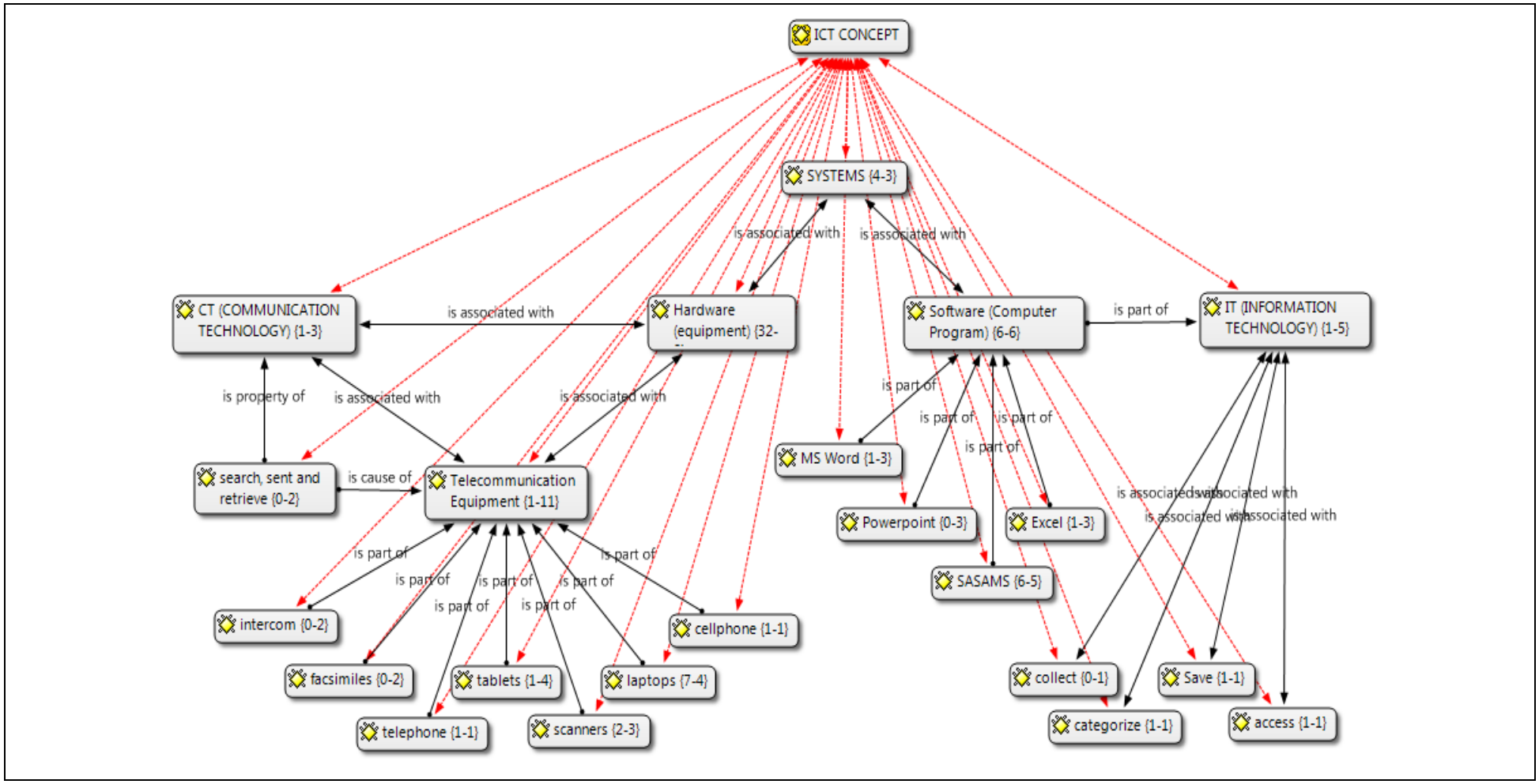



*Figure 4.1.: ICT Concept*

The network hermeneutic as illustrated in Figure 4.1 portrays the number of findings in relation to the selected quotations (segments of texts, as coded in *Atlas.ti™)* presented in brackets (examples [3-2]) showed in each text. The network hermeneutic which is shown as codes illustrates that participants had more or less the same opinions concerning the identified theme, namely ICT.

In order to determine the training needs of school principals regarding the use of ICT in school management, the researcher found it appropriate to uncover the understanding of the concept ICT as seen by rural and township primary principals.

The concept 'ICT' is seen by most interviewed principals as information technology. This is visible from the following remark:

> *I think ICT got to do with computers, information technology, communication and the use thereof (P9: 1 – 39:40).*

Most principals refer to ICT as information technology. Information technology is the concept of making use of computers as well as software to manage information as well as storing, processing and retrieving information (Bialobrzeska & Cohen, 2003). Some principals refer to ICT concept as the awareness of technologies such as tablets. None of the participants mentioned the different functions of tablets, such as video recordings of seminars and trainings and for work done outside the office which is ideal for school principals. However, none of the participants mentioned using tablets in school management either, which gives the impression that their concept of ICT does not include knowledge of these functions.

Another participant mentioned the use of Skype, which gives the indication that this principal does have slightly more knowledge of what the concept ICT entails:

> *Obviously I'm using the telephones to call people, I'm sending E-mails, I'm receiving E-mails, I'm using Skype too. I use my laptop to keep my recordings, my files. I do this myself (P2*: 9 – 12)

Another participant stated that ICT is a tool that makes life easier:

> *A tool that can be used to make life easier like computers, cell phones, laptop, photo copier, overhead projectors, scanners, fax machines* (P4: 41 – 3)

Another participant remembered how ICT was before the more recent and advanced modern technology:

> *It comes to my mind the improvement or the change from the old method of communication to the new method of communication. In the past we used to ICT….it, I'm not sure what the "I" stands for, but its computer technology. The technologies that I am aware of are communication technology. We are moving into an era whereby we are speeding up all these kinds of technology; like…..during the olden days we use to send letters from one place to another and people use to run by foot that side. Then post offices were introduced, there came a time that faxes were introduced, telephones were introduced. Then in order to speed up the process of communicating the technology has improve….the…processes for example we are now using cell phones, you don't have to ask for the number please…you fax, you e-mail, that is how the improvement has been made* (P11: 11 – 50).

It is visible from the above response that this participant is not knowledgeable regarding modern technologies. This participant prefers to see ICT as how it was before and is still stuck between the old and the new technologies. What this principal sees as new technology is already out-dated. This principal's concept on ICT will not allow him / her to quickly access information, analyse statistics or collaborate with colleagues. Also, he / she will not be able to interact with colleagues and stakeholders more effectively and efficiently, because he / she does not have the knowledge of the advantages of making use of ICT in school management. He still sees cell phones and fax machines as being 'new'; in fact it is already out-dated. Cell phones and video cameras have been developing into new technologies such as tablets whereas fax machines have developed to E-mails. He does not mention more modern technologies such as Skype, iPod, GPS, etc. It is clear that this principal is of the older generation because his concept of ICT is out-dated. However, not all principals who are of the older generation's ICT knowledge are out-dated and the findings are only applicable to this research. ICT knowledge is out-dated. Knowledge of some principals of the concept ICT is not up to standard which can classify principals as being technology "disabled". Out-dated knowledge of ICT still takes up a lot of time to complete management tasks.

In today's fast-growing world of technology, an individual who is not knowledgeable or even competent in ICT can be regarded as an inactive member of modern society. ICT can be regarded as a driving force of social changes as distance is no longer an issue when it comes to accessing information (Noor-Ul-Amin, 2012). Accessing information is made easier by using the internet as confirmed by two principals:

*Mainly for administrating purposes and communication such as fax documents to the department, fax documents to other stakeholders and we phone them on the telephone other stakeholders and admin we photocopy documents for our meetings, we Google for research, and we emails for communication purposes to our stakeholders and also our parents* (P9: 23 – 9).

*We do have computers with internet, like for instance this one. We can get information from outside* (P1: 47 – 6)

From the findings on the *ICT concept* (Fig. 4.1.) it is evident that most principals are only familiar with the general technologies, such as telephones, fax machines, computers, scanners, laptops and overhead projectors. According to the White paper ( § 2.2.2.) on e-Education all managers of schools were supposed to be ICT knowledgeable by 2013 (Department of Education, 2004). The lack of knowledge principals have regarding what the concept ICT is, means, is an indication that the White Paper on e-Education is still ineffective as there is now in 2014 a lack of knowledge regarding ICT.

#### *4.2.1.2. Uses of ICT in management tasks and management areas*

The identified theme, *uses of ICT in management tasks and management areas*, as illustrated in Figure 4.2, is stated as the second theme of training needs of school principals in the use of ICT in school management.

The network hermeneutic as illustrated in Figure 4.2, shows the number of findings in relation to the selected quotations (segments of texts, as coded in *Atlas.ti™)* presented in brackets (examples [3-2]) shown in each text. The network hermeneutic which is shown as codes illustrates that participants had more or less the same opinions concerning the identified theme, namely uses of ICT in management tasks and management areas.

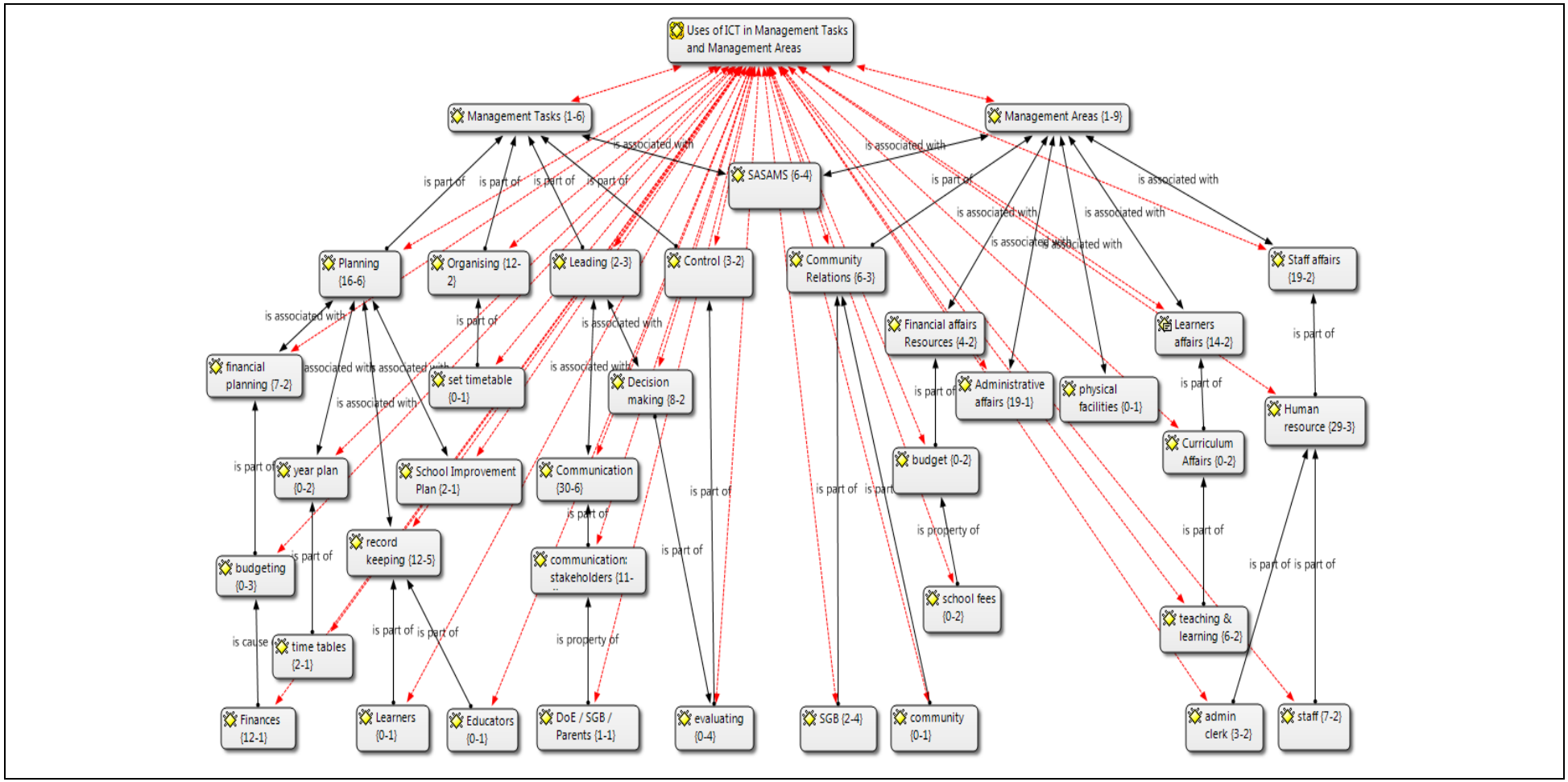



*Figure 4.2.: Uses of ICT in management tasks and management areas.*

Management consists of two major properties, management tasks and management areas; which are integrated with each other (Van Deventer & Kruger, 2003).

Management tasks consist of planning, organising, leading and controlling. Planning is the first, yet most important management task (Van Deventer & Kruger, 2003) . If a principal is effective at planning, the day-to-day task will be much easier. To a question raised as to what ICT is used for in the management of the school, the comment by a principal was as follows:

> *For all management tasks: planning, organising, leading and control. (*P3:18 – 33)

Planning is associated with a year plan; hence setting up time tables, record keeping which is part of learners and educators' information. Planning, in addition, is associated with the setting of the school improvement plan as well as financial planning such as budgeting (EIC, 2000). Planning can be very time consuming if a principal does not make use of ICT to assist. Using ICT to plan for school management tasks will make principals' tasks easier and faster as it is less time consuming with the assistance of technology. Another participant responded as follows to a question posed on uses of ICT for management tasks:

> *We use the equipment for planning, like year planning, quarterly planning, daily planning, monthly planning, different meeting planning, draw up the target, drawing up the time tables, drawing up the target, drawing the certificates for the awards, drawing the calendar. (*P11:11 – 1)

A further use of ICT is different types of planning such as financial planning and administrative planning:

> *Finance, budgeting, to draft your budget, year plan, administration, departmental laptop for educators information, allocation of subjects, timetabling* (P4:52 – 34).

Budgeting is done during financial planning, whereas drawing up a time-table is the property of a year plan which forms part of administrative planning. Principals can also make use of spread sheets for financial planning. Like any other organisation, schools need to keep a track record of their finances. Keeping track of finances will allow them to monitor their incomes and expenditure correctly which can prevent misuse of finances. Being a manager and an accountable officer, it is the responsibility for the school's finances (Bisschoff & Mestry, 2003). Even though in some schools the assistant does the finances, as responded by another participant:

*I don't use ICT, I do everything manually. The only person who does this on the system is the clerk, because she also handles finances* (P8: 35 – 25).

Income of school fees, departmental allocations as well as donations to the school form part of financial planning, and also expenditures can be recorded by using spread sheets (Department of Education, 2002). Calculations of incomes and expenditures can be made automatically to give accurate totals and averages with these spread sheets, etc. Furthermore, charts can also be used to show the principal, SGB changes in income, expenditures, but also the losses and profits of activities. Using ICT can assist principals in recording financial documents such as audit reports but also stock keeping (South Africa. Department of Education, 2002). Despite these advantages of using ICT in management, some principals still do everything manually and leave some financial tasks to the assistant.

A huge advantage of using ICT is that backups can easily be made which the principals can save or even e-mail to the department if information, data and reports are needed (UNESCO, 2005). All of these uses form part of the advantages of using ICT, which school principals can benefit from to manage their school, as responded below:

*I use it for managerial duties, communication and administration* (P4: 9 – 12).

Once plans have been finalised principals need to assign the planned tasks by organising (Van Deventer & Kruger, 2003) . By organising, the second management task, a structure is created for members to work together effectively to achieve organisational goals (Anupkumar, 2005). Organising can be illustrated through the use of ICT such as PowerPoint presentations. Scheduling the school's time is done by means of timetables. It seems that some principals do use ICT to organise the school time-table:

*I use it for managerial duties, communication and administration. Compiling of the year plan, time table and a lot of directives that I give to the staff* (P4: 12 – 12).

After all, principals should be involved in organising the timetable to ensure effective implementation of departmental requirements (Van Deventer & Kruger, 2003). The use of a time table in a school is one of the means by which to ensure the organised flow of teaching and learning and the maximum use of time management.

From the quote below it shows that an interviewed principal does use ICT for to ensuring the organised flow of management tasks:

*For management reasons like the things we use to keep our school going and to make sure everything is going well like the planning of the time table and the capturing of the learners and teachers' information* (P6: 45 – 9).

Some principals do not use ICT for management and leave everything to the teachers in the school:

*I leave everything to my teachers to do most of the time* (P1: 55 – 21).

Leading as third management task includes effective communication as well as motivation in a school (Van Deventer & Kruger, 2003). Principals must be able to use ICT themselves in their day-to-day tasks in order to motivate staff members to do so. In fact, principals must be technology leaders and provide constant and positive leadership for staff members (Afshari *et al.*, 2008). However, technology leadership does not mean to only have knowledge of technology, but to also to understand and apply technology in management tasks (Afshari *et al.*, 2008). A participant confirms the use of ICT in leading, as well as organising as management tasks:

*For all management tasks: planning, organising, leading and control (*P3:18 – 33).

School activities, as well as management, involve people (Van Deventer & Kruger, 2003), therefore a manager should be an inspiration to the rest of the staff by leading by example (Rothbauer-Wanish, 2009). Rothbauer-Wanish (2009) argues that being an effective leader also means being an effective communicator. Sub-tasks of leading are communication, motivation, conflict management and negotiation (Van Deventer & Kruger, 2003).

Since the participants placed so much emphasis on the use of ICT in communication, communication is therefore identified as separate theme (Figure 4.5) which is discussed in more detail (§ 4.2.2.5) in a subsequent paragraph. ICT is also used for management as seen from the view of participants:

*Communicating with the stake holders, sending E-mails when necessary, phoning the AO's, and sending correspondence through that* (P2: 61 – 9).

*Cell phone for communication, laptop for curriculum purposes, mainly SAMS (school administration*) (P3: 45 - 9).

*For administration, LTSM and for communication with other schools and the area and district office* (P4: 7 – 9).

*To communicate with the area office* (P7: 5 – 10).

*Mainly for administrating purposes and communication such as fax documents to the department* (P9: 9 – 9)

When needed, one can also have a group video conference (Bialobrzeska & Cohen, 2003) with other principals or stakeholders to discuss matters of school management. As illustrated in Figure 4.1., ICT is a system which is associated with hardware and software. Telecommunication is a type of hardware which consists of cell phones, telephones, facsimiles, intercom and scanners (Rusten & Hudson, 2013). This telecommunication hardware equipment is also associated with CT (Communication Technology) as CT makes communication easier via sending and receiving information, as seen by another participant:

*A tool that can be used to make life easier like computers, cell phones, laptops, overhead projectors, scanners, fax machines* (P4: 1 – 39:40).

Currently some principals make use of only one–on–one telephone calls and some make use of e-mails to assist them in the management of their school. A participant responded as follows:

*The little that I know makes my life easier. I just use my cell phone and call the department to find out things. I can send an e-mail but struggle now and then to do it then I have to call our secretary again, but I'm trying, I'll get there* (P5: 22 – 38)

The implication of having knowledge of ICT (§ 2.6.2), like the above principal, can be significant in school management. Knowledge and usage of ICT can simplify principals' management tasks and get work done faster. Making use of Skype allows you to have video conference calls as well as voice calls which enable principals to have meetings in the comfort of their homes. Having an actual visual conversation with relevant people can help to strengthen your relationship with that person, no matter where they are (Bialobrzeska & Cohen, 2003) . Skype is also free; therefore affordability shouldn't be a problem for principals regarding this necessity. If they have an Internet connection, they can make use of Skype as often as needed. A principal confirmed using Skype:

*Obviously I'm using the telephones to call people, I'm sending e-mails, I'm receiving e-mails, I'm using Skype too* (P2: 9 – 12).

Some principals do not use technology frequently (§ 2.6.2). Not being able to send e-mails can hinder principals to effectively perform their day-to-day task of managing their school with ICT. The impact is that schools are less able to handle organisational data more quickly. Information takes a longer period of time to reach the recipient, while the correct delivery of

information might be a challenge. In fact the use of e-mails is only one type of technology use, since there is a large variety of technologies which can be used for school management, such as twitter, face book, web-logs, telephone conferencing etc. One of the principals mentioned the use of some of these varieties of technology as seen below:

> *I think I'm good, I'm not yet there or excellent I can adapt because I can use the E-mails, I can use the skypes, I can use the facebooks, the twitter, the whatsapps, those things I can use them* (P2. 22 – 37).

ICT can be considered to be an effective enabler to create access, store, transmit and manipulate different types of communication information in audio and visual form. ICT can also be used to prepare school announcement, reports, letters of meetings with parents, student registration and teacher and staff employment (Maki, 2008s). The Organisation for Economic and Co-operation Development (OECD, 2008) claims that the internet is seen as the most leading enabler towards better, faster and cheaper approach to operating administration and in the management of daily tasks such as searching for information, storing information, retrieving information and sending information. It is important for principals to receive more knowledge and information regarding the access of the Internet. Some principals do realise the importance of the internet as a means of communication. By using the Internet principals can communicate with a variety of stakeholders regardless of where they are:

> *To communicate with the area office and the district office, other principals and other schools, with the other stakeholders and to organise functions of our school* (P6: 52 – 12).

Control is the fourth and final management task. Even though the principals may delegate the control process, they are responsible for everything that happens in the school and remains accountable for everything. It is important for the principal to evaluate whether plans have been executed and to which extent it has been successful or needs adjustment (Van Deventer & Kruger, 2003). This can also be done with the use of ICT.

Although control is the final and very important management task, none of the interviewed principals mentioned control as part of the management tasks of a school. Furthermore, none of the principals mentioned that they use ICT for control in the management of their schools, because most of these principals use ICT mainly for communication purposes. However, financial control using ICT is important for tasks such as printing invoices, financial reports, creating requisition forms; etc. From the interviews it is clear that none of these principals use ICT for these financial control purposes.

Management areas on the other hand consist of learners and staff affairs, financial affairs, community relations, administrative affairs as well as physical facilities (Van Deventer & Kruger, 2003). Staff affairs such as absenteeism of educators can be easily identified by means of ICT. Time table software can also help with parent evenings, examinations and other events taking place at school. Substitution can be arranged for absent educators by identifying educators not teaching at that specific time. Record can also be kept of educators that are absent and, substitute teachers can also be analysed. A school timetable can easily be created by using technology. Allocation of educators as well as physical facilities such as classrooms and other resources can effortlessly be identified by using technology (Maki, 2008). All of these can be printed and are available at any time. Some schools do make use of ICT for these management areas even though it is mainly used by the secretary:

> *She uses it to capture the learners and educators information by means of the SAMS system. You know when teachers were absent she must capture it. We must also know where our learners stay; she must capture their addresses and other information* (P6: 17 – 18.)

Another management area which ICT can be used for is administrative affairs (Maki, 2008). ICT can be used in administration for setting a time table and making use of a year plan, whereas staff and learner affairs are managed through SA-SAMS (§ 2.2.2). SA-SAMS is associated with management tasks as well as management areas. Learners' affairs can also be managed through teaching and learning as well as record keeping as stated by the following participant:

> *The SAMS system that we use to insert and get information about learners and educators is also on my personal laptop* (P7: 31 – 26).

The South African School Administration and Management System (SA-SAMS) helps to reduce workload in every area of school life (§ 2.6.3). SA-SAMS was developed to assist schools with daily administration and management tasks. Record keeping of learners and staff members (as illustrated in Figure 4.2) can be attached and entered and reused through the system and ensure that the latest information is always available when needed. Using SA-SAMS, principals can analyse exactly the impact that an additional staff member can have on the school, on their budget. This can help principals to make informed decisions as the manager of the school. SA-SAMS can also be used for inventory of school stationary, hoping that the school is run and managed smoother. However, through the responses of the participants it is mostly, or in some cases only the administrative clerk (secretary) who is using this powerful management tool. A question was asked during the interview, whether

principals have received any training in SA-SAMS and in which areas they would like to receive ICT training. The responses were respectively as follows:

> *No, no formal training, only our secretary received training to use the SA-SAMS system* (P6: 24 – 28).
>
> *The area of SA-SAMS, to understand it 100%. Also to use all the other functions of a laptop* (P7: 29 – 44).

#### *4.2.1.3. Training needs of principals*

The identified theme, *training needs of principals*, as illustrated below in Figure 4.3, is stated as a theme of school principals in the use of ICT in school management.

The network hermeneutic as illustrated in Figure 4.3 shows the number of findings in relation to the selected quotations (segments of texts, as coded in *Atlas.ti™)* which is presented in brackets (examples [1-2]) shown in each text. The network hermeneutic which is shown as codes illustrates the training needs of school principals in the use of ICT in school management. As illustrated in Figure 4.3, principals need training in the field of ICT- training programmes, ICT-knowledge and ICT-skills.

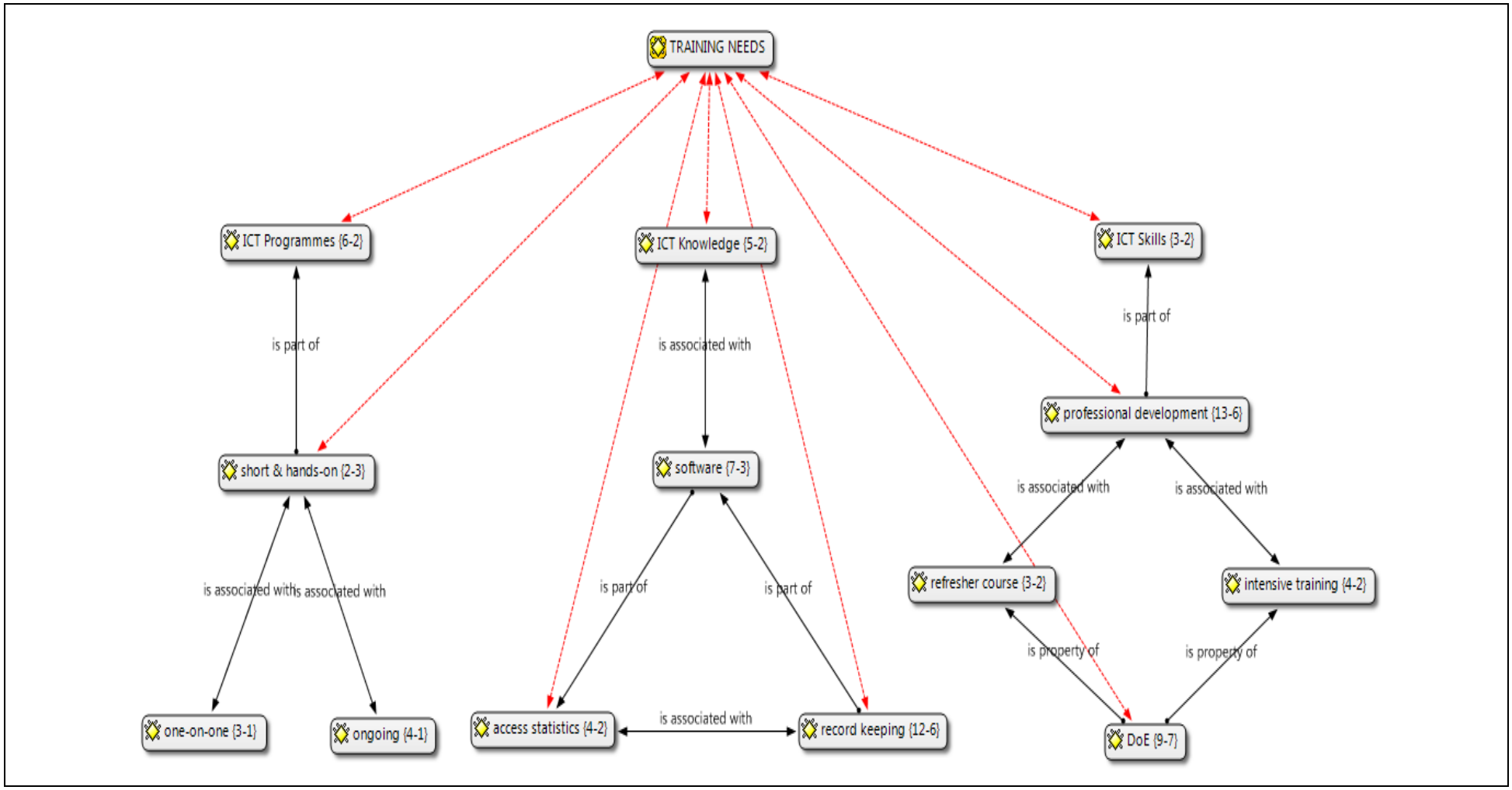



*Figure 4.3.: Training needs of school principals in the use of ICT in school management*

Principals need to be able to do what they are supposed to do such as managing the school as well as being a leader. With the implementation of technology in his / her school, the principal must support his / her staff members with regard to the use of ICT in their classrooms. To be able to do this, they need to be well-trained, well-skilled and well-developed in the use of ICT for school management. ICT training needs can be divided into ICT–training programmes, ICT–Knowledge and ICT-Skills.

Certain aspects need to be considered for an ICT training programme. ICT training programmes should be short; hence head-on with a one-on-one approach (Abuhmaid, 2011). Some principals prefer formal courses as stated by a participant below:

> *I should think, like I already said the information I have I gathered by myself...If I can get someone who can give me straight formal information I can be very happy, and in all area, to be an all-rounder and to know everything* (P1: 9 – 43).

Training should be specifically for principals and how they can use technology in school management. Training regarding ICT only focuses on the integration of ICT in the curriculum for teaching and learning purposes and not for the use in management in their day-to-day activities as principals, as mentioned by another participant regarding ICT training:

> *We requested it from the department, but it was not for the principal alone, it was for the whole staff of our school. As principal alone I did not receive any training from the department or other institution* (P8: 41 – 32).

However, a principal mentioned the need for training in areas such as sending E-mails as well the use of the internet when asked about their training needs in the use of ICT for the management of their schools:

> *In all areas, to capture information, to type things, to use the internet, to e-mail things, to use a fax and copy machine and use all these functions* (P5: 25 – 45).

To implement technology in schools, principals need to be computer literate (Sheninger, 2012). School principals that are appropriately trained in the use of ICT will feel more comfortable using ICT (Spencer, 2012) and will not fear technology. Not knowing how to do something as a leader can be frustrating and time consuming for a school principal. Performing certain management tasks manually without the use of ICT, like another principal, is very time consuming as mentioned above:

> *I don't use ICT, I do everything manually. The only person who does this on the system is the clerk, because she also handles finances (*P8: 31 – 25).

Frustration of not being able to use ICT effectively can affect principals' management productivity, mood as well as interaction with the staff negatively. While making mistakes when using ICT and asking staff members for assistance can be a bad example as a leader of an organisation. Being dependant on your staff to assist you to do your duty as a school principal (with the help of a less time consuming tool such as ICT), can be an embarrassment. Some school principals depend too much on staff members to assist them using ICT, as confirmed by a principal:

> *I entirely depend on staff members to assist me with ICT, entirely* (P9: 67 – 41).

ICT training is a vital factor that can improve school principals' attitude towards ICT (Papaioannou & Charalambous, 2011). This can be done either in-service by / through the department of education or through a private institution, such as Vuselela. Continuous and on-going ICT training can also contribute towards a positive ICT use in the management of the school and positive attitude towards ICT. Training should be aimed at the use of ICT in the administration and management in rural and township primary schools. This is confirmed by the responses of school principals that indicated that they had received no training in this regard:

> *None from the Department of Education, only the basics presented by a private company, Vodacom, for educators. The department didn't give training, but organised an ICT conference where ICT teaching aids were presented* (P9: 29 – 30).

Principals can improve their efficiencies in managing their school if they are capable of using ICT (Afshari *et al.*, 2012)(§2.6.1). Principals should be provided with formal one-on-one ICT training courses on both the software and the hardware of technology to improve their ICT capability. School principals that are appropriately trained in the use of ICT will feel more comfortable to use ICT and not be fearful of technology (OECD, 2001)(§2.6.1). Not knowing how to do something as a leader can be frustrating and time consuming for a school principal.

Training should not only be a once-off workshop. It must be on-going as technology is constantly changing. Principals must have frequent opportunities for thorough and active training that is authentic and useful in their daily responsibility to manage the school. This can help them to use ICT effectively in their management duties. Principals can only benefit from the use of ICT for school management. Principals can benefit through effective ICT training programmes which will enable them to use ICT effectively for school management

(Abuhmaid, 2011). This will also improve principals' ICT competence as well as their self–confident (Papaioannou & Charalambous, 2011).

Knowledge of ICT regarding software such as a word processor, spread sheet and presentations are important for principals to be able to access statistics in order to make decisions, but also for record keeping. Basic knowledge of word processing, spread sheets, presentation software (PowerPoint), using web pages and the internet are requirements that will improve principals' computer skills. Some principals lack this basic knowledge of ICT software as stated by different participants and they need training:

> *I think I'll need ICT training in basic computing, MS Word, Excel, PowerPoint, mainly those* (P 9:68 – 44).
>
> *I am not really computer literate. I would like training in all areas of using ICT* (P3:23 – 42).
>
> *In all areas, to capture information, to type things, to use the internet, to e-mail things, to use a fax and copy machine and use all these functions* (P5: 25 – 44).

As a leader, a school principal should stay ahead with technology in order to become a competitive leader. A principal must be well informed and aware of ICT. From the interviews conducted, it became clear that the main use of ICT by these primary principals was in word processing (typing of letters), sending and receiving E-mails, using the internet. The uses of spread sheets, databases and PowerPoint for presentations are areas in which most principals need training. These are not used by them as they do not have the knowhow. This incompetency with regard to using ICT has been confirmed by a principal:

> *The computers got sections like PowerPoint, word and excel. I would like training in it storing information in it, to do the finances in it, teaching the children with it. There are a lot of thing I will be able to do with it* (P8: 53 – 45).

For principals to be technology leaders, they need to develop ICT skills (Gronow, 2007). Every leader has professional development needs; from refresher courses to intensive training in ICT. Professional development is therefore an important component of leadership as elaborated on by the Organisation for Economic Co-operation and Development (OECD, 2010) in, § 2.2.5. Principals that did their formal educational training years ago at a college or university, did not receive training in the use of ICT in school management, as indicated by the principal below:

*I received training very long ago at Pukke, around the years 1990's when I was doing my ACE. For me it was simple; when I was in standard 8, 9 and 10 I done typing at school (P11:11 – 36).*

Learning about the use of technology for school management is an area in which professional development is needed, as demonstrated by the little knowledge some principals (interviewees) have with regard for the use of technology as described below:

*As I said, my ICT knowledge is very, very limited, it's a disadvantage to me as I'm indicating that I am now registered for a course, a part-time course which I'll be doing in the evening after I knocked off from work. So, my ICT skills is lacking so I wanted to do something about it (P9: 66 – 38).*

Professional development in the use of ICT will not only increase their confidence, but also their productivity in school management (Papanastasiou & Angeli, 2008). As gathered from the interviews it is clear that there are not enough ICT training opportunities from the department of education for primary rural and township principals in the use of ICT for school management:

*None from the Department of Education, only the basics presented by a private company, Vodacom, for educators. The department didn't give training, but organised an ICT conference where ICT teaching aids were presented (P4: 5 – 30.*

*Nothing, the department didn't give us as principals training in ICT. I also didn't go for any training because we don't always have money to pay for this things and its usually expensive. (P5: 19 – 31)*

*I haven't received any. (P2: 18 – 30)*

*None. What I know I taught myself, and is still learning by myself. (P6: 25 – 31)*

Financial assistance from the DoE with regard to ICT training of school principals is needed. A lack of funds also prevents the use of ICT by principals, as it is likely that principals' attitude will be negative (Flanagan, 2003). Some schools only have one laptop which is only used for administration purposes:

*We only have a cell phone, a laptop and one computer that don't even work because we don't have money to fix it (P5: 33 – 7).*

*Our secretary uses the laptop, but only for administrative purposes to get information from the SAMS system of learners and educators the laptop, but only for administrative purposes (P5: 4 – 10).*

The lack of available technology does not give the principal any opportunity to gain in experience regarding the use of technology (Goktas *et al.*, 2009). Certain management tasks never get done due to a lack of available computers and other technologies (§ 2.6.5). Having financial assistance will enable principals to have more and a variety of technology available to use for school management. This also goes hand in hand with the appropriate ICT training and support in the use of these technologies (IICD, 2007). Some schools have a limited technology available to use with a minimum of financial assistance as explained by the next respondent:

*We only have a cell phone, a laptop and one computer that don't even work because we don't have money to fix it. Children don't pay school fees to fix everything. We don't even have a landline phone and no fax machine (P5: 3 – 7).*

Principals need training to be equipped with ICT skills through relevant ICT training to become computer literate and to use ICT frequently as it will assist them to manage their school more effectively (Gronow, 2007). Despite the availability of some technology at schools, it is mostly used by the administrative assistants and not much by the principals due to a lack of training:

*I don't use it only our secretary uses it for the administration work of our school* (P5: 7 – 13).

*Well, as a principal I'm not that much savvy when it comes to ICT, as you can see in my office I don't have a computer although I have a personal laptop, but I don't use it that much, but its mainly used by the clerk* (P9: 39 – 12).

The lack of skills among principals to use ICT effectively for school management remains one of the biggest training need experienced by principals (§ 2.6.4). As technology leaders, principals must be trained to be technology knowledgeable and should possess the necessary technology skills (Afshari *et al.*, 2008). A principal that is ICT competent has ICT skills, knowledge as well as the facilities to use these technologies. However some of the interviewed principals are not computer literate:

*I don't use it frequently, because I'm not so much compliant. To be honest, I don't use it frankly because I'm not computer literate (P8: 23 – 13).*

ICT training is desperately needed by principals to manage their schools more efficiently. ICT is not some magic spell that will resolve all problems; ICT is needed to provide the leaders of primary and rural schools with the necessary skills and training they so desperately need.

#### *4.2.1.4. Uses of ICT Computer Software*

The identified theme, *uses of ICT computer software*, as illustrated in Figure 4.4, is stated as a training need regarding ICT computer software in school management.

The network hermeneutic as illustrated in Figure 4.4 shows the number of findings in relation to the selected quotations (segments of texts, as coded in *Atlas.ti™)* which is presented in brackets (examples [2-2]) showed in each text. The network hermeneutic which is shown as codes illustrates the ICT needs of school principals in the use of ICT in school management.

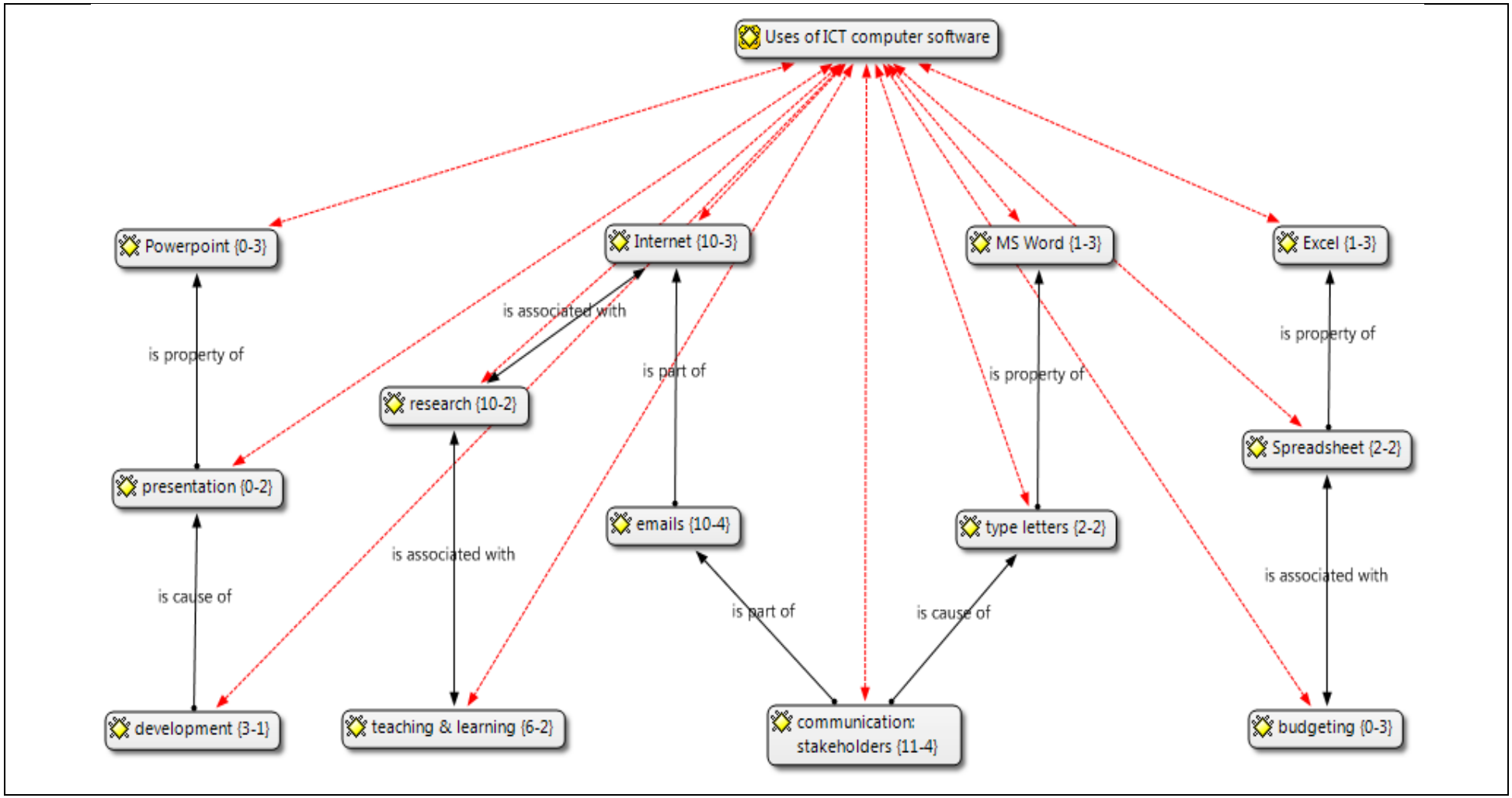



**Figure 4.4.: Uses of ICT Computer Software**

ICT needs of principals are associated with software (computer programmes). This software refers to PowerPoint, internet, MS Word, Excel and SA-SAMS (§ 2.6.3) as mentioned by the participants. The department of education introduced a management system (SA-SAMS), as mentioned in Chapter 2 and in § 4.2.1.2 to help schools improve their management of administration, but also to simplify school management for principals. Software is part of computer programmes, such as MS Word, Excel, PowerPoint, SA-SAMS (§ 4.2.1.2 and § 2.6.3) and the internet as indicated in Fig.4.1.

PowerPoint is part of presentation which is associated with development; because you need to have computer skills in order to use PowerPoint for presentations. PowerPoint is a useful tool for showing parents and stakeholders graphs, photos, maps, etc. that confirm or enhance what the principal is saying during meetings. It is useful for illustrating the content by highlighting certain main aspects (UNESCO, 2005). Principals can use Power Point to present powerful slide shows during meetings, while charts in Excel programmes can be used to illustrate relationships between variables. Only one principal mentioned PowerPoint, even though this specific leader does not use PowerPoint in school management and acknowledges PowerPoint as one of the areas that training is needed in the management of the school:

> *The computers got sections like PowerPoint, Word and Excel. I would like training in it storing information in it, to do the finances in it, teaching the children with it. There are a lot of thing I will be able to do with it* (P8: 53 – 45).

A further use of the internet and Word processing programmes is that it helps the principal to communicate with the different stakeholders via E-mails and in typing letters. This has been confirmed by a principal below:

Another participant responded to the use of the internet as follows:

> *Mainly for administrating purposes and communication such as fax documents to the department, fax documents to other stakeholders and we phone them on the telephone other stakeholders and admin we photocopy documents for our meetings, we Google for research, and we emails for communication purposes to our stakeholders and also our parents* (P9:25 – 9).

Furthermore the internet can also be used for research that can be implemented for teaching and learning purposes. At some schools, principals do not use the available technologies, but teachers use it mainly for the purpose of teaching and learning:

*For subject teaching, mainly subject teaching as a teaching aids (P1: 57 – 18).*

*The mathematics teacher uses it to present his lessons (P2: 14 – 18).*

Another form of software that is needed is Excel, which represents the use of spread sheets a principal can use for budgeting, drawing-up timetables and schedules, as a participant revealed training needs in Excel:

*I don't think I need training as such, but I could say, I would like training on Excel but not so much because most of the things I can do them (P2: 24 – 43).*

Software applications are designed to make the user's tasks easier and less time consuming. An ICT literate principal will be able to perform his duties as a school manager more effectively with knowledge of the use of ICT. Software allows principals to perform their everyday management tasks on the computer such as communicating with stakeholders by typing letters, sending Emails or downloading from a web page. Only one principal mentioned making use of Skype:

*I think I'm good, I'm not yet there or excellent, I can adapt because I can use the Emails, I can use the skypes, I can use the Facebooks, the twitter, the WhatAapps, those things I can use them (P2: 22 – 37).*

#### *4.2.1.5. Communication*

The identified theme, *communication*, as illustrated below in Figure 4.5, is stated as the fifth theme in the use of ICT in school management.

The network hermeneutic as illustrated in Figure 4.5, projects the number of findings in relation to the selected quotations (segments of texts, as coded in Atlas.ti™) which is presented in brackets (examples [1-2]) showed in each text). The network hermeneutic which is shown as codes illustrates communication in the use of ICT in school management.

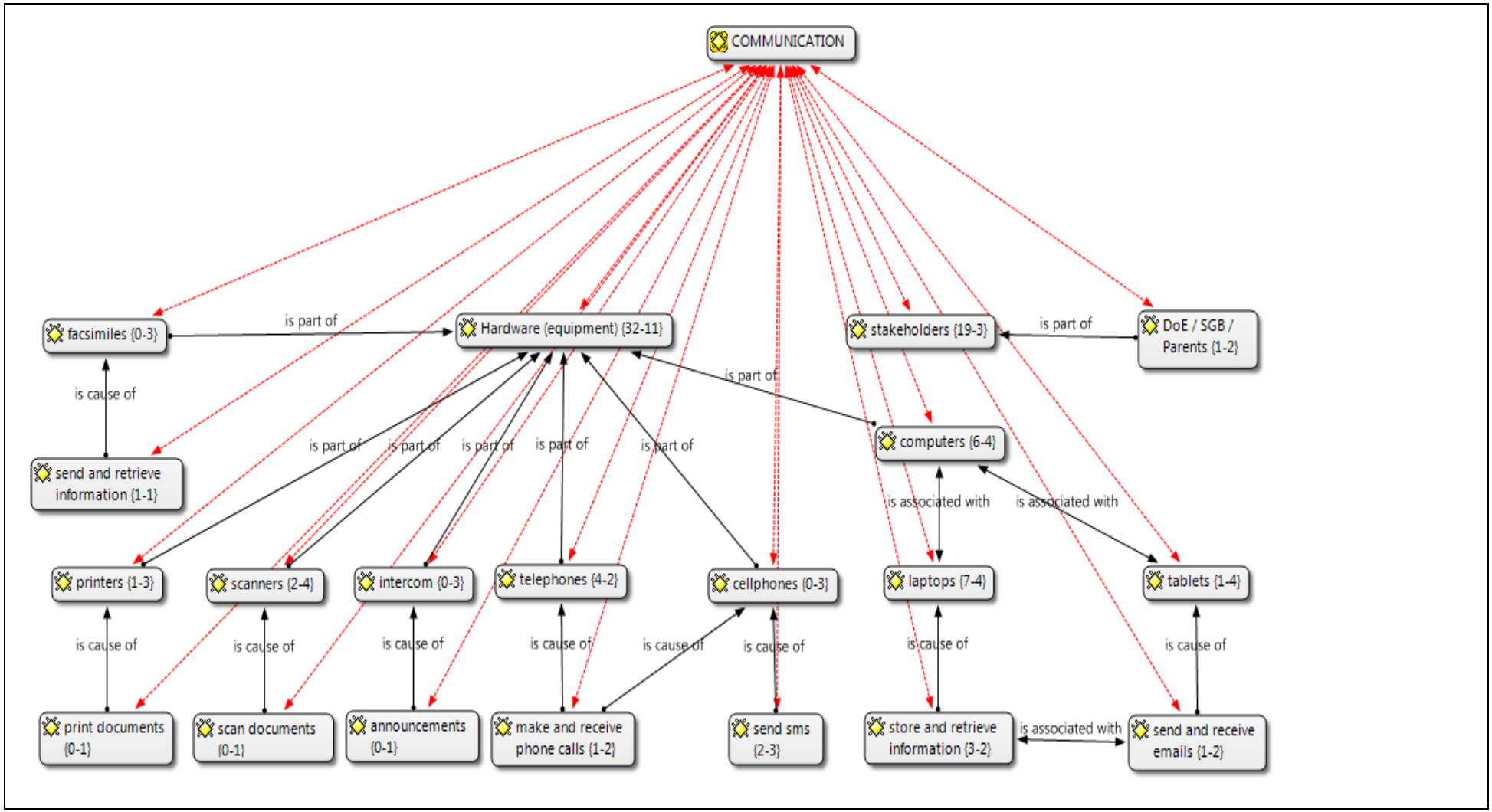



*Figure 4.5.: Communication*

As mentioned earlier (§ 4.2.1.4) communication is regarded by all interviewed principals as a very important use of ICT and therefore the researcher is compelled to elaborate in more detail on communication as a means to use ICT.

From the interviews it became clear that most participants use ICT only as a tool for communicating. The participants are also of the opinion that communication can be made easier through the use of ICT, which enables handling and broadcasting information electronically. This includes storing, managing and processing as well as communicating information (Mdlongwa, 2012). The use of ICT by principals can improve the flow of communication of administration of staff, learner and general information in schools. Inefficiencies in the communication process can slow down the delivery and quality of communication with stakeholders and create delays when conveying information. The following principals confirmed that they do use ICT for purposes of communication and administration:

> *Mainly for administrating purposes and communication such as fax documents to the department, fax documents to other stakeholders and we phone them on the telephone other stakeholders and admin we photocopy documents for our meetings, we Google for research, and we emails for communication purposes to our stakeholders and also our parents (P9: 74 – 9).*
>
> *Cell phone for communication, laptop for curriculum purposes, mainly SAMS (school administration) (P3: 45 – 9).*

Communication as sub task of leading as a management task (§ 4.2.1.2) can be seen as an important method which principals can use to influence staff members to do their best (motivate). Communication by the principal is done via cell phones through text messages and the use of Emails sent to the community, of which parents and stakeholders form part. Most schools use ICT only for basic communication, as can be seen by a participant's statement:

> *Communication with the stakeholders, sending Emails when necessary, phoning the AO's and sending correspondence through (P2: 1 – 9).*

It is clear that communication is used between parents and principals to inform them about the year plan and / or administrative information regarding the learners. Using technology such as Emails to communicate with stakeholders reduces the time it takes to get the message through. The use of Emails is also an effective way of keeping record of what was

communicated by who and when. Using Emails is a very supportive tool for an organisation (Papanastasiou & Angeli, 2008). Keeping record of Emails can be helpful if a principal needs to refer back and need some proof that they have paid for a service or product, even to review the content of an important meeting, deadline or memo. Even though the use of Emails reduces the cost of using paper, it can lead to confusion if written poorly. Therefore principals need to be properly trained in the use of Emails. This was the response of another participant regarding the use of emails:

> *I should think, like I already said the information I have I gathered by myself, If I can get someone who can give me straight formal information I can be very happy, and in all areas, to be an all-rounder, and to know everything (P1: 42 – 43).*

The stakeholders of a school which are the DoE, the SGB and the parents can be contacted via hardware such as facsimiles, printers, scanners, telephones, cell phones and intercoms. Due to this, hardware equipment information can be sent and retrieved via (facsimiles), print documents (printers), scan documents (scanners), make and retrieve phone calls (telephones), send text message (cell phones) and make announcements (intercoms) (Rogers, 2007).

Principals can make use of all these applications in order to manage their schools more efficiently (Afshari *et al.*, 2008). But this can only be done if they have the necessary equipment for using these applications. Without the training, skills and knowledge (§ 2.6), it is all in vain that schools have all the equipment, but they do not know how to use it. Some schools do have some ICT equipment, but the principal does not make use of it and leave it up to the assistant to use it:

> *I don't use it only our secretary uses it for the administration work of our school* (P5: 44 – 13)

Another participant responded as follows:

> *I do use ICT to communicate. I don't use Emails. I use only the cell phone for communication*. (P3: 20 – 36)

From the interviews it is clear that all of the participants use ICT for communication purposes even though, most communication is not done digitally:

*For teaching and communication with other schools and the area office (*P 1: 7 – 9).

*There are many uses for administration purposes. Communicating with the stake holders, sending Emails when necessary, phoning the AO's, and sending correspondence through that* (P2: 6 – 9).

*For communication with the stakeholders* (P 3: 11 – 18).

*For administration, LTSM and for communication with other schools and the area and district office* (P 4: 7 – 9).

*To communicate with the area office and the district office, other principals and other schools, with the other stakeholders and to organise functions of our school* (P6: 52 – 12).

Two types of uses of ICT for communication can be found; paper-based communication and digital communication. Paper-based communication involves print outs (hard copies) of documents while digital communication involves a computer and a screen to present the document (Nicholla, 2013). Even though digital communication is far cheaper in the sense that there is no printing involved, most school principals still print letters to send to stakeholders. In today's digital society almost everyone has at least a cell phone regardless of their place of residence or vicinity. Principals can make their duty as managers of a school far easier by sending text messages to stakeholders or Emails regarding information. Only one school is currently busy with a trial run of the text message system:

*We busy with a trial run for SMS programme where we going to send SMS meetings to our parents, no longer using letters trying to use less paper* (P9: 31 – 9).

The availability of technology equipment is one of the factors at these schools that makes it difficult for the principals to explore more modern devices and different ways of communication which can enhance their tasks of school management. Specific training is required to address the effective use of these varieties of ICT in school management. In order for principals to make use of digital communication they need to be knowledgeable about the existence of these technologies and be trained (§ 4.2.1.3) to make use of it in school management (§ 2.6.2). The department of education does supply principals with a cell phone, but this is mainly for them to keep in touch with the department, especially where there is no infrastructure such as telephone lines (§ 2.6.5). Some of these mobile phones

don’t even have technology such as WhatsApp and voice recording facilities to simplify management duties even more. It is mainly used for making calls and sending messages. These phones cannot be used for other management tasks such as planning. Using these phones for different types of planning would have simplified principals’ management tasks. A principal explained that they do make use of a cell phone to communicate, but they do not have the necessary infrastructure for telephone lines:

> *Cell phone, photo copy machine and a laptop. We don’t have a landline telephone, we don’t even have telephone lines here* (P7: 4 – 7).

Most principals only use ICT such as word processing (typing of letters), making phone calls, sending and receiving Emails. This makes them get stuck and used to only a few technologies. This shows that inadequate ICT training is visible in primary rural and township schools . If principals that are at the top of an organisation only have the basics and in some case have only had limited training, how can any organisation expect to prosper and set an example to their subordinates? As observed from the responses below, most principals make use of only the basic ICT equipment such as telephones and Emails to communicate:

> *For teaching and communication with other schools and the area office (P1: 8 – 9).*
>
> *To communicate with the area office (P7: 2 -10).*
>
> *Communicating with the stake holders, sending Emails when necessary, phoning the AO’s, and sending correspondence through that (P2: 2 – 9).*
>
> *Cell phone for communication, laptop for curriculum purposes, mainly SAMS (school administration). A copy machine to make copies and a fax. Copy machine we also use to type letters to parent (P3: 2 – 9).*
>
> *Mainly for administrating purposes and communication such as fax documents to the department, fax documents to other stakeholders and we phone them on the telephone other stakeholders and admin we photocopy documents for our meetings, we Google for research, and we Emails for communication purposes to our stakeholders and also our parents. We busy with a trial run for SMS programme where we going to send SMS meetings to our parents, no longer using letter trying to use less paper. We are going to that phase of ICT (P9: 2 - 9).*

Laptops, tablets and desktops also form part of hardware equipment which can be used to communicate with. A laptop or a tablet can be a very powerful communication device for a principal to have. This equipment can be used for storing and retrieving information, but also for sending and retrieving Emails (Asiabaka, 2008). However, it seems that the laptops available at schools are only used by the secretaries for administration purposes and not by the school principals for communication management:

> *Our secretary uses the laptop, but only for administrative purposes to get information from the SAMS system of learners and educators* (P5: 4 – 10).

Communication with staff members through Emails can save on photocopying costs, which serves as an effective use of technology for administrative purposes. Also, a lot of information can be given through regarding the school to other stakeholders and you can access your Emails from a large number of different locations (Krishnaveni & Meenakumari, 2010). Using an e-mail is without a doubt cheaper than using a telephone. Very important is that Emails can assist principals to organise daily correspondence more effectively and save it on computers. Whether it is receiving or replying to an e-mail you can attach the original message so that the recipient knows what you are talking about. With the help of ICT it is more efficient to manage an organisation like a school with large amount of correspondence to handle daily. Some principals do make use of Emails as a communication tool:

> *Obviously I'm using the telephones to call people, I'm sending e-mails, I'm receiving e-mails, I'm using Skype too* (P2: 25 – 12).

Furthermore, money can be saved because it is much quicker to move around or send information. Another advantage is that Information is delivered almost immediately and you can respond to that information immediately. This is an effective way of communication, especially for principals responsible for ensuring that every part of the school is functioning optimally (Schiller, 2003).

A tablet, on the other hand, is faster and easier to move around with than a laptop as it is not locked to one location; it also has the ability to easily copy or share your work quickly and faster. Even though one participant mentioned tablet as ICT equipment, none of them mentioned using it in the management of their schools:

> *It's technology…information technology...I thinking of computers, laptops, usage and tablets (P8: 3 – 3).*

Management using ICT can give a whole new meaning for principals; it will leave them having more time to focus on the visions of the school, since ICT is less time consuming. We can communicate with each other from miles apart using our computers and phones via e-mailing and texting, which was not the case a few years ago. The internet assists us in getting tasks done within a shorter period of time with the click of a button (Schiller, 2003). Social networks such as twitter and Facebook have improved even our social lives, and are also used by a principal:

> *I can use the skypes, I can use the Facebooks, the twitter, the WhatsApps, those things I can use them (P 2:22 – 37.)*

Technology thus affects every part of our lives (Bialobrzeska & Cohen, 2003). There is a touch of technology in everything we do in life and it continues to make our lives more and more convenient. It is going to continue to change and reinvent itself in our lives and our workplaces. With the constant improvement of technology equipment we must constantly adopt these inventions into our everyday lives (Salvi, 2012). This will also help us to improve our technology skills and the way we communicate. Technology no longer is a luxury; it has become a necessity in communication.

#### *4.2.1.6. Lack of infrastructure*

The identified theme, *lack of infrastructure*, as illustrated in Figure 4.6, is stated as the sixth theme in the use of ICT in school management.

The network hermeneutic as illustrated in Figure 4.6, shows the number of findings in relation to the selected quotations (segments of texts, as coded in Atlas.ti™) which is presented in brackets (examples [1-1]) shown in each text. The network hermeneutic which is shown as codes illustrates the lack of infrastructure in the use of ICT in school management.

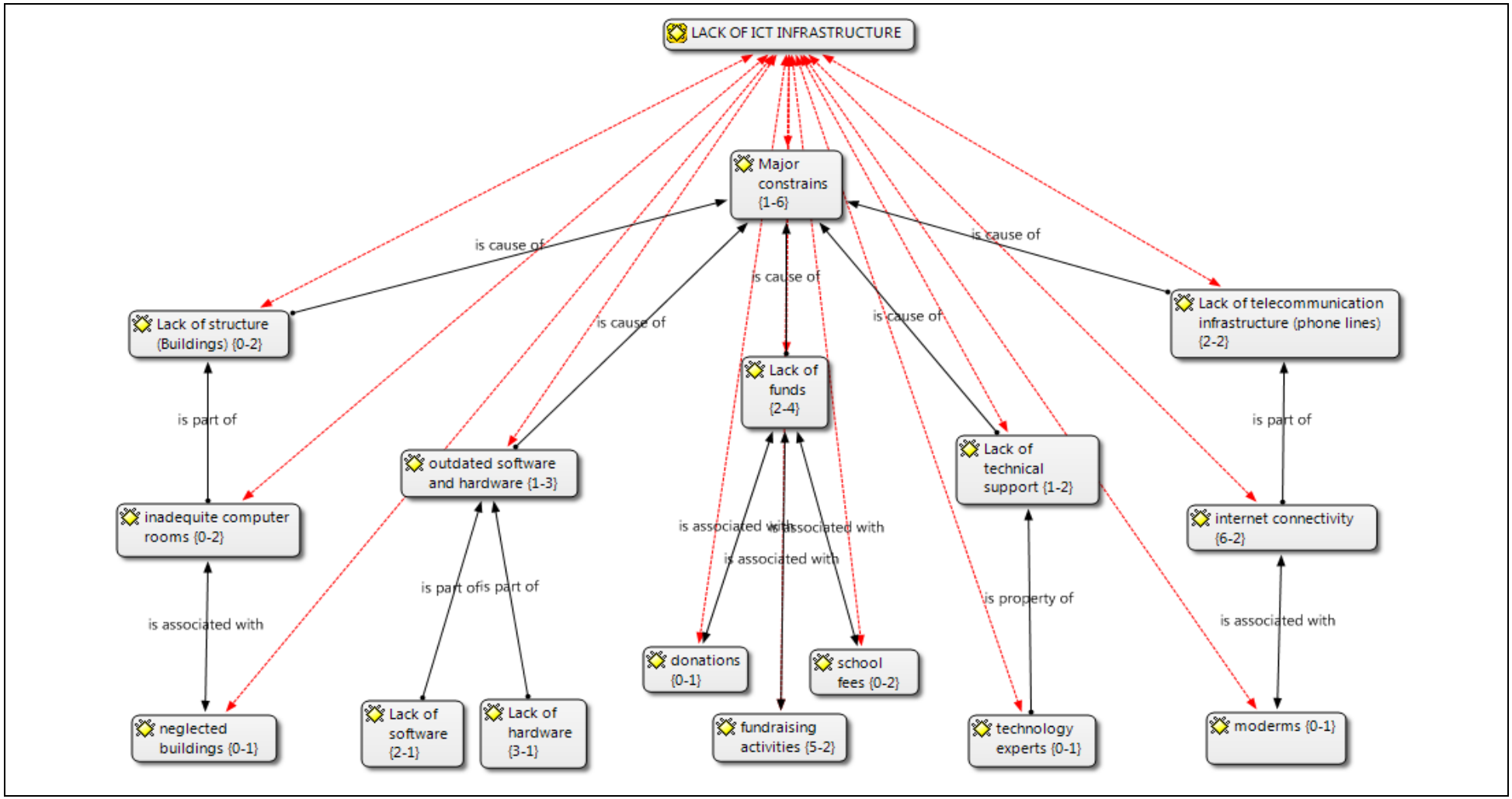



*Figure 4.6.: Lack of infrastructure in the use of ICT in school management*

One of the constraints that tend to limit the optimum use of ICT in management by principals is a lack of structure (buildings), a lack of hardware and software, a lack of funds, a lack of telecommunication (landlines) and a lack of technical staff (Nonyane & Mlitwa, 2008) . Technology and technological resources are essential in education, but without the necessary equipment these schools, and communities are going to lag behind in the line of technology innovation (Nonyane & Mlitwa, 2008) . Many of these interviewed rural and township schools lack infrastructure. This leaves a gap between schools in rural and township areas on the one hand, and the ones in urban areas on the other due to the availability of more and a variety of technical equipment and technical support.

From the interviews it is clear that one of the main reasons for a lack of ICT use and capability by primary rural and township schools is the lack of infrastructure. Most schools have inadequate computer rooms as well as neglected buildings which therefore lead to the lack of infrastructure as described in the following paragraphs. Other physical conditions are the size of principals' offices, but also electrical lightning. However, the availability of electricity is usually a major barrier to schools (NREL, 2013).

The availability of electricity will influence the decision as to whether or not install computers. Even though it is simple to connect a computer to the internet through telephone lines, a school still needs electricity to connect the computers. Without existing phone lines it can often be difficult to provide wiring for telephone connections in principals' offices. Some rural primary schools don't have telephone lines; this was confirmed by the next participant:

> *We don't have a landline telephone; we don't even have telephone lines here* (P7: 4 – 7).

The combination of heat and dust often forces the installation of expensive school computer programmes with suitable air conditioning systems, which causes further financial implications. As rural areas are usually situated in a dusty environment with no tar roads, this should be regarded as an important consideration to bear in mind (Rusten & Hudson, 2013). .

Appropriate hardware and software at schools are out-dated or non-existent. Lack of ICT equipment is visible as seen from the analysis of the interviews. These schools also lack ICT hardware (computers, laptops, cell phones, printers etc.) as well as ICT software (PowerPoint, Ms Excel, Ms Word, Internet etc) which also hinders the use of ICT for school management. Some of these principals don not have this software available:

*We only have a cell phone, a laptop and one computer that don't even work because we don't have money to fix it (P5: 33 – 7).*

Financial support for schools to maintain existing infrastructure is inadequate. This is clear from the response of one of the participants below:

*We only have a cell phone, a laptop and one computer that don't even work because we don't have money to fix it. Children don't pay school fees to fix everything. We don't even have a landline phone and no fax machine* (P5: 26 – 7)

Schools need financial resources to purchase and install ICT equipment, but also to buy the necessary software suitable for school management. A budget should also be available for on-going maintenance of equipment, replacing older equipment and obtaining more computers. A budget for on-going equipment support, repair and replacements are often neglected or insufficient. This results in principals not be able to use the equipment and start doing everything manually again, which will let them lag behind regarding the use of ICT to perform their day-to-day task more sufficiently and effectively. This is already the case as seen from the response of a participant not using ICT:

*I don't use ICT, I do everything manually. The only person who does this on the system is the clerk, because she also handles finances* (P8: 32 – 25).

The funds to purchase and install equipment should come from the Department of Education it being the highest of a school organisation, because schools represent the department of education. The most important source of funding for computer resources is allocations from school fees, fundraising activities and donations. However, these are not sufficient and lead to a lack of funds due to non-payment of school fees:

*Children don't pay school fees to fix everything* (P5: 27 – 7).

The lack of funds will lead to no use of technology because of lack or non-existence of ICT equipment . School management tasks will be done manually which will again take up a lot of the principal's time and effort.

On the other hand, school budgets have to cover the purchase of consumables needed for ICT, pay connectivity and fund maintenance to keep ICT systems running. It will therefore be necessary for a school to organise special fundraisers and reaching out to the school governing body and private companies for funding. Even though many rural schools are

section 21 schools (non-school fees paying schools) (NNSSF, 2007), schools may consider charging parent(s) a small fee which can help to cover the cost of ICT equipment maintenance. Principals in cooperation with the department of education should develop and implement strategies to guarantee sustainability of ICT.

Without the necessary funds schools will not be able to repair possible damaged equipment or upgrade software programmes (Rusten & Hudson, 2013). This could lead to less usage of technology leaving principals more frustrated and less optimistic about technology. School management will not be able to function effectively, because ICT cannot be used for school management.

Problems in rural areas are stable electricity that is lacking (Nonyane & Mlitwa, 2008) . Computers operate better when the electricity power is continuous and of consistent voltage. Many rural schools, especially older ones have an insufficient supply of electricity to endure the additional demand made by computers. Most schools gain access to the internet through modems, and only a few gain accesses to the internet by means of leased lines or Wi-Fi.

> *We don't have a landline telephone; we don't even have telephone lines here. (P7: 4 – 7).*

The lack of general infrastructure and roads of a poor quality are some of the general challenges in rural areas as well as in rural and farm schools (Nonyane & Mlitwa, 2008) . The lack of infrastructure has a negative influence on the implementation of ICT in rural areas, as it puts principals in a position of not being able to use ICT for school management (Mashinini, 2008)**.** This is one of the reasons why schools in rural communities make less use of ICT than of urban communities, because the availability of ICT is less or non-existence. ICT infrastructure in South Africa is overall good, but the opposite is true for most rural areas (Mashinini, 2008). For this reason it is almost understandable for principals in these rural communities to not use ICT.

#### *4.2.1.7. Attitude of Principals towards the use of ICT*

The identified theme, *attitude of school principals*, as illustrated in Figure 4.7, is stated as the seventh main theme of training needs of school principals in the use of ICT in school management.

The network hermeneutic as illustrated in Figure 4.7 shows the number of findings in relation to the selected quotations (segments of texts, as coded in Atlas.ti™) presented in brackets

(examples [3-1]) showed in each text. The network hermeneutic which is shown as codes illustrates participants' attitudes towards the use of ICT in school management.

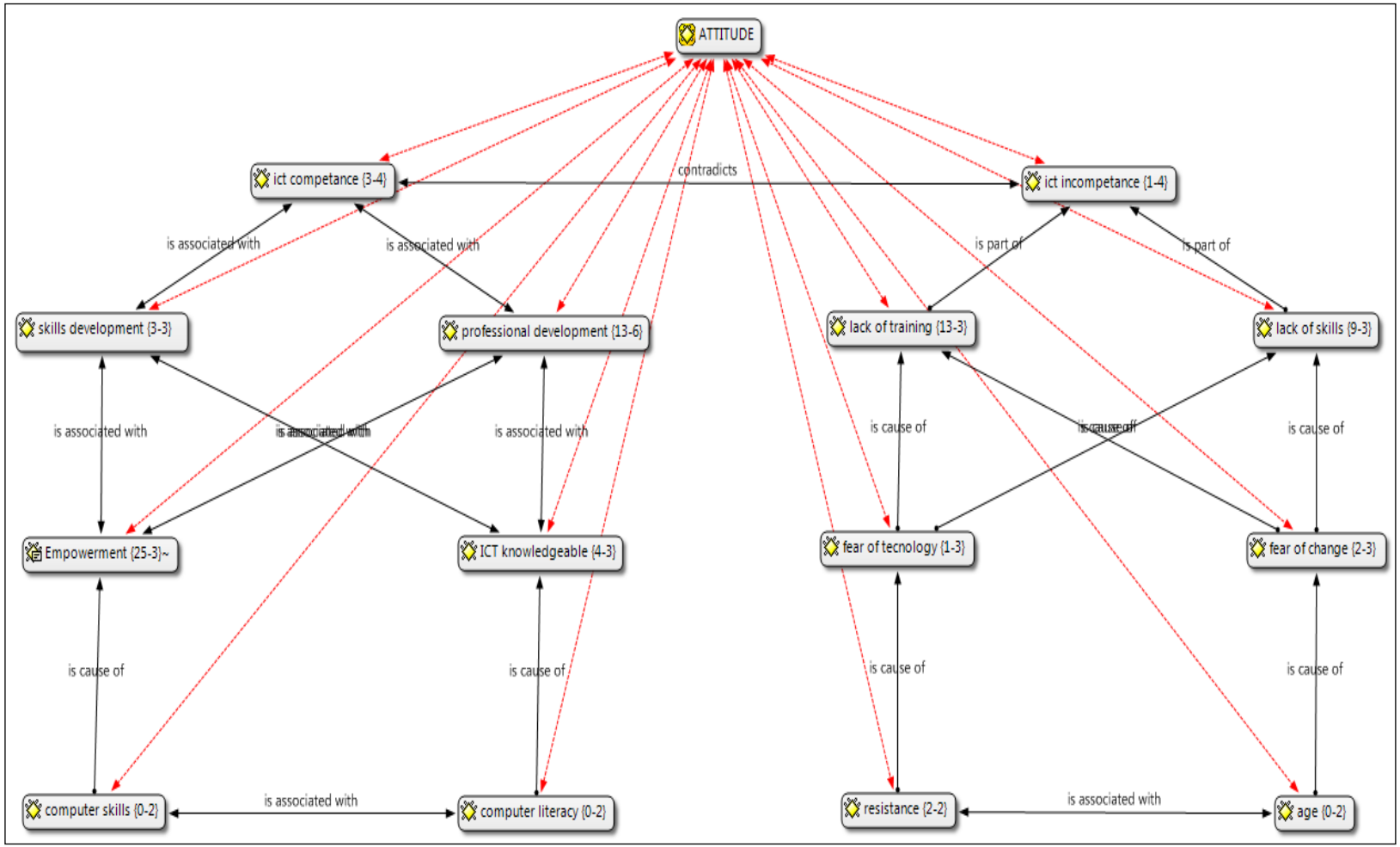



*Figure 4.7.: Attitude towards the use of ICT in school management*

According to the findings, rural and township primary school principals hold a positive, but also negative attitude towards the use of ICT. This is coherent with other studies carried out concerning attitude of school principals regarding ICT in different countries, such as Cyprus (NetDay., 2008; Papaioannou & Charalambous, 2011). Even though these school principals have a positive attitude towards ICT some of them do not have computer knowledge and neither are they computer literate:

> *Well, as a principal I'm not that much savvy when it comes to ICT, as you can see in my office I don't have a computer although I have a personal laptop, but I don't use it that much, but its mainly used by the clerk for assistance as a way to communicate with the parents and others stakeholders for the benefit of the school (P9: 40 – 12).*

Another participant responded as follows:

> *I don't use it frequently, because I'm not so much compliant. To be honour, I don't use it frankly cause I'm not computer literate (*P8: 22 – 23).

Some participants do have a positive attitude towards the use of ICT:

> *It allows me to keep up with the new trends. It's also that a person should be innovative and inquisitive, makes you to become more knowledgeable and that's the only way how you can improve your knowledge of ICT* (P11: 11 – 47).

Another commented:

*So my ICT skills at lacking so I wanted to do something about it* (P9: 66 – 38).

Examining the results from the interviews some principals are positive and attended ICT courses and training in their own time. Computer skills have been upgraded through training. This shows that these principals are willing and motivated to improve their ICT skills and empower themselves in their workplace. This was evident from some participants:

> *I'm a nova in fact I will be going for my ICT extra lessons at Vuselela in July* (P9: 55 – 21).

> *I only have a certificate for a basic computer course. I taught myself with what I know (*P4:26 – 27).

Age and resistance are associated with each other, whereas age is a cause of fear of change and resistance which is the cause of fear of technology (Du Toit, 2011; Felix *et al.*, 2013). The more experience or exposure one gains with ICT the less visible the anxiety towards the use of ICT will be. The more one uses technology the more positive one will be towards its abilities and what ICT has to offer (Felix *et al.*, 2013). The fear of technology as well as the fear of change contributed to the lack of training and the lack of skills which ultimately leads to ICT incompetence (Du Toit, 2011). It is also possible that some of the older generations struggle to adapt to the use of technology (Du Toit, 2011). A lack of information regarding how technology can simplify their lives creates a fear technology. Therefore, principals need to be educated regarding the advantages ICT has for school management. Without the proper education regarding ICT the fear of technology will not be overcome (Du Toit, 2011). ICT must be seen as a tool that can make their management tasks so much easier, faster and more effectively. Training in the use of ICT for school management is therefore a necessity for principals.

Age of a principal also has an influence on the attitude of a principal regarding the use of ICT (Du Toit, 2011). This can be seen from a principal's response that only has a few years left in the education system:

> *I am old now, I only have five months to go then I go on pension* (P11: 11 – 45).

> *I'm not an expert concerning ICT. I'm very lazy concerning technology*
> (P11: 11 – 30)

It is important for a principal to take initiative and encourage a positive attitude in staff members to use ICT in administration and management of a school. This effort will be an advantage in the changing age and time that we live in regarding ICT in innovations. The positive attitude of a principal will change the way a school is managed. Activities and managerial tasks will be performed in a short period of time and be more organised. A principal with ICT, such as a computer, available in his office will be more encouraged and enthusiastic to use these technologies since it is available. Some of the interviewed principals don't even have a computer in his / her office and was negative towards ICT:

> *Well, as a principal I'm not that much savvy when it comes to ICT, as you can see in my office I don't have a computer although I have a personal laptop, but I don't use it that much, but its mainly used by the clerk* (P9: 69 – 12).

It seems that a negative attitude among some principals may be visible as a barrier to themselves, as responded below.

> *I'm not an expert concerning ICT. I'm very lazy concerning technology*
> *(*P11: 11 – 30).

This negative attitude of principals towards the use of ICT has implications for education. Management tasks may either take a longer period of time to be completed or not completed at all. Principals should therefore be convinced of the value and the benefits of ICT for the management of their school which can be done through appropriate professional ICT skills development focusing on the use of ICT for the management of schools as mentioned in Chapter 2 (§ 2.2.5). Negative attitude such as the following comment from a principal is not supposed to be one of a leader:

> *I don't use the ICT too much, because it's a lot of work (P11: 11 – 52).*

This negative attitude can be due to a lack of training. They have not been trained to use ICT; therefore they are not aware of the benefits that ICT can bring to the management of the school. As technology changes principals training should be updated on a regular basis provided by the department of education. If these principals are trained regarding the use of ICT in school management (§ 4.2.1.3), they will demonstrate a more positive attitude towards the use of ICT for school management. This will lead to more skilled and effective principals performing better in the management of their schools.

Skills development and professional development are associated with ICT knowledge and empowerment, which is associated with ICT competency (Clayton *et al.*, 2009) and a positive ICT attitude. Computer skills contribute to empowerment which ultimately also contributes to skills development (UNDESA, 2013) and a positive attitude. Computer skills are associated with computer literacy, which cause one to be ICT knowledgeable (§ 2.6.2). ICT knowledge is associated with skills development, as well as empowerment, positive ICT attitude, contributing to professional development, which is associated with ICT competence (§ 2.6). Using ICT contributes positively to the personal development of principals. Principals with ICT skills and a positive attitude towards ICT will be able to manage the school more effectively and efficiently. For this reason it is important to train principals regularly to use ICT in school management in order to develop a positive attitude towards ICT. However, some principals are prepared to overcome the barrier by really doing something about it, by cultivating a positive attitude towards the use of ICT in the management of their school, as they see it as an important component in effective school management.

*It allows me to keep up with the new trends. It's also that a person should be innovative and inquisitive makes you to become more knowledgeable and that's the only way how you can improve your knowledge of ICT* (P11: 11 – 47).

*I am old now, I only have five months to go then I go on pension* (P11: 11 – 37).

Exposure to ICTs also creates a more positive attitude towards their use (Cavas *et al.*, 2009). It is unlikely for principals or any other leaders to have a positive attitude towards ICT if they are not- exposure to these technologies (UNDESA, 2013). On the other hand they are not exposed because many of these rural and township primary schools do not have the necessary infrastructure to make use of such facilities. This barrier of non-exposure will lead to uninformed leaders that will therefore not know what the benefits of these technologies are and how it can simplify their tasks as school managers.

#### *4.2.1.8. Quality of Management*

The identified theme, *quality management*, as illustrated in Figure 4.8, is stated as the eighth theme in the use of ICT in school management by school principals.

The network hermeneutic as illustrated in Figure 4.1 shows the number of findings in relation to the selected quotations (segments of texts, as coded in Atlas.ti™) which is presented in brackets (examples [3-2]) showed in each text. The network hermeneutic which is shown as codes illustrates quality management in the use of ICT by school principals for school management.

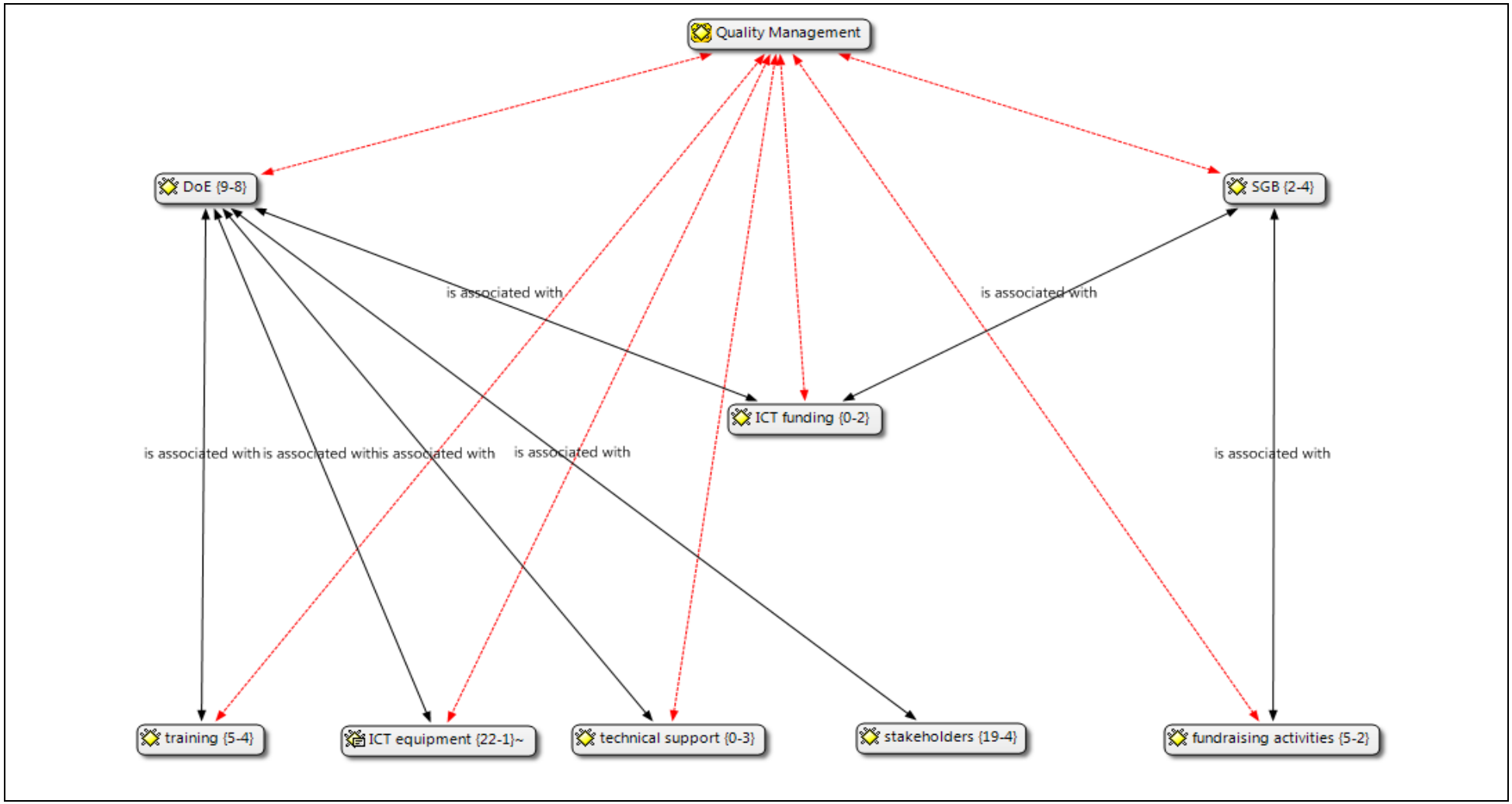



*Figure 4.8.: Quality Management*

Principals that are competent and at ease using technology can play a leading and supportive role in the use of ICT in the management of schools.(Gronow, 2007). The use of ICT in quality management depends on the principal's leadership and knowledge of technology. A principal that uses ICT in school management will realise the importance of quality ICT management and will therefore be able to successfully implement ICT use in the school. The department of education can support primary principals by providing them with quality ICT training, equipment as well as ICT technical support for quality school management. Support from the department of education will give principals a sense of belonging and importance in what they need to accomplish regarding quality ICT management in school (§ 2.6.4). The department needs to train (§ 2.6.) principals in the ICT skills that are lacking as part of service delivery for ensuring quality ICT management.

The lack of ICT infrastructure has an influence on quality ICT management. A lack of infrastructure in schools can have some implications for school management. This can lead to no or a slow pace of communication and sharing of information which can lead to a less flexible organisation. It will also lead to a less efficient school with no or slow development in ICT (Gronow, 2007).

Without the necessary technical support principals cannot be expected to use ICT to effectively manage good quality of the school:

> *Cell phone, photo copy machine and a laptop. We don't have a landline telephone, we don't even have telephone lines here* (P7: 33 – 7).

Technical support includes opening of the websites, failing to connect to the internet, malfunctioning of computers and expecting principals to work with old computers. These are only a few examples of the technical support needed by principals to ensure quality management. A lack of technical support can negatively influence quality management of a school, which can lead to a delay of important correspondence and information. Poor communication will at the end of the day lead to a cutback of communication, meaning information is not frequently shared with stakeholders. ICT support is important because it encourages ICT sustainability in schools (Wallace, 2014). Time is also wasted by waiting for equipment to be fixed. Having a support system in place will assist principals to save time on fixing software and hardware problems when needed. Poor management of ICT can lead to technical breakdowns which lead to major financial implications such as continuous replacement of equipment.

Financial constrains influence the quality of management of a school because principals are not able to use ICT to manage the school due to damaged and dysfunctional equipment:

> *We only have a cell phone, a laptop and one computer that don't even work because we don't have money to fix it. Children don't pay school fees to fix everything* (P5: 28 – 7).

In order for quality management to be effective in a school, school principals need ICT infrastructure and ICT technical support (§ 4.2.1.7). Hardware and software programmes also have an influence on a schools' quality management relating to the use of ICT, as unavailability leads to poor service delivery. Training in the use of hardware and software programmes can contribute to positive quality ICT management in schools by a principal as training is needed in these areas:

> *The computers got sections like PowerPoint, Word and Excel. I would like training in it storing information in it, to do the finances in it, teaching the children with it. There are a lot of thing I will be able to do with it* (P8: 53 – 45).

Another consideration to ensure quality management is to educate principals in how ICT can benefit their day-to-day activities by quality managing of the school more. Some principals accept ownership of their own illiteracy regarding the use of ICT in school management. A principal mentioned that he is empowering himself to be a better school manager by attending an ICT course to improve his ICT skills:

> *As I said my ICT knowledge is very, very limited, it's a disadvantage to me as I'm indicating that I am now registered for a course, a part-time course which I'll be doing in the evening after I knocked off from work. So, my ICT skills at lacking so I wanted to do something about it* (P8: 66 – 38).

Another participant admitted not using ICT in school management and being illiterate regarding ICT. However, this principal does not even seek opportunities to enhance or empower his ICT literacy, which can hamper the quality of management in his school:

> *I don't use it frequently, because I'm not so much compliant. To be honours, I don't use it frankly cause I'm not computer literate* (P8:22 – 13).

The quality of managing a school can improve through the use of ICT by a principal (Ahmad *et al.*, 2012). By implementing quality ICT management can improve an organisation's quality of deliverance and the quality of school management. Correspondence and a huge amount

of information can be sent and received faster improving the quality and productivity of management. Relying on an assistant to assist you in using ICT does not guarantee the quality of management as much as when a leader makes use of ICT by himself. As leaders, principals should establish a clear responsibility and accountability for managing key activities for the quality day-to-day management of the school. Principals need to be involved ensuring that information and data is sufficient and accurate. Some participants leave the use of ICT to ensure quality management totally to assistants:

> *I don't use ICT, I do everything manually. The only person who does this on the system is the clerk, because she also handles finances (P8: 87 – 25).*

Quality management is still not a reality in some primary rural and township schools due to the fact that principals are not competent to use ICT effectively in school management. Hence they cannot deliver quality management of their schools.

## 4.3. SUMMARY

In this Chapter the researcher analysed data collected from interviews. From the data analysis eight (8) themes crystallized namely: (a) ICT Concept (b) Uses of ICT in Management areas and management tasks, (c) Training needs of principals, (d) Uses of computer software ,(e) Communication, (f) Lack of Infrastructure, (g) Attitude towards the use of ICT, as well as (h) Quality Management in the use of ICT in school management.

The theme ICT concept (§4.2.2.1- Figure 4.1) gave an indication of the principals' views regarding ICT. Most leaders see ICT as information technology; others viewed ICT as communication technology. Another participant had no idea the meaning of the abbreviation ICT and had to be assisted by the interviewer. None of these participants viewed the concept ICT as Information Communication Technology.

After realising what ICT entails, principals were able to give their opinion on how they use ICT in the management tasks and management areas (§ 4.2.2.2 –Figure 4.2) to ensure optimal managing of their schools. What was surprising is that principals do use ICT, but only a few uses ICT in the day-to-day management of the school. Even though different sections of ICT can be used for management areas and management tasks by principals, most of these principals use ICT only for purposes of communication.

Limitation of the use of ICT in school management is due to a lack of ICT training (§ 4.2.2.3 – Figure 4.3). Most principals lack ICT knowledge, ICT skills and ICT training. Even though principals realise the importance of ICT in school management, only one school leader

mentioned attending an ICT course to empower himself in ICT. Although some principals admit to their ICT illiteracy, they do not make an effort to empower themselves.

Lack of empowerment in uses of ICT software (§4.2.2.4 – Figure 4.4) has been identified as hindrances to use ICT. Some principals have knowledge of different software programmes, but only make use of SA-SAMS for school management. As SA-SAMS is distributed freely to schools, but it is not compulsory to accept it, can be one of the reasons why interviewed principals do not make use of other ICT programmes for school management. However, SA-SAMS is mainly used by the school assistant and not by the principals.

All interviewed principals make use of ICT as a means of communication (§4.2.2.5 Figure 4.5). Most are still typing and printing letters and some are sending Emails. Most are using cell phones to communicate, while only one principal started to implement the SMS system as a means to communicate. But, none of these interviewed principals are using Skype or conference calls in the management of their school.

Lack of infrastructure (§4.2.2.6 – Figure 6) is one of the constraints that prevent principals from using technology in school management. The most common lack of infrastructure visible from the interviews was the availability of telephone lines. Principals also lack finances which make it difficult for them to upgrade or maintain existing infrastructure. As these interviewed schools are situated in rural and township areas, lack of infrastructure and poor quality roads are some of the challenges that contribute to lack of infrastructure.

Most principals have a positive attitude (§ 4.2.2.7 – Figure 4.7) towards the advantages of ICT, but a negative attitude towards the use of ICT in school management. The negative attitude is due to the lack of ICT training, skills and knowledge as well as lack of support to use ICT in the management of their school. Age by some principals also plays a huge role in the negative attitude of principals that fear change and technology .This was confirmed by a participant mentioned being too old to learn new things.

Principals find it difficult to maintain quality management (§ 4.2.2.8) due to ICT illiteracy. Principals are not educated enough to use ICT effectively in their day-to-day tasks to manage the school. Through ICT training the quality management of a school can improve as some principals empower themselves by attending ICT courses.

Each of the themes was discussed, together with relevant direct quotes of principals. The discussion of data has been presented in graphical networks which were made possible using the computer software Atlas.ti™.

In Chapter 5 the researcher discusses the findings interpreted from the data analysis done in this Chapter as well as the possible implications of the findings. Recommendations are made on these implications.

# CHAPTER 5:
# SUMMARY, FINDINGS AND RECOMMENDATIONS

## 5.1. INTRODUCTION

In this Chapter a summary is given regarding the most important aspects of the dissertation. For purposes of this review, a summary of the main ideas of each Chapter is given. Following the research objectives, the results from the literature and the empirical research helped in identifying the training needs of principals with regard to the use of ICT in school management. The findings of the research are discussed in line with the research questions. Recommendations are formulated resulting from the qualitative investigation. Recommendations on different levels are proposed. Limitations of the study are explained and the Chapter concludes with a personal research experience of the study.

## 5.2. SUMMARY OF THE RESEARCH

The purpose of this section is to give a summary of the most important aspects of the different Chapters in the dissertation.

In Chapter 1 the research problem and motivation (§1.2) was constructed and discussed based on the use of ICT by principals in the management of their schools. After this, a preliminary review of literature followed (§1.3). The preliminary literature review firstly clarified the relevant concepts (§1.3.1) used in this research, which refined how the researcher interpreted certain main concepts found in the literature. In the preliminary literature review the researcher discussed principals as leaders of change as well as leaders in the use of ICT (§1.3.2). Different uses of ICT in school management (§ 1.3.3) have been highlighted in this specific Chapter. Attention was also given to training needs of principals regarding the use of ICT in school management (§1.3.4). Subsequently, the research problem (§1.4) was posed and discussed. The purpose of the research followed was broken down into specific research aims (§1.5). A brief discussion of the research design and methodology (§1.6) followed indicating a qualitative, phenomenological study. The role of the researcher (§1.6.3) was also elaborated upon and followed by the discussion of a selection of the social networks (§1.6.4). After which the selection of the social network, the selection of participants (§1.6.5) were discussed followed by the strategies of data collection (§1.6.6). Subsequently in this Chapter, a discussion of the data analysis (§1.6.7) was followed by the steps to ensure trustworthiness (§1.6.8). The considerations that were taken into account

were followed and adhered to with regard to the ethical aspects of the research (§1.7). Finally, the expected contribution of the study has been indicated (§ 1.8).

In Chapter 2 an overview of the use of ICT in school management was given. This specific Chapter starts with a concept clarification of terminology used throughout the Chapter (§ 2.2). Concepts include ICT, educational management, training, rural, township and professional development. After which the theoretical framework concerning different management models which correlate with this research was given (§2.4). In order to conceptualise the theoretical framework for this research, different management leaderships and models were reviewed and summarised with the intent of identifying models / theories as a point of reference for this study. From the described models, the management task–area model (§ 2.4.3) was chosen as the lens through which the phenomenon of the use of ICT in management is viewed. Tendencies regarding current uses of ICT in school management (§ 2.5) in different countries have been pointed out; internationally and locally (South Africa). Both developed and developing countries have been identified and discussed with regards to the use of ICT in school management. Chapter 2 concluded with a discussion of the training needed for using ICT in school management (§2.6). Training needs, as identified in the literature, in the use of ICT in school management includes ICT training programmes, ICT knowledge and ICT skills.

Chapter 3 addressed the research methods, and strategy of inquiry that was used in this research. A summary of the research design was given along with the paradigm in which this research was embedded. As the researcher aimed at understanding and interpreting how principals make use of ICT to manage their schools, the interpretive paradigm was chosen as a research lens.

The qualitative method (§3.2.2) was used as a research approach and chosen through the interpretive paradigm to obtain descriptive information with regard to the use of ICT in the management of a school. A phenomenological study design (§3.2.3) and method of approach was chosen within qualitative research. This approach gave an understanding of principals' experiences and of their training needs regarding the use of ICT in their school management. The study was done through the experiences given by the principals with regard to their use of ICT to manage their schools.

Furthermore, the population and sampling (§3.2.4) of the research was specified. The research was done in the Matlosana area of the North West Educational Provincial Department where only ten primary rural and township schools were used for this research.

The researcher used a purposive sampling technique for this research. The researcher approached only principals of primary rural and township schools to determine their experience and knowledge in the use of ICT to manage their school. Participants were selected according to the type of school (primary rural and township schools), designation of principals and the availability of ICT at their schools. The method of data generation (§ 3.3) was discussed at length in Chapter 3. Semi-structured interviews were conducted by means of pre-determined questions set by the researcher. Interviews were audio recorded for purposes of record keeping and trustworthiness (§ 3.5) of the research. The hermeneutic approach to data analysis was referred to during the transcribing process (§ 3.4). Individual interviews were transcribed keeping correctness at mind completeness; the transcriptions were verified by two independent individuals. Transcriptions were analysed and coding was done using the computer software programme Atlas.ti™. Chapter 3 concluded with a reference to the ethical aspects (§ 3.6) taken into account during data collection.

The analysis and discussion of the qualitative data was the main focus of Chapter 4. The qualitative data have been analysed and transcribed using the software computer programme Atlas.ti™. Through open coding, the researcher initially identified 169 codes. With the help of selective and axial coding as well as the use of the Atlas.ti™ networking function, the researcher eventually managed to reduce the 169 codes to a total of 8 themes. All open codes that could be grouped together were linked to a certain theme.

From the analysis of the individual interviews, the different findings and codes were placed within eight (8) themes, namely ICT Concept, uses of ICT in management tasks and management areas. Training needs of school principals, uses of ICT computer software, communication, lack of infrastructure, attitude of principals towards the use of ICT and quality of management. Each of these themes was discussed separately as well as in their interrelation. This gave a great deal of clarification to the research question. More in-depth examination of these eight themes were discussed with the researchers' supervisor and co-supervisor to identify the ICT needs of principals in order to use ICT effectively in the management of schools.

After more in-depth examination of these eight themes, as well as the discussion with the researcher's supervisor and co-supervisor, the researcher identified the training principals need with regard to the use of ICT to manage their schools effectively (§ 4.3.3.2).

In Chapter 5 a summary of an integrated interpretation of the research is presented. The findings of the literature review, reported in Chapter 2, confirmed that there is little

knowledge or research done regarding the use of ICT by principals for school management purposes. In the existing literature there is not enough research done regarding the training needs of principals in primary rural and township schools. For this reason the researcher had aimed to determine the training needs of primary rural and township schools concerning the use of ICT for school management. The conclusion is that the reason why principals are not trained regarding the use of ICT for school management, it is not due to a single isolated factor or reason, but due to a combination of a number of relevant factors and reasons. Recommendations are given on different levels to assist principals regarding the use of ICT. In the next paragraph the researcher focus on the essence of the research namely the findings.

## 5.3 FINDINGS OF THE RESEARCH

The findings that follow are made on the basis of the literature review as well as the analysis of the data collected.

### 5.3.1 Findings related to the research aim one

With regard to research aim one, namely the importance of the use of ICT in school management (§1.4), the following main findings were made:

ICT can be used and incorporated in all management tasks and management areas which will allow principals to perform their duties easier, faster and more accurately (§ 2.4). The interactive and interrelated nature of the different management areas and management tasks were illustrated in Diagram 1, Chapter 2.

***Use in management tasks:***

- Using ICT in school management, for specific planning, helps in improving matters relating to financial planning and budgeting in schools (§ 2.4.3.1). These tasks can be performed by means of software programmes such as Excel and PowerPoint presentation when presenting the budget. By using ICT, communication with parents and stakeholders can be done easier, faster and more convenient informing the community about school related matters.

- Organising managerial activities, including the distribution of responsibilities to staff members can be done faster with the help of ICT (§ 2.4.3.1). Through the help of ICT software such as Excel can be used for setting of timetables as well as MS Word which can be used for setting agendas and typing letters. Organising of

resources and systematically grouping of a variety tasks in various areas can be simplified with the use of ICT.

- A principal should lead the staff members of the specific school by making use of ICT and setting an example through using ICT himself / herself to manage the school (§ 2.4.3.1). It is important for staff members to have a positive role model whom they can look up to and who can set an example. A principal would be a perfect role model as he / she is in a position of authority.

- Controlling what staff members do and how well it has been done can be determined faster with the use of ICT (§ 2.4.3.1.). Reports on work done can be E-mailed to the principals with proof of progress and vice versa. Receipts of purchasing of goods, requisition forms and inventories can be controlled and managed using ICT.

***Use in management areas:***

- ICT can assist with the managing of administration affairs involving staff and learners' information. Principals can use ICT to manage educator and learner information more effectively and efficiently by using ICT (§ 2.4.3.2). Access to up-to-date information of learners and educators are available anytime and anywhere, which simplify management of staff and learners' affairs.

- The maintenance of physical facilities and equipment of a school can be controlled, managed and kept up to date more effectively by the principal through the use of ICT (§ 2.4.3.2). Management of physical resources can be simplified and less time-consuming by using ICT. Inventories for available facilities and equipment can be done by means of a spread sheet. The use of spread sheets simplifies recordkeeping of inventories and can be stored safely.

- The relationship between stakeholders and the school can be built through a better communication channel by means of ICT (§ 2.4.3.2). Through the use of ICT parents and stakeholders can be informed about meetings. Receiving and respond on relevant activities is done almost immediately. Communication channels increase more effectively via E-mail, SMS and chat rooms, simplifying community relations.

- ICT plays a vital role in making administration in a school less burdensome. ICT offers possibilities which improve and develop administration; strengthens the capability of handling administrative work more effectively. The information system SASAMS assists schools with administration and management relating to learners and staff information. SA-SAMS supply schools with an effective and easy system which consist aspects of school management.

### 5.3.2. Findings related to research aim two

With regard to research aims two, namely to determine from literature the role ICT currently plays in the management of schools (§ 1.6 & § 2.5), the following findings were made:

***Developed countries***

Managing educators' information through the use of ICT is widely used by schools in European countries (§ 2.5.1.1). European schools have achieved effective school administration by the use of ICT in areas like financial management and managing of learners' progress and educators' information. In some European countries, information systems have been developed for registration of learner records and learner progress. Information systems are available in several South East European countries but are not utilised to its full potential as it is still developing and being maintained (§ 2.5.1.1.1). A lack of management and of human resources is some of the challenges experiencing in the use of ICT in South East Europe. In England, an ICT system has been developed to support principals in their management of the school. An Online Matrix management system which assists principals on issues such as links with other schools is currently used in England to obtain essential information (§ 2.5.1). A professional supportive programme regarding the use of ICT is also available in England to build principals' skills and knowledge of the use of ICT in management. In Cyprus, principals have a positive attitude towards the use of ICT for management purposes; however, they still need training to apply ICT in practice. Most Cyprus school principals do not use ICT for administrative use due to the lack of software programmes designed for administration and the refusal of change by school principals (§ 2.2.5.1.1.1). Educational organisations in the United Kingdom strongly rely on ICT. Professional support for principals regarding the use of ICT is currently available in England (§ 2.5.1). Communication of information is distributed e-mails, while practical information are made available to staff through intranet.

International countries such as Australia and South Korea created an information system for the purpose of assisting school administrators with their administrative duties of keeping

record of personnel information as well as learners' records (§ 2.5.1). South Korea makes use of an Education Information Disclosure System where the entire learner' information is accessible to parents and learners at all time through online system. Learners' information is stored on a database. In Australia the use of management information systems by primary principals has reduce their workload and made management duties more effective (§ 2.5.1). The use of information systems in Australian schools helped principals with decision-making and control of their school. Most schools in Canada are currently connected to the internet (§ 2.5.1). Canadian principals do make use of ICT in school management; however they do face some challenges such as lack of network infrastructure and slow or unstable wireless access. Some schools use out-dated technology which frustrates principals and hinders the use of ICT in management.

### ***Developing countries***

In Brazilian schools "the internet" is mainly used as a research tool by staff members and principals (§ 2.5.1.1.3). Challenges such as basic access to technology and technical skills are experienced in Brazil, which leads to a barrier to develop technical skills. In Nigeria, as well as neighbouring countries, some principals "do not make use of ICT in the management of their schools". Yet they still keep records in files and filling cabinet whereby they take up space and collect dust (§ 2.5.2.2). There are some schools in Nigeria that still register learners manually and maintain educators as well as learners' information manually (§ 2.5.2.2). This can be very time consuming with a great possibility of misplacing documents. Although ICT equipment and computers are available in Lesotho schools, principals lack adequate ICT professional development programmes to use ICT in schools (§ 2.5.2.2). This is further influenced by the lack of infrastructure to use ICT in the management of their schools. Kenyan schools have yet to implement ICT in the management of their schools. Factors exists there hinder the implementation of this technology such as infrastructure and principals' attitudes towards change (§ 2.5.2.1). Uganda faces difficulties such as lack of electricity; etc, yet ICT still plays a significant and key role in their educational system. Uganda also puts ICT policies in place to enhance the use of ICT in management (§ 2.5.2.1). Uganda regards education as important and therefore aims to provide quality education in a timely and cost-effective manner. Tanzania makes use of an Educational Information Management system (EMIS) to manage educational data and information. The purpose of this being used by principals are to improve the management in their schools (§ 2.5.2.1). With the assistance of the EMIS it is expected from principals to collect and distribute educational data to stakeholders on a regular basis.

In South Africa, even though rural schools have some technologies, principals have little to no access to computers and the internet (§ 2.5.3). This is due to rural areas being situated in the outskirt of a town and lacking infrastructure for use of ICT. The Department of Education published the White Paper on e-Education to ensure the use of ICT in the education sector. The Department of Education developed a computerised educational school management system (SA-SAMS) to assist principals with management and administrative tasks in schools. Although rural schools in South Africa do have some technologies available, they have little or no access to computers and the internet. Challenges such as lack of infrastructure and the fear to cope with technology change hinder the effective use of ICT and their ability to manage their school.

### 5.3.3. Findings related to research aim three

With regard to research aim three, namely to empirically determine the training that principals in township and rural schools need in the use of ICT in school management (§ 1.6 and Chapter 4), the following findings were made. However, these findings are only applicable on the interviewed principals and are not generalised in any manner.

***Training in the advantages and use of ICT in school management***

Some principals have a misconception on the meaning of ICT and view ICT as computers and laptops. Due to this misconception these interviewed principals do not really know what ICT can do in the management of their schools. They are not aware of the advantages concerning the use of ICT in school management. The majority of principals do use ICT, but not in the management of their schools (§ 4.2.2.2). Therefore, training regarding the advantages and use of ICT in school management are needed. In order for these principals to use ICT effectively in school management, they need to be trained regarding the advantages on the use of ICT in the management of their school.

***Training in the use of ICT in management tasks and management areas***

The majority of principals do have ICT equipment available, but do not use ICT in the management of their schools (§ 4.2.2.2). The use of a telephone seems like the main ICT tool currently used by these principals for management tasks and areas. Several principals delegate the use of ICT to the teachers and assistant due to little or no knowledge on how to use ICT. As ICT is used limitedly by interviewed primary principals, one of the needs is to train principals on how to use ICT in the management of schools. Training on how to use ICT in school management will improve the quality in which principals manage their school. The

interviews revealed that there is a need for training to use ICT for school management (§4.2.2.3). Principals do have an idea on how to use ICT, but several principals do not use it for management purposes. None of these principals received any formal training on how to use ICT, especially in school management. Training was mainly given for school secretaries as well as teachers as of how to use ICT in teaching. However, the interpretation of the data from the interviews revealed that ICT training was mainly obtained by principals own initiative rather than through formal training. At the end of the interview principals were asked in which areas they need training regarding the use of ICT and the response of most principals was in all the different programmes that will assist them in school management.

### ***Training in the use of certain ICT software programmes***

Majority of these school principals rely on either the secretary or a teacher to assist them to use ICT. This has the implication when the secretary is not available that principals cannot work. The most important ICT training that principals need concerning the uses of ICT computer software is basic computer training in different software programmes such as MS Word,Ms Excel, PowerPoint and the internet (§ 4.2.2.4). Training in the use of these software programmes will enable principals to perform their day-to-day tasks in managing the school easier and more effectively and efficiently. Some principals even specify some software such as SA-SAMS that they need training in. Other principals can't even use the SA-SAMS software to access information about educators or even finances. This implies that they do not use this software in the management of the school, although SA-SAMS were specifically designed to assist principals with management tasks, a majority of school principals only use ICT such as the internet to communicate with stakeholders. Uses of ICT for other purposes were minimal.

### ***Training in the use of ICT in communication***

ICT is mainly used by principals for the purpose of communication (§ 4.2.2.6). Also, interviewed township and rural principals still make use of printing letters to inform stakeholders about school activities instead of sending e-mails which is more convenient and an effective way of saving paper. Theses principals need training on how to send e-mails and to make use of a variety of technologies to communicate, this way they will save on printing costs (letters to stakeholders). These principals need training to use the internet to be able to send e-mails, to Skype and to use a variety of different ICT in school management.

***Training in ICT skills designed for principals***

Principals of these interviewed schools need training in ICT skills and competences to use ICT in management. Training in ICT skills and competences ought to cater specifically for principals to use ICT in management tasks and areas, as this is one of the training needs. The interviewed principals lack ICT knowledge and therefore need training on the use of ICT. Principals need to be assist to obtain knowledge regarding ICT and how it can lead to effective management of the school. Training courses are needed, specially designed for principals. There is a need for principals to receive ICT knowledge to use ICT in the management of the school. Exposing principals more often to use ICT may influence principals' attitude positively towards the use of ICT in school management.

The recommendations on above findings follow in the next paragraph.

## 5.4. RECOMMENDATIONS

Recommendations are made on different educational levels in order to assist principals to use ICT in the management of their school. Recommendations are needed to bring about improvement and development in the use of ICT by principals.

### Recommendations at National Level: Training Institutions and the National Department of Education

#### Recommendation 1

Training needs of principals regarding the use of ICT may be addressed in specific training programmes specifically designed for school leadership. Courses should be short, hands-on and aimed at developing ICT skills and knowledge for use in school management.

### Motivation

As different principals have different backgrounds and knowledge with regard to ICT, ICT training will benefit for principals and aspiring principals during training before becoming a principal. During these training sessions principals should be equipped with knowledge and skills regarding the use of ICT and how it will benefit them (§ 4.2.2.3). In these training courses principals need to be made aware of the concept of ICT and what ICT can contribute in school management. Some principals don't even know what the meaning of the concept ICT entails (§ 4.2.2.1). ICT Training sessions for principals ought to be specifically on how to use ICT in the management of a school and not necessarily in teaching and

learning (§4.2.2.3). Too many training sessions caters for the use of ICT in teaching and learning and not enough in school management. From the findings of the results some principals shows a negative attitude towards the use of ICT (§4.2.2.7). Training ought to aim to change the negative attitude of principals, and give the skills to use ICT in the management of schools.

## Recommendations on Provincial level: Department of Basic Education

### Recommendation 2

More compulsory professional training opportunities ought to be given principals, with regards to the use of ICT in the management of schools.

### Motivation

Compulsory and continuous professional development in the use of ICT for school management (§ 4.2.2.3) is needed. Some of the principals confessed that they are not computer literate (§ 4.2.2.3). However, school principals are willing to learn, but do not receive training from the department of education regarding the use of ICT in school management (§ 4.2.2.3). Several principals mentioned that they are too old and are not willing to learn as they are about to go on pension (§ 4.2.1.7). These principals already have a negative attitude towards ICT in the sense that they regard themselves as too old to learn something new. Principals should develop their own ICT skills, but also request training from the Department of Education.

## Recommendations on District Level: Area Project Office

### Recommendation 3

Principals at district level can establish a principal's forum where important areas for ICT development can be discussed. Principals themselves decided on the areas that they need training in concerning ICT in the management of schools. This forum can develop opportunities in the form of workshops and seminars for the development and implementation of ICT use in the management of schools.

### Motivation

From the results indicated that principals lack skills and knowledge, but are eager to learn (§ 4.2.2.4). A principal's forum can play an important role in the development of the use of ICT in school management through specific training programmes designed for this purpose.

## Recommendations on School Level: School Governing Body (SGB)

### Recommendation 4

In appointing principals, the school governing body, should take note that ICT knowledge and the competence for using ICT in the management of the school are important. Therefore candidates could be expected to be ICT competent. The SGB can recruit an expert in ICT to ask candidates some questions and evaluate in this manner the ICT competency of candidates.

### Motivation

The results show that most principals are not knowledgeable regarding ICT (§ 4.2.2.2). Principals often rely on an assistant or teacher to assist, whereas the principal should set an example regarding the use of ICT (§ 4.2.2.4). It will be beneficial to the school during the appointment of the principal to appoint a person who is ICT knowledgeable and competent to ensure the effective and efficient management of the school through the use of ICT.

### Recommendation 5

Principals ought to evaluate themselves to determine whether they have made progress regarding the use of ICT in school management in order to identify their strengths and weaknesses and to improve where necessary. If no progress has been made principals need to be able to identify the gaps in order to get appropriate training. A time frame should be set on development which principals can use as guideline.

### Motivation

The results shows that most principals gain knowledge through self-taught (§4.2.2.3), however technology is changing so fast that principals cannot get stuck on what they taught themselves. Training needs to be update on a regular basis. However, it is not only the responsibility of the DoE to provide principals with the necessary training. Principals must act proactively and take initiative and responsibility as leaders of their school to attend existing

ICT training. From their side they need to take responsibility and equip themselves regarding the use of ICT.

### Recommendation 6

Further research is necessary to determine the progress on the implementation of the white paper on E-Education, especially in rural and township schools.

### Motivation

The research showed that principals in the specific interviewed primary rural and township schools did not receive training from the department of education concerning the use of ICT in school management. The principals feel often as their training needs concerning ICT are not taken in consideration and the department of education does not do anything about it.

## 5.5. LIMITATIONS OF STUDY

The study was limited to primary principals in rural and township schools. It was limited to only ten primary schools in only one Area Office (AO) district in the North West Province. Several principals did not want to be recorded at all. Interviews were at first not adequate which compel researcher to interviews additional principals. Member checking was not done which perhaps could have enhanced the trustworthiness of the research. The study was limited and only applicable on the interviewed principals and findings are not generalised in any manner.

## 5.6. CONCLUSION

In this research it was shown that principals of primary rural and township schools lack training regarding the use of ICT in school management. This research also showed that the implementation process in terms of deliverance of the White paper on e-learning is taking place at a slower pace that was initially intended. The effects of the lack of ICT training is that principals of rural and township schools become more and more technologically handicapped in a fast changing world of technology. Not being ICT literate can be frustrating to a principal and affect his / her management skills negatively. As manager, a principal is supposed to set an example regarding the use of ICT in order to show his / her competence and capability in his / her position as a leader. Principals cannot expect teachers to use technology if they cannot use it themselves. This sends a clear message to the teacher that

the technology is not valued as an instrument of usage. Principals should be given the opportunity to make sense and to use technology for school management.

The Department of Basic Education should train principals in the use of ICT in school management. It will not be worth it if principals of rural or township schools are trained to use ICT, but they cannot access it due to a lack of infrastructure at their workplace. Accessibility of ICT should be on both software as well as hardware, not forgetting resources (physical) such as buildings. ICT technical support and assistance should be available at all times to principals of both software and hardware components. Without this support, training will be worthless.

# LIST OF REFERENCES

Abbad, M.M., Morris, D. & De Nahlik, C. (2009). Looking under the bonnet: factors affecting student adoption of e-learning systems in Jordan. *International review of research in open and distance learning,* 10(2):1-22.

Abuhmaid, A. (2011). ICT training courses for teacher professional development in Jordan. *Turkish online journal of educational technology,* 10(4):195-210.

Adults with Congenital Cardiac Disease (ACCD). (2010). *Professional development overview*. Human Resource Department.

Adeoti-Adekeye, W. (1997). The importance of management information systems. *Library review,* 46(5):318-327.

Adeyemi, T. & Olaleye, F. (2010). Information Communication and Technology (ICT) for the effective management of secondary schools for sustainable development in Ekiti State, Nigeria. *American-Eurasian journal of scientific research,* 5(2):106-113.

Aduwa-Ogiegbaen, S.E. & Iyamu, E.O.S. (2005). Using information and communication technology in secondary schools in Nigeria: problems and prospects. *Educational technology & society,* 8(1):104-112.

Afshari, M., Bakar, K.A., Luan, W.S., Samah, B.A. & Fooi, F.S. (2008). School leadership and information communication technology. *Turkish online journal of educational technology,* 7(4):82-91.

Afshari, M., Ghavifekr, S., Siraj, S., Samad, A. & Sukor, R. (2012). Transformational leadership role of principals in implementing informational and communication technologies in schools. *Life science journal ACTA - Zhenggzhou University overseas edition,* 9(1):281-284.

Agyeman, O. (2007). *ICT for education in Nigeria.* Survey of ICT and education in Africa: Nigeria country report on ICT for education in Nigeria (No. 46372).

Ahmad, R., Komputer, K.J.A., Utara, I.A.B.C. & Kedah, J. (2012). *Managing the use of ICT in schools: strategies for school leaders.* http://www.academia.edu. Date of access: 26 January 2012.

Akrani, G. (2011). *What is organising? Meaning definition process articles*. http://kalyan-city.blogspot.com/2011/07/what-is-organising-meaning-definition.html. Date of access: 17 January 2012.

Anderson, G. & Arsenault, N. (2000). *Fundamentals of educational research*. London: Falmer Press.

Anonymous. (2012). *Information Communication Technology: what is ICT?* http://www.tutor2u.net/ business/ict/intro_what_is_ict.htm. Date of access: 20 April 2012.

Antić, L. & Sekulić, V.M. (2005). Organizing as the phase of management process and management accounting. *Facta universitatis-series: economics and organization,* 2(3):237-245.

Anupkumar, A. (2005). *Principles of management: an analysis of the contributions of various thinkers to the field of management, and a review of the management practices of five companies*. FedEx USA: Corporate Communications.

Asiabaka, I.P. (2008). The need for effective facility management in schools in Nigeria. *New York science journal,* 1(2):10-21.

Australian Department of Education, Employment and Workplace Relations (DEEWR). (2012). *ICT strategic planning guide for Australian schools.* http://www.deewr.gov.au/ Schooling/DigitalEducationRevolution/Pages/default.aspx Date of access: 14 December 2012.

Azaria, A.B.U. (2012). *Human resource management in education: course development*. (EDA 721.)

Balanskat, A., Blamire, R. & Kefala, S. (2006). *The ICT impact report: a review of studies of ICT impact on schools in Europe.* European schoolnet. Europe: Education and Culture.

Baskin, C. & Williams, M. (2006). ICT integration in schools: where are we now and what comes next? *Australasian journal of educational technology,* 22(4):455-473.

Bassey, S.U., Okodoko, D. & Akpanumoh, U.K. (2009). Information communication technologies in the management of education for sustainable development in Africa. *African research review,* 3 (3):414-428.

Batool, A. & Batool, B. (2012). Effects of employees training on the organizational competitive advantage: empirical study of private sector of Islamabad, Pakistan. *Far East journal of psychology and business,* 6(5):59-72.

Becta. (2006). *ICT research*. http://www.becta.org.uk. Date of access: 14 September 2010.

Bialobrzeska, M. & Cohen, S. (2003). *Managing ICTs in South african schools: a guide for school principals.* Braamfontein: South African Institute for Distance Education (SAIDE).

Bialobrzeska, M. & Cohen, S. (2005). *Managing ICTs in South African schools: a guide for school principals.* Braamfontein: South African Institute for Distance Education (SAIDE).

Bingimlas, K.A. (2009). Barriers to the successful integration of ICT in teaching and learning environments: a review of the literature. *Eurasia journal of mathematics, science & technology education,* 5(3):235-245.

Bishop, P. (2002). *Information communication technology and school leaders. Handbook of educational leadership and management*. Edinburgh Gate: Pearson Education.

Bisschoff, T. & Mestry, R. (2003). *Financial school management explained*. Cape Town: Kagiso Publisher.

Bogatti, S.P. (1999). Elements of research. http://http//www.analytictech.com/mb313/ elements.htm Date of access: 4 October 2012.

Bolden, R., Gosling, J., Marturano, A. & Dennison, P. (2003). *A review of leadership theory and competency frameworks. a review of leadership theory and competency frameworks.* Exeter: University of Exeter. Centre for Leadership Studies.

Botha, R.J., *ed*. (2012). *Financial management and leadership in schools*. Cape Town: Pearson Education.

Boyce, C. & Neale, P. (2006). *Conducting in-depth interviews: A guide for designing and conducting interviews for evaluation input*. Watertown, Mass.: Pathfinder International.

Briscoe, M. & Lee, P. (2005). *Support for strategic leadership of ICT: an English model*. http://insi~ht.eun.org/ww/en!pub/insight!thematic. Date of access: 9 December 2012.

Bush, T. (2007). Educational leadership and management: theory, policy and practice. *South African journal of education,* 27(3):391-406.

Bush, T. (2011). *Theories of educational leadership and management.* London: Sage.

Buton, N., Brundrett, M. & Jones, M. (2008). *Doing your education research project.* London: Sage.

Cavas, B., Cavas, P., Karaoglan, B. & Kisla, T. (2009). A study on science teachers' attitudes toward information and communications technologies in education. *Turkish online journal of educational technology,* 8(2):20-32.

Charalambous, K., & Ioannou, I. (2008). The attitudes and opinions of Cypriot primary teachers about the use of the internet for their professional development and as an educational tool. *Learning, Media and Technology*, *33*(1): 45-57.

Chen, B., Gallagher-Mackay, K. & Kidder, A. (2014). *Digital learning in ontario schools: The 'new normal'*. Toronto: People for Education.

Choonara, M.A. (2005). *Effective school budgeting for the optimum utilization of physical resources* (Master's thesis). Johannesburg: University of Johannesburg.

Clarke, A. (2007). *The handbook of school management*. Cape Town: Kate McCallum.

Clayton, J., Elliott, R. & Saravani, S. (2009). *ICT PD Cluster programme research review project: Report on international policy in the context of ICT PD*. Project report. Hamilton, NZ.

Cohen, L., Manion, L. & Morrison, K. (2007). *Research methods in education*. London: Routledge.

Condie, R., Munro, B., Seagraves, L. & Kenesson, S. (2007). *The impact of ICT in schools: a landscape review.* Becta, Coventry: University of Strathclyde. Quality in Education Centre.

Conradie, D.P. & Jacobs, S.J. (2003). Challenges encountered when using ICTs (Information and Communication Technologies) in support of development in rural African communities. *Engineering management*, 13(1):30-33.

Cook, L. & Greenwood, H. (2008). "Cleaners don't need computers": bridging the digital divide in the workplace. *Aslib proceedings,* 60(2):143-157.

Creswell, J.W. (1998). *Qualitative inquiry and research design choosing among five traditions.* Thousand Oaks, Calif.: Sage.

Creswell, J.W. (2009). *Research design: qualitative, quantitative, and mixed methods approaches*. Thousand Oaks, Calif.: Sage.

De Vos, A.S., Strydom, H., Fouché, C.B. & Delport, C.S.L. (2011). *Research at grass roots: A primer for the social science and human professions.* Pretoria: Van Schaik.

Demir, K. (2006). School management information system in primary schools. *Turkish online journal of educational technology,* 5(2):45.

Department of Education ***see*** South Africa. Department of Education.

Dictionary. 1996. South African dictionary. Manzini, Swaziland: Macmillan Boleswa Publishers.

Dictionary.com. 2012. *Township*. http://www.dictionary.com Date of access: 9 December 2012.

Dlodlo, N. (2009). Access to ICT education for girls and woman in rural South Africa: a case study. *Technology in society,* 31(2):168-175.

Du Plessis, A.W. (2012). Teachers' perceptions about their own and their schools' readiness for computer implementation: a South African case study. *Turkish online journal of educational technology,* 11(3):312-325.

Du Preez, P., Campher, T., Grobler, B., Loock, C. & Shaba, S. (2003). *A guide to educators and managers in education, module 1: Principles of effective education management.* Sandton: Heinemann. (Effective education management series.)

Du Toit, C. (2011). *Riglyne vir effektiewe onderwys in afkampusonderwysprogramme vir praktiserende onderwysers* (Doctoral thesis). Potchefstroom: Noordwes-Universiteit. Potchefstroomkampus.

Durando, M., Blamire, R., Balanskat, A. & Joyce, A. (2007). *EMature schools in Europe*. *Isight-Knowledge Building and Exchange on ICT Policy and Practice*. http://insight.eun.org/shared/data/pdf/emature_schools_in_europe_final.pdf. Date of access: 13 March 2012.

Dynamics, M. (2011). *Education*. http://www.microsoft.com/dynamics. Date of access: 13 March 2012.

Ebersohn, L. & Ferreira, R. (2012). Rurality and resilience in education: place-based partnerships and agency to moderate time and space constraints. *Perspectives in education,* 30(1):30-42.

Edgell, R. (2012). *Lyndall Fownes Urwick: influential British management thinker*. http://www.managers-net.com/Biography/biograph7.html Date of access: 11 January 2013.

Edmondson, R.S. (2005). *Evaluating the effectiveness of a telepresence-enabled cognitive apprenticeship model of teacher professional development.* Logan, Utah: Utah State University.

Elston, C. (2007). *Using ICT in the primary school*. London: Sage.

Engineering Institute of Canada (EIC). (2000). *School improvement plan a handbook for principals, teachers and school councils.* http://eic.edu.gov.on.ca Date of access: 18 February 2013.

Ezzat, H. (2007). *Management process II: organisation.* http://www.faculty.ksu.edu.sa/.../Nursing%20management%20489NUR/II. Date of access: 20 December 2012.

Farooq, U. (2012). *Basic concept of planning as primary function of management*. (Study lecture notes.)

Farrell, G. (2007). *Survey of ICT and education in Africa: Uganda country reportz: ICT in education in Uganda.* Washington, D.C.: World Bank.

Felix, C., Vhuramayi, C., Martin, C. & Nyasha, M. (2013). Impact of age on employee resistance to change. a case study cotton company (COTTCO) in Zimbabwe. *Greener journal of business and management studies,* 3(9):386-392.

Ferguson, G. (2012). *What is professional development?* http://www.wisegeek.com/what-is-professional-development.htm Date of access: 19 October 2012.

Fiore, D. (2011). *School community relations*. 3rd ed. Larchmont, N.Y.: Eye On Education.

Flanagan, L.J. (2003). Technology leadership for the twenty-first century principal. *Journal of educational administration,* 41(2):124-142.

Flick, U. (2006). *An introduction to qualitative research*. 3rd ed. London: Sage.

Fourie, I. & Krauss, K. (2010). Information literacy training for teachers in a developing South African context: suggestions for a multi-disciplinary planning approach. *Innovation,* 41:107-122.

Fraenkel, J.R. & Wallen, N.E. (2008). *How to design and evaluate research in education*. 7th ed. New York: McGraw-Hill Higher Education.

Fraenkel, J.R., Wallen, N.E. & Hyun, H.H. (1993). *How to design and evaluate research in education*, v. 7. New York: McGraw-Hill.

Gardiner, M. (2008). Education in rural areas. *Issues in education policy,* 4:1-33.

Gauteng Department of Education (GDE). (2011). *Guidelines on the management and usage of ICTs in public schools in Gauteng*. https://gnelearning.wikispaces.com/file/view/_ICT_Management_Usageguidelines.pdf. Date of access: 23 August 2012.

Givehope. (2012). *Givehope Imizamo Yethu Educare Centre*. http://www.givehope.ch/index. htm Date of access: 11 January 2012.

Goktas, Y., Yildirim, S. & Yildirim, Z. (2009). Main barriers and possible enablers of ICTs integration into pre-service teacher education programs. *Educational technology & society,* 12(1):193-204.

Gosmire, D. & Brady, M. (2007). *A bumpy road: principal as technology leader.* http://www.nassp.org/portals/0/content/55193.pdf Date of access: 26 April 2013.

Gronow, M. (2007). *ICT leadership in school education*. A paper presented to the Australian Catholic University Conference "Directions for Catholic Education Leadership in the 21st Century", 29 July - 1 August 2007. The Sofitel Wentworth Sydney, Australia.

Gurr, D. (2000). The impact of information communication technology on the work of school principals. *Learning & managing,* 6(1):63-67.

Gurr, D. (2001). Principals, technology, and change. *The Technology Source.* http://technologysource.org/article/principals technology and change/ Date of access: 12 January 2011.

Hay, L. (2001). *Information leadership: managing the ICT integration equation.* Wagga Wagga, Australia: Charles Sturt University. School of Information Studies.

Hennessy, S., Onguko, B., Harrison, D., Ang'ondi, E.K., Namalefe, S. & Naseem, A. (2010). *Developing the use of ICT (Information and Communication Technology) to enhance teaching and learning in East African schools: a review of the literature.* Cambridge, UK and Dar es salaam, TZ: Faculty of Education, University of Cambridge and Aga Khan University Institute for Educational Development-Eastern Africa.

Hepp, P., Hinostroza, E., Laval, E. & Rehbein, L. (2004). *Technology in schools: education, ICT and the knowledge society.* Washington, D.C.: World Bank. Distance & Open Learning and ICT in Education Thematic Group, Human Development Network, Education.

Herselman, M.E. & Jacobs, S.J. (2005). An ICT-hub model for rural communities. *International journal of education and development using information and communication technology,* 1(3):57-93.

Hew, K.F. & Brush, T. (2007). Integrating technology into K-12 teaching and learning: current knowledge gaps and recommendations for future research. *Educational technology research and development,* 55(3):223-252.

Higa, C. (2007). ICT capacity and human resource development in island economies. *Developing human resources in the pacific,* 14(1):98-101.

Hissom, A. (2009). *Introduction to management technology*. Kent, Oh.: Kent State University.

Holt, D. (2011). *Distributed leadership in support of quality management of Online Learning Environments (OLEs): ALTC OLE quality management project team*. (Occasional paper.)

Hoque, K.E., Razak, A. & Zohora, M.F. (2012). ICT utilization among school teachers and principals in Malaysia. *International journal of academic research in progressive education and development,* 1(4):17-34.

Hughes, O. (2003). *Public management and administration.* New York: Mcmillan.

International Institute for Communication and Development ( IICD). (2007). *ICTs for education.* The Hague: People-ICT-Development.

Isaacs, S. (2007). *Survey of ICT and education in Africa: Lesotho Country Report ICT in Education in Lesotho*:. InfoDev.

Jain, P. (2006). Empowering Africa'sdevelopment using ICT in a knowledge management approach. *Electronic library,* 24(1):51-67.

Joubert, R. & Bray, E. (2007). *Public school governance in South Africa.* Pretoria: Interuniversity Centre for Education Law and Education Policy (CELP).

Joubish, M.F., Khurram, M., Amed, A., Fatima, S.T. & Haider, K. (2011). Paradigm and characteristics of a good qualitative research. *World applied sciences journal,* 12(11):2082-2087.

Kalanda, K. (2012). *An investigation of ICT integration in the Lesotho secondary and high school science classroom* (Doctoral thesis). Pretoria: University of South Africa.

Karim, A. (2011). The significance of management information systems for enhancing strategic and tactical planning. *Journal of information systems and technology management,* 8(2):459-470.

Khanya Schools. (2009). *Outcomes for ICT training at Khanya schools*. http://www.khanya.co.za/projectinfo/doc/edutraining.doc Date of access: 30 May 2013.

Kimani, G. (2010). *Educational management.* Nairobi, Kenya: African Virtual University.

Kinash, S. (2012). *Paradigms, methodology and methods.* http://skinash@bond.edu.au Date of access: 6 January 2011.

Kinuthia, W. (2009). Educational development in Kenya and the role of information and communication technology. *International journal of education and development using information and communication technology,* 5(2):6-20.

Kitching, J. & Blackburn, R. (2002). *The nature of training and motivation to train in small firms*. [London]: Department for Education and Skills. (Research report RR 330.)

Koontz, H. & O'Donnell, C. (1972). *Principles of management: an analysis of managerial functions*. New York: McGraw-Hill.

Krishnaveni, R. & Meenakumari, J. (2010). Usage of ICT for information administration in higher education institutions: a study. *International journal of environmental science and development,* 1(3):282-286.

Law, N., Lee, Y. & Yuen, H. (2010). The impact of ICT in education policies on teacher practices and student outcomes in Hong Kong. *Assessing the effects of ICT in education*: 143.

Lepi, K. (2013). *South Korea vs U.S. education: new report examines key differences*. http:// wwwedudemic.com/2013/05/south-korea-vs-u-s-education-new-report-examines-key-differences/ Date of access: 29 September 2014.

Lepičnik-Vodopivec, J. & Samec, P. (2012). Advantages and disadvantages of information communication technology usage for four-year-old children, and the consequences of ITS usage for the childrens' development. *International journal of humanities and social science,* 2(3):54-58.

Litman, T. (2012). *Planning principles and practices*. http://www.vtpi.org/access.pdf. Date of access: 12 December 2012.

Litosselitti, L. (2003). *Using focus groups in research*. London: MPG Books.

Lucas, B. & Thompson, L. (2012). *School-community relations handbook.* Saskatchewan School Trustees Association. Research Centre.

Lumby, J. (2003). Transforming schools: managing the change process. In Thurlow, M., Bush, T. & Coleman, M., *eds*. *Leadership and strategic management in South African schools.* London: Commonwealth Secretariat. p. 101-116.

Lunenburg, F.C. (2010). The principal and the school: what do principals do? *National forum of educational administration and supervision journal,* 27(2).

Makewa, L., Meremo, J., Role, E. & Role, J. (2013). ICT in secondary school administration in rural southern Kenya: an educator's eye on its importance and use. *International journal of education and development using information and communication technology (IJEDICT),* 9 (2):48-63.

Makhanu, E. (2010). *Principals' literacy in Information and Communication Technology (ICT): towards improving secondary school performance in Kenya* (Doctoral thesis). Pretoria: University of South Africa.

Maki, C. (2008). Information and communication technology for administration and management for secondary schools in Cyprus. *Journal of online learning and teaching,* 4(3):18-20.

Maree, K., *ed*. (2010). *First steps in research*. Pretoria: Van Schaik.

Mashinini, M.J. (2008). Challenges of ICT policy for rural communities: a case study from South Africa. *Social dimensions of information and communication technology policy,* 282:125-137.

McCullough, D.C. (2009). *Township transformation time line*. Pretoria: Department of Cooperative Governance and Traditional Affairs.

McGriff, M. (2012). *What is the meaning of theoretical framework*? http://www.smarsheet. com. Date of access: 4 October 2012.

McMillan, J.H. & Schumacher, S. (2010). *Research in education: evidence-based inquiry*. Boston, Mass.: Pearson.

Mdlongwa, T. (2012). *Technology (ICT) as a means of enhancing education in schools in South Africa: challenges, benefits and recommendations*. SAICSIT '14 Proceedings of the Southern African Institute for Computer Scientist and Information Technologists Annual Conference 2014 on SAICSIT 2014 Empowered by Technology. New York: ACM.

Mentz, E. & Mentz, K. (2003). Managing technology integration into schools. *Journal of educational administration,* 41(2):186-200.

Mentz, E., Bailey, R., Havenga, M., Breed, B., Govender, D. & Govender, I. (2012). The diverse educational needs and challenges of information technology teachers in two black rural schools. *Perspectives in education,* 30(1):70-78.

Merriam, S.B. (1998). *Qualitative research and case study applications in education: revised and expanded from case study research in education*. San Francisco, Calif.: Jossey-Bass..

Merriam, S.B. (2009). *Qualitative research: a guide to design and implementation*. New York: Wiley.

Mertler, C.A. (2009). *Action research: teachers as researchers in the classroom*. London: Sage.

Mills, G.E. (2007). *Action research: a guide for the teacher researcher.* 3rd ed. Upper Saddle River, N.J.: Pearson Merrill Prentice Hall.

Milton, P. (2003). *Trends in the integration of ICT and learning In K-12 systems.* Toronto: Canadian Education Association.

Milton, P. (2005). Trends in the Integration of ICT for learning in Canadian schools. *Asia-Pacific cybereducation journal,* 1(2):37-47.

Mingaine, L. (2013). Leadership challenges in the implementation of ict in public secondary schools, Kenya. *Journal of education and learning,* 2(1):32.

Mitrofanova, H. (2004). *Building community-schools relations*. Lincoln: University of Nebraska-Lincoln Extension in Lancaster County.

Mohanty, R. (2011). *ICT advantages and disadvantages*. http://ict-adv-disadv.blogspot.com/ Date of access: 11 December 2012.

Moletsane, R. (2012). Repositioning educational research on rurality and rural education in South Africa: beyond deficit paradigms. *Perspectives in education,* 30(1):1-8.

Moloi, K. (2007). An overview of education management in South Africa. *South African journal of education,,* 27(3):463-476.

Moriarty, J. (2011). *Qualitative methods overview*. London: School for Social Care Research. National Institute for Health Research.

Morrison, M., *ed*. (2007). *What do we mean by educational research*? London: Sage.

Moses, M. (2009). *Availability, accessibility and use of information and communication technology in management of students' academic affairs in Makerere*. Makerere: Makerere University.

Mouton, J. (2006). *How to succeed in your master's and doctoral studies*. Pretoria: Van Schaik.

Moyle, K. (2006). *Leadership and learning with ICT*. Voices from the profession: what Australian school leaders say. (World Conference on Educational Multimedia, Hypermedia and Telecommunications, no. 1.)

Munro, G. (2011). *The role of the principal in managing the pedagogical use of ICT in schools* (Master's thesis). Potchefstroom: North-West University.

Naidu, A., Joubert, R., Mestry, R., Mosoge, J. & Ngcobo, T. (2008). *Education management and leadership: a South African perspective*. Cape Town: Oxford University Press.

National Council for Curriculum Assessment (NCCA). (2012). *Information and Communications Technology (ICT) in the primary school curriculum: guidelines for teachers.* Dublin: Author.

National Norms and Standards for School Funding Policy (NNSSF). (2007). *Basic school financial records.* http://www.education.gov.za/LinkClick.aspx?fileticket= 9DiDOH1U2k8= Date of access: 10 December 2010.

National Qualifications Framework (NQF). (2012). *What is ICT*? http://www.nqf.org.za/ download_ files/nqf.../NLRD_FAQ_Question_3.pdf Date of access: 20 April 2012.

National Renewable Energy Laboratory (NREL). (2013). *Renewable energy for rural schools.* http://pdf.usaid.gov/pdf_docs/ PNACK616.pdf Date of access: 15 July 2013.

Ndlovu, B. (2012). *Lack of skills challenge to ICT development in the schools*. http://www. chronicle.co.zw/lack-of-skills-challenge-to-ict-development-in-schools/ Date of access: 20 January 2014.

NetDay. (2008). *Speak up 2007 for students, teachers, parents & school leaders: selected national findings.* http://www.tomorrow.org/docs/National%20Findings% Date of access: 11 July 2014.

Nicholla, M. (2013). *Communications applications - IGCSE ICT resources*. http://www.ictlounge.com/html/communications_applications.htm Date of access: 12 June 2013.

Nieuwenhuis, J. (2009). *Introducing qualitative research*. Pretoria: Van Schaik.

Nkonki, V.J.J. & Mammen, K.J. (2012). Implementation of the integrated quality management system and educators' perceptions, concerns and dispositions on their career. *Journal of social sciences,* 31(3):32-336.

Nonyane, J. & Mlitwa, N. (2008). ICT access and use in rural schools in South Africa: a case study in Mpumalanga Province. *Section: IS, ICT & E-commerce, E-health, E-learning,* 1:94-104.

Noor-Ul-Amin, S. (2012). *An effective use of ICT for education and learning by drawing on worldwide knowledge, research, and experience: ICT as a change agent for education* (A literature review). University of Kashmir.

Nyirenda, M. (2013). Planning for ICT literacy in public schools in Tanzania. *Guardian*

Ocholla, D. & Le Roux, J. (2011). Conceptions and misconceptions of theoretical frameworks in Library and Information Science research: a case study of selected theses and dissertations from eastern and southern African universities. *Mousaion,* 29(2): 61-74.

Ogbomo, M.O. & Ogbomo, E.F.O. (2008). Importance of Information and Communication Technologies (ICTs) in making a heathy information society: a case study of Ethiope East Local Government Area of Delta State, Nigeria. *Library philosophy and practice*: 1-8.

Okereke, G. (2007). *Information and communication technology.* Nigeria: National Open University.

Ololube, N.P. (2006). Appraising the relationship between ICT usage and integration and the standard of teacher education programs in a developing economy. *International journal of education and development using information and communication technology (IJEDICT),* 2(3):70-85.

Olum, Y. (2004). *Modern management theories and practices*. Paper presented at the 15th East African Central Banking Course, Makerere University, Faculty of Social Sciences, Department of Political Science and Public Administration.

Onwuegbuzie, A.J. & Leech, N.L. (2007). *Sampling designs in qualitative research: making the sample process more public*. http://www.nova.edu/sss/QR/QR12-2/onwuegbuzie.pdf Date of access: 30 September 2012.

Organisation for Economic Co-operation and Development (OECD). (2001). *Using ICT to promote equity and collaboration at Spencer Public School*. http://intradev.oecd.org/els/ict/CA/CA04.htm Date of access: 1 September 2014.

Organisation for Economic Co-operation and Development (OECD). (2008). *Broadand and the economy*. Korea: Korea Communication Commission.

Organisation for Economic Co-operation and Development (OECD). (2010). *Teachers' Professional Development.* Europe in International Comparison. An analysis of teachers'professional development based on the OECD's. Teaching and Learning International Survey (TALIS). European Union, Luxembourg

Papaioannou, P. & Charalambous, K. (2011). Principals' attitudes towards ICT and their perceptions about the factors that facilitate or inhibit ICT integration in primary schools of Cyprus. *Journal of information technology education,* 10:21.

Papanastasiou, E.C. & Angeli, C. (2008). Evaluating the use of ICT in education: psychometric properties of the survey of factors affecting teachers teaching with technology (SFA-T3). *Educational technology & society,* 11(1):69-86.

Passey, D. (2002). *ICT and school management: a review of selected literature*. Lancaster: Lancaster University. Department of Educational Research.

Patton, M.Q. (2002). *Qualitative research and evaluation methods*. 3rd ed. Thousand Oaks, Calif.: Sage.

People-ICT-Development (IICD). (2007). *ICTs for education: impact and lessons learned from IICD-supported activities.* The Hague, Netherland: IICD.

Picciano, A. (2011). *Educational leadership and planning for technology*. 5th ed. New York: Pearson.

Plante, J. & Beattie, D. (2004). *Connectivity and ICT integration in Canadian elementary and secondary schools: first results from the information and communications technologies in schools survey, 2003-2004.* Canada: Culture, Tourism and the Centre for Education Statistics Division.

Prokopiadou, G. (2011). Using information and communication technologies in school administration: researching greek kindergarten schools. *Educational management administration & leadership,* 40(3):22.

Qabaka, V. (2013). Township: the true meaning? In Qabaka, V., *ed*. Kasi, *Economics finding solutions to developing South Africa's township communities*.

Ramcharan. (2004). Higher or basic education? The composition of human capital and economic development. *IMF staff papers,* 51(2):309-326.

Ritchie, J., Lewis, J. & Elam, G. (2009). Designing and selecting samples. In Richie, J. & Lewis, J., *eds*. *Qualitative research practice: a guide for social science students and researchers.* London: Sage. p. 1-23.

Rogers, H.W. (2007). Assessing technology's role in communication between parents and middle schools. *Electronic journal for the integration of technology in education,* 7:36-58.

Rothbauer-Wanish, H. (2009). *Organizing as a management function.* http://www.suite101.com/.../organizing-as-a-management-function-a1245 Date of access: 18 December 2012.

Rural Development Task Team and the Department of Land Affairs (RDF). (1997). *Thriving rural areas: rural development framework.* Pretoria: Author.

Rusten, E. & Hudson, H.E. (2013). *Infrastructure: hardware, networking, software and connectivity.* http://www.ictinedtoolkit.org/usere/library/tech_for_ed_chapters/06.pdf Date of access: 4 October 2013.

Salvi, S. (2012). *What is training and development?* https://www.amherst.edu/offices/human_resources/training Date of access: 6 June 2012.

Sarvi, T. & Yao, P. (2009). *Good practice in information and communication technology for education.* Mandaluyong City, Philippines: Asian Development Bank.

Scepanovic, D., Lazarevic, B. & Wassenmiller, A. (2010). *Reform in progress: current trends and concerns in developing education management information systems in the South East European Countries.* Serbia.

Scheerens, J. (2010). *Teachers' professional development: Europe in international comparison: an analysis of teachers' professional development based on the OECD's Teaching and Learning International Survey* (TALIS).

Schiller, J. (2003). Working with ICT perceptions of Australian principals. *Journal of educational administration,* 41(2):171-185.

Sefika, M.R, Mavetera, N. & Mavetera, C.G. (2013). Investigating the benefits of ICT in Lesotho Rural Communities of Mabote and Kubetsoana. *Journal of African research in business & technology*: 1-17.

Selwood, I. (2005). *Primary school teachers' use of ICT for administration and management.* Edgbaston, Birmingham, UK: University of Birmingham, School of Education.

Seroto, J. (2012). Rural education in South Africa: a critical reflection on government reconstruction and development efforts. *Journal of human ecology - New Delhi,* 37(2):77.

Severin, E. & Capota, C. (2011). *The use of technology in education: Lessons from South Korea*. Washington, D.C.: Inter-American Development Bank.

Sharma, S. (2009). *Educational management: a unified approach of education*. Delhi: Global India Publications.

Sheninger, E. (2012). Overcoming the fear of technology. *Digital leaders*: 66-77.

Shoewu, O. & Idowu, O.A. (2012). Development of attendance management system using biometrics. *Pacific journal of science and technology,* 13(1):300-307.

Simbarashe. (2012). *Contingency approach to management*. http://www.Referencefor business.com/management/Comp-De/Contingency-Approach-to-Management.html Date of access: 5 October 2012.

Skaik, S.H. (2008). *Management theories: history and practice*. www.cmguide.org/archives/ 291 Date of access: 19 October 2012.

Smith, J., Flowers, P. & Larkin, M. (2009). *Interpretative phenomenological analysis: theory, method and research*. Thousand Oaks, Calif.: Sage.

Soanes, C. (2002). *South African Oxford dictionary*. 3rd ed. Oxford: Oxford University Press.

South Africa. Department of Education. (2004). *White paper on e-Education*. http://www. sahistory.org.za/sites/default/files/white%20_paper_on_e-education_2004.pdf Date of access: 15 February 2013.

South Africa. Department of Education. (2007). *ACE (School leadership) manage organisational systems, physical and financial resources*. Pretoria: Department of Education.

South Africa. Department of Education. (2013). *ABC of general school information.* http:// www.thutong.doe.gov.za/administration/Administration/GeneralInformation/ SASAMS/ tabid/3346/Default.aspx Date of access: 15 February 2013.

South Africa. (2004). *Census 2001*. *Concepts and Definitions* (No. 03-02-26). Pretoria: Statistics South Africa.

Spencer, J. (2012). *11 reasons teachers aren't using technology* #edchat #edtech. http:// www.educationrethink.com/2012/.../11-reasons-teachers-arent-using.htm Date of access: 15 August 2013.

Stadtländer, C. (2007). Reframing organizations: artistry, choice, and leadership. *Electronic journal of business ethics and organization studies,* 12(1):2.

Steyn, G,M. (2009). Teachers' perceptions of continuing professional development programmes in South Africa: a qualitative study. *Acta Academica,* 41(4):113-137.

Strydom, H. & Venter, L. (2005). Sampling and sampling methods. In De Vos, A.S., *ed*. *Research at grassroots: for the social science and human service professions.* Pretoria: Van Schaik. p. 192-204.

Stuart, L.H., Mills, A.M. & Remus, U. (2009). School leaders, ICT competence and championing innovations. *Computers & technology,* 53:733-741.

Swarts, P. & Wachira, E. (2010). *Tanzania: ICT in education situational analysis: global e-school and communities initiative*. http://www.gesci.org/assets/files/Knowledge%20Centre/Situational%20Analysis_Tanzania.pdf Date of access: 16 March 2013.

Thite. (2012). *The State of Information & Communication Technology (ICT) in Lesotho.* Paper presented at the EuroAfrica-ICT FP7 Awareness and Training Workshop. http://euroafrica-ict.org/wp-content/plugins/alcyonis-event-agenda//files/The_state_of_ICT in_Lesotho.pdf. Date of access: 16 March 2013.

Tinio, V.L. (2002). *ICT in education: UN development programme.* http://http:www.eprmers.org Date of access: 9 September 2012.

Trucano, M. (2011). *Surveying ICT use in education in Brazil*. Washington, D.C.: World Bank.

United Nations. Department of Economic and Social Affairs (UNDESA). (2013). *Promoting empowerment of people in achieving poverty eradication, social integration and full employment integration and full employment and decent work for all*. New York: Author

Unachukwu, G. & Nwankwo, C. (2012). Principals' readiness for the use ICT in school administration in Anambra State of Nigeria. *Research journal in organizational psychology and educational studies,* 1(2):114-120.

UNESCO. (2005). *Information and communication technologies in schools*. France: Author.

Van der Linde, R. & Van Braak, J. (2010). The e-capacity of primary schools: development of a conceptual model and scale construction from a school improvement perspective. *Computers & education,* 55:553.

Van der Westhuizen, P.C. (1991). *Effective educational management.* Pretoria: Kagiso Tertiary.

Van der Westhuizen, P.C., *ed*. (1996). *Schools as organisations.* Pretoria: Van Schaik.

Van der Westhuizen, P.C. (2007). *Schools as organisations.* Pretoria: Van Schaik.

Van der Westhuizen, P.C., *ed*. (2008). *Effective educational management*. Pretoria: Kagiso Tertiary.

Van Deventer, I. & Kruger, A.G. (2003). *An educator's guide to school management skills.* Pretoria: Van Schaik.

Van Niekerk, M. (2009). *Principal's influence on teachers professional development as indicator for the integration of ICT in schools* (Doctoral thesis). Pretoria: University of Pretoria.

Van Rooyen, J.W., *ed*. (2012). *Financial management in education in South Africa*. Pretoria: Van Schaik.

Vassiliou, A. (2011). *Key data on learning and innovation through ICT at school in Europe 2011.* Brussel: European Commission.

Villegas-Reimers, E. (2003). *Teacher professional development: an international review of the literature*. Paris: UNESCO. International Institute for Educational Planning.

Wallace, F. (2014). *Is support team training in the North West improving ICT education in schools*? http://cozacares.co.za/.../support-team-training-north-west-improving-ict-educa.. Date of access: 12 June 2014.

Weihrich, H. & Koontz, H. (2008). *Major principles or guides for the managerial functions of planning, organizing, staffing, leading, and controlling*. New York: McGraw-Hill.

Whalley, M.E., *ed*. (2011). Leading and managing in the early years. In Miller, L. & Cable, C., *eds*. *Professionalization, leadership and management in the early years*. London: Sage.

Willis, J.W. (2007). *Foundations of qualitative research: interpretive and critical approaches*. Thousand Oaks, Calif.: Sage.

Wren, D.A, Bedeian, G. & Breeze, J.D. (2002). The foundations of Henri Fayol's administrative theory. *Management decision,* 40(9):906-918.

Yusuf, M.O. (2005). Information and communication technology and education: analysing the Nigerian national policy for information technology. *International education journal,* 6(3):316-321

## ADDENDUM A:

# PERMISSION TO CONDUCT RESEARCH

**education**
Lefapha la Thuto la Bokone Bophirima
Noord-Wes Departement van Onderwys
North West Department of Education
**NORTH WEST PROVINCE**

Temane Building
8 O.R. Tambo Street, Potchefstroom
Private Bag X1256,
Potchefstroom 2520
Tel.: (018) 299-8216
Fax: (018) 294-8234
Enquiries: Mr H. Motara
e-mail: hmotara@nwpg.gov.za

**DR KENNETH KAUNDA DISTRICT**

**SENIOR PROFESSIONAL SUPPORT MANAGER**

03 June 2013

Ms A Malan
North West University
Potchefstroom Campus

**PERMISSION TO CONDUCT RESEARCH: TRAINING NEEDS OF PRIMARY SCHOOL PRINCIPALS IN THE USE OF ICT IN SCHOOL MANAGEMENT OF RURAL AND TOWNSHIP SCHOOLS - AT SCHOOLS MATLOSANA AREA OFFICE – DR KENNETH KAUNDA DISTRICT**

The above matter refers.

Permission is hereby granted to you to conduct your research at schools at Matlosana Area Office - Dr Kenneth Kaunda District under the following provisions:

- **the activity you undertake at the school should not tamper with the normal process of learning and teaching;**
- **you inform the principal of your identified schools of your impending visit and activity;**
- **you provide my office with a report in respect of your findings from the research; and**
- **you obtain prior permission from this office before availing your findings for public or media consumption.**

Wishing you well in your endeavour.

Thanking you

**MR H MOTARA**
**DISTRICT DIRECTOR**
**DR KENNETH KAUNDA DISTRICT**

*cc* *Mr S S Mogotsi – Area Manager: Matlosana*

## ADDENDUM B:

# PERMISSION TO CONDUCT RESEARCH

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS

Private Bag X6001, Potchefstroom
South Africa 2522

Tel: (018) 299-2000
Fax: (018) 299-2999
Web: http://www.nwu.ac.za

Enquiry: Dr. CP. v.d. Vyver
Tel: 018 299-4587
e-mail: cp.vandervyver@nwu.ac.za

14 Homestead Street
Alabama
Klerksdorp
2577
27 May 2013

The APO-Manager
Matlosana
Klerksdorp
2570

Dear Sir

**PERMISSION TO CONDUCT RESEARCH**

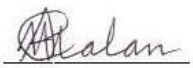
I am currently a student at the North West University; Potchefstroom campus. I am currently doing my M.Ed under the supervision of Dr. C. P. van der Vyver and co-supervision Dr. C. du Toit-Brits. My research title is: Training needs of primary school principals in the use of ICT in school management of rural and township schools.

I hereby kindly request permission to conduct research in the Matlosana Area, Dr. Kenneth Kaunda district of the North West Education Provincial Department. Five schools of the Matlosana area will be used which includes 1 township school, 2 rural schools (more than 500 learners) and 2 rural schools (less than 500 learners). Individual interviews will be conducted with the principals of these schools. The responses of the principals will be treated as confidential and their identities will not be revealed during the research or the report writing. The names of the schools will be kept confidential.

I trust that this research will make a meaningful contribution to the training that school leaders require in regards to the use of ICT in the management of primary schools.

I trust that you will consider my request favourable and support me in this research.

Yours sincerely



Annadene Malan

## ADDENDUM C:

# INFORMED CONSENT A MALAN

NORTH-WEST UNIVERSITY
YUNIBESITI YA BOKONE-BOPHIRIMA
NOORDWES-UNIVERSITEIT
POTCHEFSTROOM CAMPUS
Private Bag X6001, Potchefstroom
South Africa 2520

Enquiry: Dr. CP. v.d. Vyver
Tel: 018 299-4587
e-mail: cp.vandervyver@nwu.ac.za

4

14 Homestead Street
Alabama
Klerksdorp
1 November 2013

Dear Participant

I am currently a M.Ed student at the North West University (Potchefstroom Campus) in education management and leadership and need your professional input. I am doing my research under the supervision of Dr. C. P. van der Vyver and co-supervision of Dr. C. du Toit-Brits. My research title is: Training needs of primary school principals in the use of ICT (information communication technology) in school management of rural and township schools.

The District Director, Mr. H. Morata, has granted me permission to conduct interviews at rural and township primary schools. The Ethical Committee of the North West University also approved my ethics application for research.

The aim of this research is to conduct individual interviews with principals to determine the training needs of school leaders regarding the use of ICT in the management of their schools. The interview deals with the use of ICT in school management. The interview aims to determine your experience in the use of ICT in school management and to determine which training needs you as a school manager need in the use of ICT in management. Your professional input in conducting this interview will definitely contribute to a better understanding of this specific matter. Such input could also eventually lead to results by which future school principals can benefit from training in the use of ICT in school management. Thank you in advance for spending time to participate in the interview. I am fully aware that you have a tight time schedule and thus appreciate your co-operation all the more. It will, however, not require more than 30 minutes completing the interview. Your participation in the interview is entirely voluntary and you can withdraw from the interview at any stage.

Your professional input in contributing to the betterment of education will be appreciated.

Before conducting the interview, please take note of the following:

- You participate in the interview on a voluntary basis.
- You will not be disadvantaged in any way as participant.
- All information will be treated as confidential.
- Your identity will not be revealed, every participant and school will remain anonymous.
- If you participate in the interview we accept that your participation in this research is voluntary.

The information you provide will be treated as strictly confidential and will be utilised for research purposes only.

1

Your co-operation and professional input will be highly appreciated.

Should you have any problems/ questions/suggestions, please contact me or my supervisor.

My sincere thanks for your support and cooperation.

Annadene Malan

082 949 2835

Dr CP van der Vyver
Research Supervisor
0845052695

| | |
|---|---|
| Name of participant | Signature |
| Date | Place Signed |

## ADDENDUM D:

# INTERVIEW SCHEDULE:

The following questions will be asked to principals in order to get an understanding regarding their training needs in the use of ICT in school management:

1. Icebreaker: What comes to your mind when you hear the concept “ICT”?

2. Which ICT applications do you have available at your school?
   - For which purpose do the school use the ICT applications which are available?
   - How do you as principal make use of such ICT equipment?
   - Who use the ICT equipment the most?
   - For what purpose does this person use the ICT?
   - Which people are the experts in your school concerning the use of ICT?

3. What ICT equipment do you as principal use in the management of your school?

4. Did you receive any training regarding the use of ICT?

5. What training have you received from the DoE or any other institution with regards to the use of ICT in school management?

6. In which management areas do you as principal use ICT in the management of your school?

7. How does your current ICT knowledge allow you to adapt or to keep up with the changing world of ICT?

8. How often do you rely on staff member to assist you to use ICT?

9. In which areas do you need training in the use of ICT in the management of your school?

## ADDENDUM E:

# LETTER OF EDITING

14 November 2014

I, **Ms Cecilia van der Walt,** hereby confirm that I took care of the **editing** of the **dissertation** of **Ms Annadene Malan** titled *Training needs of primary school principals in the use of ICT in school management of rural and township schools.*


MS CECILIA VAN DER WALT

BA (*Cum Laude*)
HOD (*Cum Laude*),
Plus Language editing and translation at Honours level (*Cum Laude*),
Plus Accreditation with SATI for Afrikaans and translation
Registration number with SATI: 1000228

Email address: ceciliavdw@lantic.net

Mobile: 072 616 4943

Fax: 086 578 1425

**ADDENDUM F:**

# LETTER : PROF CJH LESSING

POTCHEFSTROOM

2531

4 Desember 2014

Me Annadene Malan

Noordwes-Universiteit

Potchefstroom

**VERKLARING: NASIEN VAN BRONNELYS**

Hiermee verklaar die ondergetekende dat hy die Bronnelys vir die studie van me Annadene Malan volgens die nuutste voorskrifte van die Senaat van die Noordwes-Universiteit tegnies nagesien en versorg het.

Die uwe

**Prof CJH LESSING**