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INFORMATION COMMUNICATION TECHNOLOGY ACCESS, USAGE AND IMPACT IN PRIMARY SCHOOL TEACHING AND LEARNING: THE CASE OF NKONKOBE AREA, EASTERN CAPE

BY

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DECLARATION

I, Silas Mlulami Chitha hereby declare that this dissertation is my own work. It has not been submitted to this or any other university for any degree before.

I also declare that all sources cited in the study (as verbatim quotes, paraphrases, or summaries) have been correctly and fully acknowledged by complete references, and that the responsibility for doing so, as directed by my supervisor and in terms of the University's policy on plagiarism, is my responsibility and mine alone. I absolve my supervisor and the university of any responsibility should this later be proved otherwise.

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Silas Mlulami Chitha

Signature: ……

Date: …….

SUPERVISOR'S STATEMENT

I confirm that the research project of the following candidate has been submitted with my approval.

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Dr. Philani Moyo

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DEDICATION

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ABSTRACT

This study examines ICT access, usage and impacts in primary school teaching and learning in Nkonkobe in the Eastern Cape Province. One of the major motivations for this study was that while the general advantages of ICT are well established and known, it however remains unclear whether South African schools, especially Eastern Cape primary schools have access to ICT hardware and software for teaching and learning. If they do have access to ICT, do they use it? For what? How frequent do they use it? Are teachers skilled enough to use this ICT in teaching and learning? Are learners benefiting from ICT usage? Against this background and questions, this research looks at whether selected urban, peri-urban, and rural primary schools in Nkonkobe Municipality have access to ICT. It also examines the role and impact of ICTs in primary school teaching and learning in Nkonkobe, Eastern Cape. The results of the study show that while urban and peri-urban primary have access to ICT, rural primary schools lack basic ICT hardware such as desktop computers and laptops. The urban and peri-urban primary schools are utilizing ICT in their daily teaching and school administration activities. Learners in urban primary schools also use ICT for their educational development. On the other hand rural primary schools are deprived of full ICT access and usage. Some of the rural schools only rely on television sets and cellphones for use in teaching and learning activities. Learners in rural primary schools are thus not benefiting much from ICT usage in teaching and learning. This ‘digital divide’ between urban, peri-urban and rural primary schools is one of the many policy gaps that are highlighted as a critical area that need to be addressed by the National and Provincial Education Departments.

ACCRONYMS

ADB	African Development Bank
AVU	African Virtual University
CASE	Community Agency for Social Enquiry
CAT	Computer Applications Technology
CBD	Central Business District
DFID	Department for International Development
DoE	Department of Education
DOI	Diffusion of Innovation
EC	Eastern Cape
EMIS	Education Management Information System
EU	European Union
HSBC	Hongkong and Shanghai Banking Corporation
ICT	Information and Communication Technology
JICA	Japanese International Co-operation Agency
KZN	KwaZulu-Natal
MDG	Millennium Development Goals
MTN	Mobile Telephone Networks
NEPAD	New Partnership for Africa's Development

NGO	Non-Govermental Organizations
NIED	National Institute for Educational Development
IT	Information Technology
RSA	Republic of South Africa
SADC	Southern African Development Community
SA-SAMS	South African Schools Administration and Management System
SCOPE	Senior Capstone Program in Engineering
SIDA	Swedish International Development Agency
SITESM2	Second International Technology in Education Study, Module 2
UK	United Kingdom
WCED	Western Cape Education Department
WSIS	World Summit on the Information Society

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CHAPTER 1

1. OVERVIEW OF THE STUDY

1.1 Introduction

Information and Communication Technology (ICT) is an umbrella term that refers to any technological communication device such as, for example, computers, computer network, computing hardware and software, cellphones, satellite systems as well as the various services and appliances associated with them such as video conferencing and e-based distant learning (Searchsmb, 2007). Information and Communication Technology (ICT) is an important tool for improved efficiency in e-commerce, e-government, societal interactions and in education (i.e. e-learning, communication and administration) (Mlitwa, 2006). It must be noted that information and communication technology (ICT) is of fundamental importance to the development of communities in relation to socio-economic and political factors. George (2004:1) asserts that starting in the 1950s and as the years went by, more and more aspects of our daily lives have come to be supported by ICTs, especially computers.

In education, ICT is considered part of a solution to address the changing learning needs of societies (Garrison and Anderson, 2003 cited in Mlitwa, 2006). ICT helps improve school administration such as the registration of learners, the keeping and retrieving of learner records, and enables electronic (rather than manual) handling of marks. Furthermore it enables teachers and learners to gain easy access to learning and teaching materials online without time constraints. Network technology also enables teachers to interact with colleagues anywhere in the world for mutual support and development. Breuleux (2001) argues that placing technology in schools and mandating an ICT program is not enough to enable teachers and students to acquire the skills and proficiencies to use them effectively. It is Breuleux's contention that ICT can indeed support more powerful and complete knowledge-building experiences for learners "if we integrated well-designed technologies in the context of meaningful, mindful inquiry projects, non-presentational pedagogies".

Among many other ICT hardware and software devices, the computer revolutionized the ICT world as we know it today. According to Guile (1998) computers do not only play a significant

role in society, but schools are increasingly acquiring computers as an aid to facilitate learning. However, in order for learning to be effective within schools, computers have to be integrated into the curriculum (Richards and Nason, 1999). This means that computers should not only be utilized as a tool for acquiring skills, but should also be used as a tutor (Taylor, 1980).

South Africa has become more globalised in recent years. This has been accompanied by a huge demand for ICT by citizens and a government desire to equip citizens with information technology (IT) skills. The South African government has also introduced a new system of using information technology in all government departments. Hoekman (2002) explains that e-government aims at transforming the existing government system through digital means by increasing citizen participation in government systems and processes. This is also aimed at improving the effectiveness and efficiency of the government services in order to foster democracy and socio-economic development (Hoekman, 2002). The South African Department of Basic Education is one of the government departments which adheres to the broader government ICT policy. The National Department of Basic Education has mandated Provincial Departments of Education to implement ICT in all schools. It even has a policy to that effect: the Department of Basic Education's Policy on the Implementation of ICT in Education (2004). In line with this policy the Eastern Cape Provincial Department of Education is in the process of implementing ICT in all schools in the province. This study examines the extent to which selected urban, peri-urban, and rural primary schools in Nkonkobe Municipality (in the Eastern Cape Province) have access to ICT. It further investigates how schools use ICTs in primary school teaching and learning and whether these ICTs have helped to improve teaching and learning.

1.2 Statement of the Problem

The Department of Basic Education's Policy on the Implementation of ICT in Education (2004) states that "every South African 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 to achieve personal goals and to be full participants in the global

community by 2013". This policy vision of the Department of Basic Education is partly inspired by the observation that Information and Communication Technology (ICT) is considered part of a solution to addressing the changing education and learning needs of societies (Garrison & Anderson 2003, cited in Mlitwa). It helps to improve schools administration through electronic records, allows easy access to recent learning and teaching materials online without time constraints. While the general advantages of ICT are well established and known, it however remains unclear whether South African schools, especially Eastern Cape primary schools have access to ICT hardware and software for teaching and learning. If they do have access to ICT, do they use it? For what? How frequently do they use it? Are teachers skilled enough to use this ICT in teaching and learning? Are learners benefiting from ICT usage? Against this background and questions, this research looks at whether selected urban, peri-urban, and rural primary schools in Nkonkobe Municipality have access to ICT. It also examines the role and impact of ICTs in primary school teaching and learning in Nkonkobe, Eastern Cape.

1.3 Research Questions

This study seeks to answer the following research questions:

1. What role does ICTs play in classroom teaching and learning in Nkonkobe primary schools?
2. What is the impact of ICTs in improving teaching and learning in Nkonkobe primary schools?
3. How can the use of ICTs be enhanced to improve their contribution to teaching and learning in Nkonkobe primary schools?

1.4 Research Objectives

The objectives of the study are:

1. To establish the role ICTs play in teaching and learning in Nkonkobe primary schools.

2. To investigate the impact of ICTs in improving teaching and learning in Nkonkobe primary schools.

3. To establish a mechanism that can be used by Nkonkobe primary schools to enhance the use of ICT's in teaching and learning.

1.5 Research Setting

The Department of Education in the Eastern Cape has 23 districts. Fort Beaufort Education District is one of these districts. Fort Beaufort Education District includes Alice, Fort Beaufort, Debe-neck, Middledrift, Adelaide, Seymour, Balfour and Bedford. The District has 249 schools in total: 47 high schools, 10 junior secondary schools and 192 primary schools. This study focuses on primary schools which include two Alice urban primary schools, namely, Davidson and Alice Primary; two peri-urban primary schools, namely, Alice Premier and Ntselamanzi Primary; and lastly two rural primary schools, namely, Readsdale Primary and Mankazana Primary School. The urban schools (Davidson and Alice Primary) are chosen simply because they are the only two urban schools in Alice. The peri-urban schools and rural schools used in this study are purposively selected.

1.6 Significance of the Study

This study contributes local level knowledge about the state of ICT implementation in Eastern Cape primary schools. It details the state of ICT access, usage and impacts in urban, peri-urban and rural primary schools in one of South Africa's deprived and underdeveloped provinces. The findings from this study have potential to be used by those involved in ICT education policy making and implementation in the Eastern Cape and nationally. The findings are also potentially useful for development practitioners involved in advocacy work about the importance of ICTs in schools. They can also be used by the government in identifying and bridging the gaps between urban and rural schools when it comes to ICT penetration rates and impacts.

1.7 Ethical Issues

According to Remenyi (1998), there are major ethical considerations to note when undertaking research. These are how the "information is collected", how the "information is processed"; and lastly, how "the findings are used" (Remenyi 1998: 110). In line with these ethical considerations, voluntary participation was followed in the study; people were not forced into participating. Informed consent was sought and received from all participants. Participants were fully informed about the procedures involved in the research (Remenyi 1998). The researcher also ensured that the participants were not put at risk of harm (physical or psychological) as a result of their participation. The researcher also guaranteed participant confidentiality (Remenyi 1998). Participants were not discriminated against on the basis of sex, race, or ethnicity.

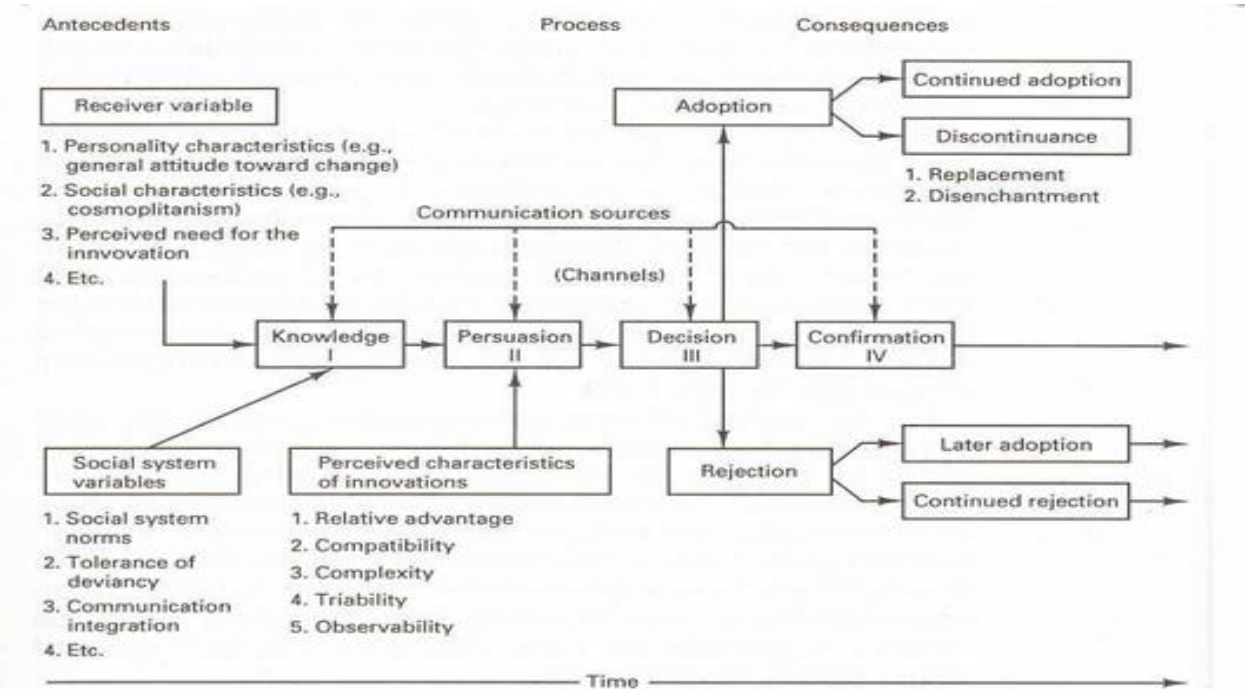
1.8 Theoretical Framework: Diffusion of Innovation Theory

This study uses the diffusion of innovation theory as its theoretical framework. The diffusion of innovation theory (developed by E.M. Rogers in 1962) is one of the oldest social science theories. It originated in communication to explain how, over time, an idea or product gains momentum and diffuses (or spreads) through a specific population or social system (Rogers, 1995). Diffusion research examines how ideas are spread among groups of people. The end result of this diffusion is that people, as part of a social system, adopt a new idea, behaviour, or product (Rogers, 1995). ICTs can be adopted as a relatively new idea in a society. The key to adoption is that the person must perceive the idea of ICTs, behaviouur, or product as new or innovative. It is through this that diffusion is possible (McQuail, 2002: 299). Adoption of a new idea, behavior, or product (i.e., 'innovation') does not happen to everyone simultaneously in a social system; rather it is a process whereby some people are more eager to adapt to the innovation than others (McQuail, 2002). Early adopters are innovators who want to be the first to try the innovation (Rogers, 1995). They are venturesome and interested in new ideas and are willing to take risks. The early adopters are people who represent opinion leaders (Rogers, 1995). They enjoy leadership and embrace change opportunities. They are already aware of the need to change and so are very comfortable adopting new ideas (Rogers, 1995). Leaders who are

aware of the need for good, worthwhile changes are usually followed by others but some people always remain skeptical about change and will only capitulate when they socially forced to follow everyone else. There are always people who are tradition bound and very conservative and will resist change of any kind (Rogers, 1995).

According to Rogers (1995) there are five main factors that influence adoption of an innovation; these are relative advantage which is a degree to which an innovation is seen as better than the idea, program, or product it replaces; the compatibility – how consistent the innovation is with the values, experiences, and needs of the potential adopters; complexity – how difficult the innovation is to understand and/or use; triability – the extent to which the innovation can be tested or experimented with before a commitment to adoption is made; observability – the extent to which the innovation provides tangible results (Rogers, 1995).

Figure 1: Diffusion of Innovation Process



Source: Rogers, 1995.

People from different backgrounds and societies will adopt innovations such as ICTs at different times and at varying paces. According to Orr (2003:1) "diffusion is the process by which an innovation is communicated through certain channels over time among the members of a social system based on some decisions and actions as to whether to incorporate the new idea or not". According to McQuail (2002) the theory therefore "suggests that social change is a process which begins with the most imaginative and committed people, and then diffuses through the rest of the society". Rogers (2003) also talks about the innovation-decision process which he describes as "an information-seeking and information-processing activity, where an individual is motivated to reduce uncertainty about the advantages and disadvantages of an innovation". For Rogers (2003), the innovation-decision process involves five steps: knowledge, persuasion, decision, implementation, and confirmation. Given that decisions are not authoritative or collective, Rogers (1995) states that each member of the social system faces his/her own innovation-decision that follows the five-step process which includes knowledge – where a person becomes aware of an innovation and has some idea of how it functions; persuasion – where a person forms a favorable or unfavorable attitude toward the innovation; decision – where a person engages in activities that lead to a choice to adopt or reject the innovation; implementation – where a person puts an innovation into use and; confirmation – where a person evaluates as useful the results of an innovation-decision already made.

According to Orr (2003) the innovation-decision process is made through a cost-benefit analysis where the major obstacle is uncertainty. People will adopt an innovation if they believe that it will, all things considered, enhance their lives. So they must believe that the innovation may yield some relative advantage to the idea it supersedes. In the context of this study, the National Department of Basic Education, Provincial Department of Basic Education, Fort Beaufort Education District and educators in schools under consideration would have made a cost-benefit analysis to see whether ICTs are work introducing to enhance teaching and learning in primary schools. Before taking their decision they would have also answered a number of questions: How can they know for sure that there are benefits of using ICT in schools? Also, in consideration of costs, people determine to what degree the innovation would disrupt other functioning facets of their daily life. Is it compatible with existing habits and values? Is it hard to use? The newness

and unfamiliarity of an innovation infuse the cost-benefit analysis with a large dose of uncertainty.

This study further uses diffusion of innovations theory because of a number of its merits. One of its good characteristics is that it takes a radically different approach to most other theories of change. Instead of focusing on persuading individuals to change, the theory sees change as being primarily about the evolution or "reinvention" of products and behaviors so they become better fitted to the needs of individuals and groups (Rogers, 2003). This theory has been used successfully in many fields including communication, agriculture, public health, criminal justice, social work, and marketing (Rogers, 2003). Given its successful implementation in these physical and social science fields, this study therefore extends its applicability to sociological enquiry with specific reference to the diffusion of ICT into urban, peril-urban and rural primary schools. Rogers, (2003) also alludes to the applicability of this theory in ICT studies when he argues that the most successful adoption of an ICT program results from understanding the target population and the factors influencing their rate of adoption.

Lastly, it must however be noted that the diffusion of innovation theory has some limitations. According to Rogers (2003), some of the limitations include the fact that the adopter categories did not originate in ICT; theory was also not developed to explicitly apply to adoption of new behaviours or ICT innovations. Thirdly, the theory works better with adoption of new behaviours rather than cessation or prevention of behaviours; and lastly it doesn't take into account an individual's resources or social support to adopt the new behaviour (or innovations). Be that as it may, the many positive characteristics and merits of the theory discussed above far outweigh these few limitations. Given these facts, this study is therefore grounded in diffusion of innovation theory as it fully examines ICT access, usage and impacts in Nkonkobe municipality urban, peri-urban and rural primary schools.

1.9 **Structure of the dissertation**

Chapter 1 introduces the study, states the research problem, research questions, research objectives, research setting, significance of the study, ethical issues and the theoretical framework.

Chapter 2 reviews literature on ICT use. It looks at the ICT policy framework in South Africa. It then looks at the comparative analysis of ICT usage in developed and developing countries and draws conclusions.

Chapter 3 examines theories and research methods that intellectually ground, frame and guide the study in relation to ICT use in South Africa, particularly Nkonkobe Primary Schools. It also covers the research design, study population, sampling procedure and size, data collection instruments and a conclusion.

Chapter 4 examines ICTs access, usage and impacts in teaching and learning in Nkonkobe Primary Schools. It analyses data.

Chapter 5 consists of the conclusions and recommendations of the study.

CHAPTER 2

2. ICT ACCESS AND USAGE AROUND THE WORLD: A LITERATURE REVIEW

2.1 Introduction

ICT is an important tool upon which various aspects of socio-economic developments are based. In line with the United Nations Millennium Development Goals where all countries declare a commitment to reduce poverty, improve equitable access to health, and redress illiteracy among the world population by 2015, the World Summit on the Information Society plan commits countries to using ICT to achieve these development goals. The World Summit on the Information Society (2003) sets a goal 'to connect secondary schools and primary schools with ICTs, to adapt all primary and secondary schools curriculum to meet the challenges of an Information Society' (WSIS Geneva 2003:2; Tunis 2005).

2.2 ICT Policy Framework in South Africa

Connecting education with ICT is not only prioritised in developed countries but also in developing countries. In Africa, the NEPAD (New Partnership for Africa's Development) set out an e-school initiative whose priority is to connect schools across its member countries – to ICT. The initiative commits to provide teachers with ICT skills to use ICT tools to enhance teaching and learning, and to provide school managers with ICT skills to facilitate the efficient management and administration of the schools (NEPAD e-school, 2004:2-3). The NEPAD e-schools initiative is also compliant with the Millennium Development Goals. The main facets of the initiative are multi-country initiative and educational initiative. The features of the NEPAD e-schools initiative are voluntary participation by countries, commitment to successful implementation, harnessing multi-country economies of scale, coordinating teacher training in many countries in a short space of time, coordinating ICT curriculum and content development across the continent, optimising e-learning techniques to enhance the limited teaching resources in subjects such as mathematics and sciences, benefiting from long term planning and

commitment by countries to create an attractive opportunity for private sector partners to provide products and services at affordable prices, reducing the cost of communication and, planned and sustainable maintenance and replacement (NEPAD e-schools, 2004).

The objective of the NEPAD (2004) e-schools initiative is to provide ICT skills and knowledge to primary and secondary school students that will enable then to function in the emerging Information Society and Knowledge Economy. This initiative also aims to make every learner ICT literate, to provide teachers with ICT skills to enable them to use ICT as tools to enhance teaching and learning and to provide school managers with ICT skills so as to facilitate the efficient management and administration in schools (NEPAD, 2004). In order to achieve all this NEPAD aimed at computerising all schools including its administration and management. NEPAD also aimed at making sure that there is connectivity to the World Wide Web after computerising and also by the training of the trainers.

These statistics show that more and more schools are acquiring computers for teaching and learning. The White Paper on e-Education also notes that the growth rate in the availability of computers was higher in high schools than in primary schools (DoE, 2004). But a large number of schools are still without computers, especially in the poor provinces of the Limpopo and Eastern Cape (DoE, 2004).

The Western Cape Education Department (WCED) has developed an e-Education Policy Framework that incorporates many of the objectives outlined in the White Paper on e-Education (DoE, 2004). This policy framework has two major goals for the Western Cape regarding ICT in education: (1) Good management and service delivery through the use of ICT and (2) the use of ICT in the classroom to ensure that effective teaching and learning takes place (WCED, 2004). The document was developed as a framework for the development of other documents, especially in relation to the issue of ICT in education (WCED, 2004). An example of one of the policies that are already being developed is an e-START policy (Chiles, 2005, e-mail). According to the e- Education Policy Framework (WCED, 2004:15-18) the education Department in the Western Cape, provincial and local governments are the main source of funding for these initiatives. However, the department also welcomes funding from the private

sector. A public-private partnership is developed to ensure funding of these initiatives. According to the Western Cape Education Department (WCED, 2004) the department has embarked on an initiative to ensure the integration of ICT throughout the system.

The KwaZulu-Natal (KZN) interim policy document has been developed within the broad framework of the National Action Plans in Africa (KZN DoE, undated). This ICT framework was developed from the mission statement of the Department of Education in KwaZulu-Natal, which states that all schools shall be ICT capable by the year 2013, in line with the White Paper on e-Education. In order to achieve the goals as set out by the White Paper on e-Education, the KwaZulu-Natal Education Department has embarked on a Proposed Operational Plan, outlining the outcomes for ICT for the province. Some of the issues addressed in this plan include management structures, funding strategies, inter-governmental collaboration and provincial structures. Other issues include infrastructure, community development and curriculum development. It was hoped that the Provincial Treasury would fund the implementation of ICT in schools (KZN DoE, undated).

The Mpumalanga province has developed a project, called the Thuthuka project, as a framework to guide the implementation of ICT in the province. Phase two of the project was to start in 2004 and was to run over a three-year period. The aim of the project was reflected in the mission of the province: "To provide learner-centered life-long education and training through ICT" (Mpumalanga, DoE:1-2). The plan further sets out the goals for the Mpumalanga Department of Education (DoE) regarding ICT implementation, which include developing computer-skilled learners as well as to enhance learning through the integration of ICT in its schools (Mpumalanga, DoE). According to the Mpumalanga Department of Education (Mpumalanga, DoE) Mpumalanga has established ten teacher centres to act as training centres for teachers, managers and administrators. The training comprised of basic computer literacy skills for the novice computer user, advancing to expert computer skills and training and in the use of ICT. It was hoped that by the year 2013 all educators, managers and administrators would have at least basic computer literacy skills. Mpumalanga's DoE has set a goal that all schools that have electricity were to have at least one computer for administrative purposes by the year 2003. It

also planned that at least 20 computer laboratories per year were to be rolled out, starting from the year 2004. However, the DoE in Mpumalanga hoped that all schools were to undertake their own connectivity, for example through dial-up Internet excess. Although some of these initiatives were partly funded by the Mpumalanga DoE, it was hoped that additional funds were to be obtained through public-private partnerships, donor projects and community partnerships (Mpumalanga, DoE).

The Eastern Cape Provincial Strategy for ICT in Education (EC DoE, undated) details the annual Education Management Information System (EMIS) survey of 2001 which states that there were only 371 schools in the Eastern Cape that had computers in 2001, and that on average there were only 1-14 computers in these schools. The Eastern Cape Provincial ICT Strategy also mentions that computers in schools are generally used to teach basic computer skills such as word processing and that the Internet has become more accessible for teaching and learning (EC DoE, undated). The EC government has also committed itself to establish partnerships with a number of stakeholders, including the private sector. According to the Eastern Cape Department of Education (EC DoE, undated) the EC government is engaging in a project called 'Connect Eastern Cape', in which some schools are identified and equipped with technological equipment such as cables, computers, ICT equipment and satellite dishes, for Internet connectivity. The private companies make donations to identified schools in the form of computers and other technological equipment if the need arises. The government then supplements these schools with whatever is still needed at that particular school.

The above provincial statistics show that South Africa is still a country with a huge gap between the rich and the poor in terms of access to ICTs (Accenture, 2001). Computer access is largely a domain of those who can afford it, although there are a lot of initiatives towards getting more people to have access to computers. Currently, if someone is able to access the computer, it is commonly in one of the four ways namely at home, at school at an Internet café and digital village (Byron & Cagliardi, 2002). According to Community Agency for Social Enquiry (CASE) Report of 2000, only about a quarter of the South African populations have access to computers. The ability to use computers is particularly low in rural areas with 2% of people having access

whereas in urban areas 25 % of youths are likely to have access to computers (CASE, Report, 2000). According to CASE, male youth seem to have better access to and understanding of technology than their women counterparts. This is based on the proportion of respondents to the CASE research of 2000.

Table 2: Proportion of people who have access to/ can use computer, by race

Computer		
Race	**Access**	**Can Use**
African	19%	16%
Coloured	34%	39%
Indian	53%	73%
White	88%	91%
All	**28%**	**27%**

Source: CASE 2000 Report

This table shows that white people are the majority users of computers followed by the Indian and Coloured communities. African people have a small number of people who have access to computers and know how to use them. This trend is generally ascribed to the historical inequalities perpetrated by the apartheid regime whereby the black population was suppressed and did not enjoy some of the basic rights they deserved. The table below describes computer access of the South African youth up to the age of 35 (CASE, 2000).

Table 3: Proportion of people who have access to/ can use computer by age

Computer		
Age	**Access**	**Can use**
16-19	32%	33%

20-24	28%	26%
25-29	27%	28%
30-35	23%	21%
All	28%	27%

Source: CASE 2000 Report

Webcheck (2000) argues that the youth are able to embrace technology more easily than the older generation. Age rather than education, appears to be the most important factor. This is because youth under the age of 20 at all levels of education are more likely to be able to use a computer compared to their older counterparts. Computers and the Internet are viewed by Eve (2001: 43) "as technologies for young people" of limited utility because they do not have access to it. Furthermore, the elderly tend to associate these technologies with the world of work or professional needs.

The Presidential Review Commission on the Reform and Transformation of the Public Service in South Africa (1998) identified a lack of strategic direction in the utilization of information management, information management systems and information technology, to support government's goals. There were a number of challenges that needed to be addressed if the information systems are to enhance the development of the new state. These included concerns about inter-operability, duplication of efforts, not achieving economies of scale, and security. In addition, the arrangements were not conducive to the creation of seamless access to government services and these needed to be assessed. There was also a realization that departments needed to establish a post of Government Information Technology Officer (GITO) to facilitate the use of ICT's for meeting the business objectives of government.

According to the Survey of ICT and Education in Africa: South Africa Country Report (Isaacs, 2007), the schools with computers is as follows: Western Cape (97%), Gauteng (94.5%), KwaZulu-Natal (43.6%), Free State (77.3%), Mpumalanga (52.9%), Northern Cape (91%), Limpopo (41.8%), North West (67.6%) and the Eastern Cape (23%). The Eastern Cape, which is among the poorest provinces in South Africa, has the lowest number of computers in schools in South Africa. The South African Department of Education through its ICT in Education policy,

the White Paper on e-education (DoE, 2004) and the Guidelines for Teacher Training and Professional Development in ICT (DoE, 2007) has developed guidelines for the distribution and use of digital resources in schools such that equity and equality in education are achieved at school level. According to the Survey of ICT and Education in Africa: South Africa Country Report (Isaacs, 2007), South Africa has also made strides in infrastructure indicators as well.

Table 1: ICT Infrastructure Indicators, 2005

Indicator	
Fixed-line subscribers	4.7 million
Mobile subscribers	23.1 million
Dial-up subscribers	1.08 million
Internet users	3.6 million

Source : Survey of ICT and Education in Africa: South Africa Country Report (Isaacs, 2007)

The usage of ICTs in former model C schools compared to 'black township' schools is better because the former model C schools are better off in terms of technology compared to the disadvantaged 'black townships' schools (EC DoE, undated). The former Model C schools are better off because the do fund raising and charging high school fees to maintain the level of technological items available. It is also interesting to note that traditionally the townships schools are far behind from the middle class and higher income schools in terms of technology. The parents and businesses of the middle class and higher income schools tend to support the schools with technology. In South Africa, all the provinces and the Nkonkobe Area schools are divided into quintile 1 -5 (EC DoE, undated). Quintile 4-5 schools are high income schools which are former model C schools which have ICTs and better technology. These are schools that are found in the urban areas. Quintile 1-3 schools are no fee schools which are found in the peri-urban and rural areas. These schools tend to have little or no ICTs at all. Some do not even have electricity to operate any ICT equipment.

2.3 Comparative Analysis of ICT usage in Developed and Developing countries

There are two major views regarding the use of ICT in education and its implications for society which can be classified as the optimistic and pessimistic views (Howell and Lundall, 2000; Polikanov and Abramova, 2003; Selwyn, Gorard and Williams, 2001). The optimistic view embraces the use of ICT in education. Howell and Lundall (2000) mention two kinds of optimists – the inevitablilists and the euphoric or visionary optimists. The inevitablilists maintain that ICTs are a significant part of everyday life and that one should be acquainted with them. Furthermore, ICTs should be an important part of the school curriculum in order to prepare learners for the modern world of technology (Howell and Lundall, 2000). The euphoric and visionary optimists, on the other hand, maintain that ICTs, which are increasingly found in the economy, may change the way we live, communicate and work (Howell and Lundall, 2000).

In contrast, the pessimists' view is that ICTs epitomize the already huge digital divide that exists between the developed and the developing world (Howell and Lundall, 2000; Polikanov and Abramova, 2003; Cuban, 2001). Not only do they maintain a pessimistic view in terms of the digital divide, but also in terms of how ICT is taught in the classroom. Stoll warns that computers encourage students to hand in "hypermedia projects" instead of written assignments (1999:6). He further cautions that simply downloading any material from the Internet does not mean that the student has learnt anything. Many governments seem to embrace the optimistic view, by encouraging the implementation of more and more computers into schools, believing that this medium will change pupils and society for the better (Mooij and Smeets, 2001). But, are computers skills enough to prepare students for the information age, and how important are computers in schools in the information age?

Most governments around the world see the development of ICT policies as indispensable to the successful integration of ICT in education. Kozma and Anderson (2002) state that "countries like Chile, Finland, Singapore and United States have set national goals and policies that identify a significant role for information and communication technologies (ICT) in improving their education systems and reforming their curricula. Major investments have been made to increase the numbers of computers in schools and the networking of classrooms".

Although ICT in education is seen as significant in many aspects in a computer-rich world, there is still a huge gap regarding implementation of computers in schools between rich and poorer countries. This is what is known as the 'digital divide' (DoE, 2004; Selwyn, Gorard and Williams, 2001). Selwyn, Gorard and Williams (2001) describe the 'digital divide' as "a growing disparity between those individuals and communities that have and those that do not have easy access to new information technologies" (2001:261). The digital divide is more evident in the implementation rate of computers in schools. Developed countries have had a 90 – 100% computer implementation success rate as compared to developing countries (UK, Department for Education and Skills, 2004). The following table illustrates the computer/student ratio and internet connectivity in some developed and developing countries in Asia and Europe between 1999 and 2004.

Table 2: ***The computer/students ratio and Internet connectivity in developed and developing countries***

Year	Country	Internet Connectivity in Schools	Computer/Pupil ratio
2004	UK	100%	1:7,5 (Primary)
1999	Finland		1:12
1999	Italy		1:28,5
1999	Portugal		1:150
2002	Canada	+80%	1:9
2002	South Korea	100%	1:9

Source: UK, Department for Education and Skills, 2004

The above table shows that the United Kingdom (UK) has 99% of all schools connected to the internet, according to the Statistical First Release, ICT of 2002 (UK, Department for Education and Skills, 2004). In many primary schools in the UK there were 7.5 pupils for every computer

in 2004, while high schools had 4.9 pupils for every computer in 2004 (UK, Department for Education and Skills, 2004). According to a report in 1999 by the European Schoolnet, Finland has a ratio of one computer for every 12 students, while Italy has a ratio of one computer for every 28.5 pupils. Portugal has a ratio of one computer for every 150 pupils (Abbott, 2001). The high computer/pupil ratio in Canada is similar to many European schools. The report by the Second International Technology in Education Study, Module 2 (SITESM2), says that one computer was available for every nine pupils in elementary schools in Canada in 1999 (Granger, Morbey, Lotherington, Owston and Wideman, 2002). This report further mentions that over 80% of schools in Canada had Internet connectivity in that year. In Denmark, the number of computers with Internet connection, from the total number of computers used for teaching and learning in 2002 was 82,2%; in Sweden 80,4%,; and in both Finland and Iceland 75,3% (Hylén, 2003).

Internet access in Africa is among the lowest in the world. Although that is the case ICT in Africa is rapidly increasing (Polikanov and Abramova, 2003). According to Polikanov and Abramova, many African states now have Internet access (2003), with South Africa the leader in this regard in southern Africa. Many African countries still do not have adequate Internet connectivity due to a lack of infrastructure (Kawooya, 2004; Polikanov and Abramova, 2003). This inadequacy in ICT infrastructure and connectivity reflects the pessimists' idea (Polikanov and Abramova, 2003; Howell and Lundall, 2000) that ICT will broaden the divisions that exist in the so-called 'digital divide' (Warschauer, Knobel and Stone, 2004; Looker and Thiessen, 2003) between the rich and the poor nations.

Many developing countries in the Southern African Development Community (SADC) region are following industrialized countries in efforts to restructure their educational practices through utilising the potential of Information and Communication Technologies (ICTs) (Kawooya, 2004; Polikanov and Abramova, 2003). It is expected that ICTs will improve quality of learning, motivate students, allow them to exercise complex skills needed in future, make extended knowledge resources of the internet accessible to them and thereby facilitate the development of I.C.T's as an agency needed for mastering the future (Kawooya, 2004; Polikanov and Abramova, 2003). Some SADC countries are investing resources to equip schools with computers to build

information networks and other infrastructure needed for knowledge society. Experiences world-wide indicate that the mere introduction of ICTs is likely to make working with more complex educational objectives available for the participants (Kawooya, 2004; Polikanov and Abramova, 2003).

In Namibia, the National Institute for Educational Development (NIED), initiated by the Ministry of Basic Education in 1995, developed a policy for ICT in Education. This policy, which was revised in 2000, also embraces the 'inevitabilist view' concerning ICT. Its aim is to prepare all ICT skilled students, learners and teachers in Namibia for the economic sector. The overall goals of the policy are to produce ICT literate citizens; produce people capable of working and participating in the new economies and societies arising from ICT and related developments; leverage ICT to assist and facilitate learning for the benefit of all learners and teachers across the curriculum; improve the efficiency of educational administration and management at every level from the classroom, school library, through the school and on to the sector as a whole; broaden access to quality educational services for learners at all levels of the education system; and to set specific criteria and targets to help classify and categorize the different development levels of using ICT in education (Namibia, Ministry of Basic Education, Sports and Culture and Ministry of Higher Education, Training and Employment creation, 2004:20).

In Zambia, the penetration levels of ICTs in education institutions remains low with those schools that are equipped mostly utilizing second-hand and refurbished computers (Isaacs, 2007). The integration of ICTs in learning and teaching practice has been limited, although the introduction of computer studies as a school study subject has begun to change this. The recent adoption of a national ICT policy, as well as the development of a draft ICT policy for education and an associated implementation framework, provides an enabling policy environment to promote far greater access and use of ICTs across all sectors of Zambia's education system, including a system for enhancing education management, administration, and teaching and learning (Isaacs, 2007).

In March 2007, the Zambian government launched its national ICT policy. At the launch, President Mwanawasa reportedly emphasized the creation of an innovative, market responsive, highly competitive, coordinated, and well-regulated ICT industry (Isaacs, 2007). The policy identifies three goals for ICT to enable a diversified and export-oriented economy; to improve livelihoods and protect the vulnerable through service delivery; to provide an efficient and effective public sector. The policy recognizes the need to face the following challenges in education: low levels of ICT literacy; high cost of technology acquisition; "Brain drain" resulting in considerable loss of skilled personnel; limited local ICT industry, lack of standardization and certification programmes in ICT; and inadequate institutional capacity (Isaacs, 2007). The Computers for Zambian Schools is a registered trust established by the local educational and ICT specialists, representatives from the British Council, Ministry of Education, and the Beit Trust. It operates as a partnership between the Computers for African Schools, which is a UK-based registered charity, the British Council, HSBC, the British High Commission, the Beit Trust, SchoolNet Zambia, MTN, ZamNet, and the Zambian Ministry of Education (Isaacs, 2007). While the ICT for education policy and implementation framework make some references to gender, they do not explicitly refer to the promotion of gender equality and women's empowerment.

Malawi on the other hand is a highly impoverished country. Malawi has a dedicated national ICT policy that includes the promotion of ICTs in education. It also has a few innovative initiatives in this area, committed largely to the promotion of ICT access in schools and integrated library and information services and networks (Isaacs, 2007). There are a few noteworthy initiatives in Malawi that attempt to bridge the digital divide. Many of these initiatives depend on donor funding from groups such as the World Bank, Swedish International Development Agency (SIDA), Department for International Development (DFID), and the Japanese International Co-operation Agency (JICA) (Isaacs, 2007). Malawi's 2020 vision is for an ICT-led Malawi and its mission is to facilitate the creation of an enabling environment for efficient, effective, and sustainable utilization, exploitation, and development of ICTs in all sectors of the economy in order to attain an information-rich and knowledge-based society and economy. This policy has a dual focus (Isaacs, 2007). The Computers for Malawian School scheme is jointly administered by the British Council and SchoolNet Malawi, which is a registered trust within the SchoolNet

Africa organization (Isaacs, 2007). There is little digital education content based on the local curriculum frameworks available in Malawi's education institutions.

Zimbabwe has been beleaguered by economic, social, and political turmoil in recent years which has had a debilitating effect on its already-declining education system (Isaacs, 2007). The country nevertheless has a dedicated national ICT policy that was adopted in 2005 and that makes significant references to the promotion of ICTs in education including pedagogical use in educational institutions. Zimbabwe also has a vibrant civil society sector that promotes ICT for development and education, of which organizations such as World Links Zimbabwe has played a pioneering role since the late 1990s (Isaacs, 2007). The African Virtual University (AVU) established an ambitious teacher education project involving 10 African countries, in partnership with African Development Bank (ADB) and the NEPAD in 2006. Zimbabwe is one of the 10 countries involved (Isaacs, 2007). Zimbabwe has a limited if any fiscal resources that are committed by government to support ICT access and use.

2.4 Conclusion

This chapter has discussed the role of ICT in socio-economic, political and cultural life around the world. It has demonstrated the benefits of ICT at individual, national and continental level. Even though the chapter notes the many benefits of ICT, it however highlights that there still exists a huge 'digital divide' between developed and developing countries. ICT penetration rates in developing countries such as Zambia, Malawi, Zimbabwe and South Africa are still low when compared to developed countries. Despite limited ICT access in many parts of South Africa, the chapter highlighted how all provinces have developed ICT policies and strategies for the basic education sector. The existence of these policies however does not mean that ICT is used in all South African primary and secondary schools. This is an issue that is explored further in the chapters that follow.

CHAPTER 3

3. RESEARCH METHODOLOGY AND METHODS

3.1 Introduction

This study uses qualitative and quantitative approaches. Both approaches are used because they complement each other thus giving birth to a stronger and much more reliable research design. Triangulation was used during data collection. According to Seal (2004:294) triangulation implies combining more than one method in looking at a particular research question to cross-check results for consistency and enhances confidence in the research findings. Data collection was conducted at two urban schools (Davidson Primary and Alice Primary), two peri-urban schools (Ntselamanzi Primary and Alice Premer), and two rural schools (Readsdale Primary and Mankazana Primary school). All these schools are in the Nkonkobe area under the auspices of the Fort Beaufort Education District. The Fort Beaufort District is chosen because it falls in the Nkonkobe Municipality and it is one of the poor performing districts in the province. In-depth semi-structured interviews and key informant interviews with teachers and Fort Beaufort Education District officials dealing with ICTs issues were conducted. A structured questionnaire was also administered as a data collection instrument.

3.2 Why Use both Quantitative and Qualitative Methods?

This study uses both quantitative and qualitative methods for a variety of reasons. Seal (2004) argues that quantitative methods can be used to establish generalization. On the other hand, Durheim, Painter, Blanche (2006:132) argue that generalizability and objectivity are not the only two strengths of quantitative research method but ideals towards which we should strive for in quantitative research. They further explain that the extent to which the results are generalizable is dependent on the way in which the sample was selected. Also the extent to which the results are objective is dependent on the way in which phenomenon under investigation was conceptualized and measured (Durrheim et al: 2006).

The quantitative method used in this study is a questionnaire. A questionnaire is an instrument used in a survey research method and is specifically designed to elicit information that will be used for analysis (Seal, 2004). It is also used in experiments, field research, and other modes of observation but is primarily for survey research (Babbie. 2007:345.). On the other hand, Seal (2004:150) defines a questionnaire as a document normally distributed through the post or personally to be filled out by the respondent in his or her own time. Although, he further explains that questionnaires may be completed by the respondent under the supervision of the researcher; the questionnaire can also be filled out by the researcher in the presence of the respondent. Some questionnaires are used to seek factual information; others are concerned with determining opinion, attitudes and interests (Seal 2004:150). In formulating a questionnaire, the researcher has two options, to use either open-ended or closed questions or use both (Babbie, 2007:246). This study uses a semi-structured questionnaire, that is to say, it uses open-ended and closed questions.

The use of questionnaires for data collection in research has some advantages and some disadvantages. The advantage in using questionnaires is that it is practical and a large volume of information can be collected from a large number of people in a short period of time and in a relatively cost effective way (Babbie, 2007). The results of the questionnaires can usually be quick and easily quantified by either a researcher or through the use of a software package. Questionnaires can also be administered by the researcher or by any number of people with limited effect on its validity and reliability (Babbie, 2007). Data collected through questionnaires can be analyzed more scientifically and objectively than other forms of research and when data has been quantified it can be used to compare and contrast other research and may be used to measure change (Babbie, 2007).

Although questionnaires have advantages one cannot avoid the fact that there are also some disadvantages that are associated with the use of questionnaires in data collection. Babbie (2007) argues that they can be inadequate when trying to understand some forms of information, that is, changes of emotions, behaviour, feelings, etc. Other scholars also argue that quantitative research is simply an artificial creation by the researcher as it is asking only a limited amount of information without explanation (Babbie, 2007). Babbie (2007) further argues that the

questionnaire data collection method lacks validity because there is no way to tell how truthful a respondent is being and there is no way of telling how much thought a respondent has put in (Babbie, 2007). Babbie (2007) further argues that the respondent may be forgetful or not thinking within the full context of the situation. People may read differently into each question and therefore reply based on their own interpretation of the question. According to Babbie (2007) there is also a level of researcher imposition, meaning that when developing the questionnaire, the researcher is making their own decisions and assumptions as to what is and is not important, and therefore they may be missing something that is of importance.

It will be recalled that this study also uses qualitative methods. Qualitative research shares the theoretical assumption of the interpretative paradigm which is based on the view that social reality is created and sustained through the subjective experience of individuals involved in the communication process (Fryer, 1991). Qualitative research attempts to accurately describe, decode and interpret meanings of phenomena occurring in a particular social context (Fryer, 1991). This method allows the researcher to interact with respondents in their own language and terms, thus providing a holistic view of the phenomena under investigation (Fryer, 1991). In this study, qualitative methods were used to obtain more in-depth information on the use and availability of ICT hardware and software in Nkonkobe municipality primary schools.

In-depth semi-structured interviews and key informant interviews are the qualitative data collection instruments used in this study. These interviews were conducted after the administration of questionnaires in an effort to broaden, deepen and improve the quality of data collected. Unlike questionnaires that are commonly self-administered, interviews as an alternative method are commonly conducted by and in the presence of the researcher meaning that they are typically done face-to-face (Babbie 2007:264). The use of interviews in this study assisted in addressing the shortcomings of soliciting data through questionnaires only.

3.3 Sampling Procedure

According to Nkantini (2005:38) sampling should be understood as a technical system or measuring device that is used to explain how specific information is selected and collected from

which data will be drawn. Sampling can be done according to at least two procedures, namely, probability and non-probability sampling. Probability sampling includes simple random sampling, systematic sampling, stratified sampling and cluster sampling (Babbie and Mouton 2001:164). Examples of non-probability sampling are accidental/incidental sampling, purposive sampling, quota sampling and snowball sampling (Babbie and Mouton 2001:165). In non-probability sampling, not everybody is given a chance to be chosen for the sample. This is the opposite of probability sampling where all in a target population stand an equal chance of being selected.

This study used simple random sampling to select respondents. The selection was done in different schools (urban, peri-urban and rural) within Nkonkobe municipality. Babbie (2007: 191) states that random sampling is key to the process since everyone has an equal chance of being selected. The advantage of this procedure is that it serves as a check on conscious or unconscious bias on the part of the researcher. It also offers access to the body of probability theory, which provides the basis for estimating the characteristics of the population as well as estimating the accuracy of the sample (Babbie 2007: 191).

3.4 Data Collection Instruments

As alluded to above, data collection was based on questionnaires, in-depth semi-structured interviews, key informant interviews and non-participant observation. A total of 25 questionnaires were distributed and administered by the researcher. Out of these, 21 were fully completed and used in the analysis. The advantage of using questionnaires is that a large coverage of participants was done in a short space of time at little cost (Flick, 2006).

A total of 21 in-depth semi-structured interviews with educators in the mentioned schools were also conducted in conjunction with questionnaires so as to increase the reliability, validity, depth and quality of the data. These 21 interviewees are those respondents who had fully completed and returned the questioner referred to above. The advantage of using interviews is the ability for the researcher to ask probing questions that address the limitations that emerge during the filling in of questionnaires (Yin, 2003). Although interviews are deemed to be the best choice as complements of questionnaires, they have limitations. The disadvantage of interviews as stated

by Dalvit (2004) is that analysis of data is usually more complicated than questionnaires and cannot guarantee anonymity. The gender and race of the interviewer can also generate assumption and respondents may try to fulfill the researcher's expectations (Yin, 2003). Lastly, too much flexibility may be a disadvantage for it allows the personal beliefs and attitudes of the interviewer to unintentionally influence the responses and/or the analysis of data (Frankfort-Nachmias 1996 cited in Dalvit, 2004). Despite the disadvantages stated above regarding interviews, the researcher chose interviews for their flexibility which allows more control over the research process (Creswell 2003: 186).

One key informant interview was conducted in this study. Key informant interviews are qualitative in-depth interviews with people who know what is going on in the community (Creswell, 2003). The purpose of key informant interviews is to collect information from a wide range of people including community leaders, professionals, or residents who have firsthand knowledge about the community (Creswell, 2003). These community experts with their particular knowledge and understanding can provide insight on the nature of problems and give recommendations for solutions.

Non-participant observation was ongoing from the first until the last day of the data collection process. The researcher physical visited all the schools, toured their computer labs, rooms where some schools kept their ICT hardware and took pictures. The researcher also observed some students using computers in a computer lab. A fairly accurate snapshot impression was obtained through these observations.

3.5 Who were the respondents?

Out of the 25 questionnaires that were administered to teachers, 21 were returned. In-depth semi-structured interviews were then conducted with the 21 educators who had returned the questionnaires. These 21 educators were from six primary schools in the Nkonkobe area under the Fort Beaufort District (see picture 1 below). The respondents of the rural and peri-urban schools were chosen because they were either the only educators in the school or those who willingly participated. In the urban schools the respondents were randomly sampled. These interviews were conducted with educators in two urban primary schools, namely, Davidson

Primary School (6 teachers) and Alice Primary School (4 teachers). Seven educators were also interviewed in two peri-urban primary schools, namely, Ntselamanzi Primary School (3 teachers) and Alice Premēr School (4 teachers). A further four educators from two rural primary schools were also interviewed. These were from Readsdale Primary School (2 teachers) and Mankazana Primary School (2 teachers). An interview was also conducted with one key informant who is in charge of ICT programmes in schools under the Fort Beaufort Education District.

Picture 1: The interviewer (left) interviewed the computer science teacher at Davidson Primary

Source: Chitha, 2013(Field Data)

3.6 Conclusion

This study used triangulation to minimize the inadequacies of individual methods. A questionnaire was administered to 21 respondents. These 21 respondents were further interviewed using in-depth semi-structured interviews. One key informant interview was also done to broaden and deepen the quality of data collected. Non-participant observations were ongoing throughout the data collection process. Data was collected with the active participation of respondents from urban primary schools (Davidson and Alice Primary), peri-urban primary schools (Ntselamanzi Primary and Alice Premēr) and rural schools (Readsdale Primary and Mankazana Primary) and the Fort Beaufort District Education Office.

CHAPTER 4

4. ICTs ACCESS, USAGE AND IMPACT IN TEACHING AND LEARNING IN NKONKOBE PRIMARY SCHOOLS

4.1 Introduction

This study sought to answer the following research questions:

1. What role does ICTs play in classroom teaching and learning in Nkonkobe primary schools?
2. What is the impact of ICTs in improving teaching and learning in Nkonkobe primary schools?
3. How can the use of ICTs be enhanced to improve their contribution to teaching and learning in Nkonkobe primary schools?

In answering the above research questions, participants were chosen to provide a local perspective of ICT implementation and usage in schools in the Nkonkobe area under the Fort Beaufort Education District. The research was conducted in six primary schools. Females were the majority respondents within these schools since primary schools in the district are predominantly staffed by females. The following table shows the number and institutional affiliation of the participants that took part in the study.

Table 4.1 Study Respondents

School	**Males**	**Females**
Davidson Primary	4	2
Alice Primary	1	3
Ntselamanzi Primary	0	3
Alice Primér	1	3

Mankazana Primary	1	1
Readsdale Primary	1	1
Key informants	0	1
Total	**8**	**14**

4.2 ICT Access in Nkonkobe Primary Schools

In order to examine whether computers are used in teaching and learning in Nkonkobe primary schools, respondents were asked as to whether their schools have computers. Respondents from urban primary schools, namely, Davidson Primary and Alice Primary indicated that they do have computers. There are 16 computers at Davidson Primary and they are all in working condition. At Alice Primary educators indicated that there are only two working computers while the rest are old computers that do not even switch on. There were no computers in the other two rural primary schools (Mankazana and Readsdale). The peri-urban primary schools, namely, Ntselamanzi Primary and Alice Premēr also had computers in their schools. The principal of Ntselamanzi Primary indicated that there are two computers at the school while in Alice Premēr educators said there are five computers. This availability of computers in Nkonkobe primary schools is in line with the Department of Basic Education's 2004 Policy on the Implementation of ICT in Education. This policy states that "every South African learner in the general and further education and training bands should be ICT capable, that is, use ICTs confidently and creatively to help develop the skills and knowledge they need to achieve personal goals and to be full participants in the global community by 2013". It adds that "ICT creates access to learning opportunities, redress inequalities, improve the quality of learning and teaching and deliver lifelong learning" (DoE, 2004).

The respondents were also asked how long they have had computers in their schools. A Davidson primary school respondent said they have had them for eight years: "We have had these computers for eight years now. The school bought them" (Respondent 3, Davidson Primary

School, interviewed on 15 August, 2013). At Alice Primary school, respondents said the school has had computers for about four years or so. As one respondent explained: "We have had these computers for ± four years now" (Respondent 7, Alice Primary School, interviewed on 28 August, 2013). The peri-urban schools also responded to this question. Ntselamanzi Primary indicated they have had the computers for five years as explained by one respondent: "We have been using these computers for five years now" (Respondent 12, Ntselamanzi Primary, interviewed on 8 August, 2013). Alice Premér educators said they have had the computers for six years as explained by one respondent: "We have been using these computers for six years now. The school bought them" (Respondent 17, Alice Primér School, interviewed on 19 August, 2013) The fact that these primary schools have had a computers for some years now shows that they are making efforts towards fulfilling the vision of the Department of Basic Education ICT Policy which calls for all schools to use ICTs by 2013.

In order to assess the accessibility of the computers to educators and learners for teaching and learning, respondents were also asked about the location of the computers in their respective schools. Davidson respondents said the computers are kept in the computer lab and principal's office as indicated by Respondent 3: who said they are "in the computer lab and office" (Respondent 3, interviewed at Davidson Primary School, on 15 August 2013). In Alice Primary School, computers are in the computer lab and one laptop is in the principal's office. The peri-urban primary schools respondents from Ntselamanzi Primary and Alice Premér indicated that their computers are kept in the principal's office.

The respondents were also asked who is allowed to use the computers in their schools. Respondents from Davidson Primary School said learners, teachers and administration staff all use the computers during school time. This is between half past seven and half past three. The respondents said the computers are used for teaching, research and for office work. As one respondent further explained: "These computers are used by learners, teachers and administration staff during school hours for teaching research and office work" (Respondent 3, interviewed at Davidson Primary School, on 15 August 2013). The situation was different at Alice Primary School. There, the respondents said the computers are used by the principal and the

administration clerk at any given time for administration purposes. This shows that ICTs are not used in classroom teaching and learning at Alice Primary School. Despite the fact that the school has computers, educators and learners thus have no access to important online teaching and learning material that could enhance and enrich their education experiences. This lack of access to ICTs for teaching and learning in schools is a very common challenge in Africa as observed by Kawooya (2004), who argues that many African countries still do not have adequate Internet connectivity due to a lack of infrastructure.

On the other hand, educators and learners in the two peri-urban primary schools use ICTs for teaching and learning. One respondent from Ntselamanzi Primary said the educators are using the computers as one respondent explained: "all educators are using the school computers" (Respondent 11, interviewed at Ntselamanzi Primary School, on 13 August 2013). Ntselamanzi Primary respondents also said that educators use ICTs for curriculum matters such as lesson plans, question papers and memorandums. At Alice Premer, respondents indicated that learners and teachers use the computers any time when there is a need. They use the computers for administration, research and other school work. This goes to show that ICTs are central in teaching and learning at Ntselamanzi and Alice Primer schools. This usage of ICTs is in line with current global teaching trends as observed by Webb (2002), who argues that the importance of ICT in the school curriculum has been emphasized recently by government initiatives involving increasing investment in ICT facilities related to learning and teaching with ICT.

In order to ascertain whether educators use ICTs for teaching related research after school, respondents were also asked whether they have computers at home. Four of the respondents from Davidson said they do have computers and they are using them for academic research, typing, and internet access. Two respondents from Alice Primary said they do have computers and they are using them for lesson plans, research and for internet access. As one of them noted: "I use my computer to do lesson plans, write school assessment tasks, to do research and access the internet" (Respondent 9, interviewed at Alice Primary School, on 27 August 2013). This ownership and use of computers after school by some of the educators shows that ICTs allow them to improve their teaching knowledge outside the school and classroom environment. This

virtual nature of ICTs has been praised by Kaniki (2002), who sees them as “necessary and critical”.

4.3 The Role of ICTs in Classroom Teaching and Learning in Nkonkobe Primary Schools

Respondents from all the schools were asked if they ever use ICTs in their teaching and learning activities. The urban schools, namely, Davidson Primary and peri-urban namely Alice Primér indicated that they use ICTs such as computers, digital data projectors, televisions and photocopiers in their daily teaching and learning activities (see picture 2 below).

Picture 2: Davidson Primary School learners busy in a computer lab

Source: Chitha, 2013 (Field Data)

One of the Davidson teachers further explained: “computers, data projector, television and photocopiers are part of what we use daily” (Respondent 4, interviewed at Davidson Primary School, on 16 August 2013). Respondents from the peri-urban primary schools, namely,

Ntselamanzi Primary School and Alice Premér also said they do use ICTs in their schools. They are using desktop computers, laptops, television, fax machines and photocopiers to enhance the quality and depth of their teaching. The rural primary schools have not been completely left out of this ICT revolution even though they do not have computers compared to urban and peri-urban primary schools. At Mankazana Primary for example, even though they do not have computers they do use a television for teaching purposes while at Readsdale primary school they use cellphones for group communication with parents. Readsdale staff sends bulk sms's to parents to communicate any teaching or extra curriculum activity information such as meetings. This use of ICTs in teaching and learning activities has been rated as positive by Kaniki (2002), who argues that sms's are effective and convenient. This view is also shared by Hawkins (2004) who notes that cellphones can also be used for browsing.

The study also sought to examine whether primary schools get any form of ICT support from the Provincial Education Department and Fort Beaufort Education District to enhance their teaching and learning activities. Respondents in the urban schools indicated that there is a support from the education department in the form of desk top computers (supplied to Davidson Primary School) and laptops (supplied to Alice Primary School). Teachers at Alice Primary School had also been trained on basic computer skills by officials from the Department of Education. In addition, they also attended a workshop organized by the Department of Education on how to use the South African Schools Administration and Management System (SA-SAMS) programme. The SA-SAMS is a programme that is used to keep information about each learner and each educator in each school.

The peri-urban primary schools (Ntselamanzi and Alice Premér) as well as some rural schools (Readsdale) also get ICT from the Provincial Education Department and Fort Beaufort Education District to enhance their teaching and learning activities. Respondents from Ntselamanzi School said they had attended ICT workshops and prepare learner information using computers. As one of them explained: "we did attend workshops on SA-SAMS and on basic computer skills at the District Office" (Respondent 11, interviewed at Ntselamanzi Primary School, on 13 August 2013). Another respondent from Alice Premér added that "we are given laptops to do administration work by the department" (Respondent 16, interviewed at Alice Premér School, on

16 August 2013). The use of ICTs in teaching and learning in these peri-urban and rural primary schools shows that they also value its contribution to improving knowledge sharing with learners. This is in line with Hawskins (2004) argument who notes that ICTs are an important tool towards better teaching and learning.

4.4 The Impact of ICTs in improving teaching and learning

The study further examined the impact of ICTs in improving teaching and learning in Nkonkobe Primary Schools. Teachers from urban primary schools (Davidson and Alice) all argued that ICTs have a positive impact on teaching and learning. According to one respondent it is necessary to use ICTs in schools "so that learners can be exposed to current technological trends out there" (Respondent 6, interviewed at Davidson Primary School, on 15 August 2013). Another respondent added that: it is necessary to use ICTs "for current and up-to-date information. Children of the 21st Century are fascinated with technology" (Respondent 5, interviewed at Davidson Primary School, on 26 August 2013). According to another respondent it is necessary to use ICTs because "ICTs make learning and teaching interesting and easy" (Respondent 3, interviewed at Davidson Primary School, on 15 August 2013) while another one also felt that it is necessary to use ICTs in schools because "it broadens the learning process of learners. They learn how to search for information on the internet, send emails and type documents" (Respondent 2, interviewed at Davidson Primary School, on 19 August 2013). The Alice Primary respondents also concurred with Davidson respondents saying it is necessary to use ICTs in schools. According to one Alice Primary School teacher, ICTs help "to improve learning and teaching" (Respondent 9, interviewed at Alice Primary School, on 27 August 2013), while another one felt that with ICTs "teaching and learning becomes easier and work can be done in a short space of time" (Respondent 7, interviewed at Alice Primary School, on 28 August 2013) .

The peri-urban schools also agree that ICTs are necessary in schools as they improve the teaching and learning environment. A teacher from Alice Premēr said ICTs "make things easier because there will be less work and less time" (Respondent 16, interviewed at Alice Premēr

School, on 16 August 2013) while another one from Ntselamanzi Primary said ICTs are necessary in schools as they "make teaching and learning easier" (Respondent 11, interviewed at Ntselamanzi Primary School, on 13 August 2013). Teachers in rural schools ~~of~~ in the Nkonkobe area agree with the urban and peri-urban teachers that ICTs have a positive impact on teaching and learning. A respondent from Readsdale Primary School said ICTs in schools help to "modernize the storage of information" (Respondent 18, interviewed at Readsdale Primary School, on 1 August 2013) while another one from Mankazana Primary School said ICTs are "necessary for both educators and learners to do research for their assignments" (Respondent 20, interviewed at Mankazana Primary School, on 20 August 2013). Another respondent said ICTs can "help learners do research for their assignments and help educators to store information for the school" (Respondent 21, interviewed at Mankazana Primary School, on 21 August 2013).

The study further established that ICTs have positively impacted the way teachers access and use teaching materials for the benefit of learners in target urban, peri-urban and rural schools. For example, one respondent from Davidson Primary School indicated that ICTs "exposes both teachers and learners to an advanced world of information" (Respondent 1, interviewed at Davidson Primary School, on 29 August 2013) while another one from the same school added that "as teachers we get extra and useful teaching resources and ICTs always complement shortfalls from other teaching aids such as textbooks and workbooks" (Respondent 2, interviewed at Davidson Primary School, on 19 August 2013). The main observation in the urban schools is that ICTs make interaction between learners and teachers much easier and they also make sharing of study material, resources and software easy. The fact that ICT based learning seemed to interest learners should be noted as is its time efficiency.

Observations by respondents from the peri-urban schools concur with the urban and rural schools findings. For example, one respondent noted that "there is a need for learners to be exposed to ICT in schools so that they can be empowered with ICT skills as early as possible so as to put on par with other white urban schools (Respondent 11, interviewed at Ntselamanzi Primary School, on 13 August 2013). The use of digital data projectors was also noted to be one of the ICT devices that make classroom teaching much easier for the teachers while enhancing learners'

learning experience. Furthermore, another respondent from Alice Premer pointed out that the use of "programmes such as encarter help learners to work on their own" (Respondent 16, interviewed at Alice Premer School, on 16 August 2013). Encarter is an educational software programme which helps young students with homework and encourages them to learn in a fun and engaging way.

It is however important not to romanticise the ICT penetration rate in Nkonkobe primary schools and its impacts thereof. A number of challenges around ICT implementation in target Nkonkobe primary schools were identified by this study. For example, one respondent indicated that "more can be done by bringing Wi-Fi to the communities so that ICT goes out of office to our streets" (Respondent 1, interviewed at Davidson Primary School, on 29 August 2013) The view that ICT implementation in Nkonkobe primary schools is not adequate was expressed by the majority of respondents. As one of them further explained: "there are still schools without ICT resources and most of the teachers are not trained yet to use ICT equipment" (Respondent 3, interviewed at Davidson Primary School, on 15 August 2013) There is also the fact that while most schools have some ICT hardware, it is simply not enough thus disproportionate to the number of learners in a given school. A good example is the few digital projectors that schools have yet this hardware is rated as one of the simplest but effective tools for use in teaching and learning. One of the respondents explained this challenge as follows: "there is only one projector versus seven hundred learners. Teachers also need training on how to use computers" (Respondent 4, interviewed at Davidson Primary School, on 16 August 2013).

Another respondent expressed similar sentiments arguing that "not all schools have computers – this means that not all learners are exposed or have any knowledge of computers" (Respondent 11, interviewed at Ntselamanzi Primary School, on 13 August 2013). This shortage of ICT hardware such as computers and digital data projectors in schools is a challenge that the said schools in conjunction with the provincial Department of Education should address if ICTs are to continue improving teaching and learning in Nkonkobe primary schools. The good thing is that the Department of Education has already identified this problem and is beginning to address it as part of its strategic plan as indicated by a key informant (Fort Beaufort Education District ICT

Co-ordinator) who said that the District is working towards improving schools' access to ICT hardware and software (key informant 1, interviewed at Fort Beaufort District Education Office, on 27 August 2013).

Furthermore, limited basic computer skills among teachers are also an issue that should be addressed through staff capacity building courses and workshops. Again this is an issue that Fort Beaufort Education District is beginning to address since some teachers have been trained on basic computer skills in partnership with Schoolnet (key informant 1, interviewed at Fort Beaufort District Education Office, on 27 August 2013). The District has also provided cami-maths software to fourteen primary schools. Cami-maths is a software programme that is developed to enhance numeracy skills of learners from grade R to grade 12.

Fort Beaufort Education District and mobile phone service providers are also involved in ICT programmes in Nkonkobe that are aimed at improving the role and impact of ICT in teaching and learning. For example, according to a key informant (Fort Beaufort Education District ICT Co-ordinator) the District has provided most schools (both primary and secondary) with laptops and 3G cards for internet connectivity (key informant 1, interviewed at Fort Beaufort District Education Office, on 27 August 2013). The main reason for providing this ICT hardware and software was to encourage school to use SA-SAMS and EMIS. EMIS is a software programme that is responsible for the collection, capturing and warehousing of education data in each province. In support of the District's schools ICT programme, MTN (a mobile phone and internet service provider) has built 15 computer laboratories in 15 schools (ten primary schools and five high schools). These schools have also been provided with internet access by MTN (key informant 1, interviewed at Fort Beaufort District Education Office, on 27 August 2013). However, some of these schools are struggling with internet signals since they are located in very remote areas. Furthermore, the data bundles that are uploaded on 3G cards by MTN are not being fully utilised in some schools due to teachers' limited ICT knowledge and resistance to adoption of new technology for use in teaching and learning.

CHAPTER 5

5.1 CONCLUSIONS AND RECOMENDATIONS

This study found that the majority of target schools (i.e., those that were part of the sample) in Nkonkobe area do have some form of ICT hardware and software that they use in teaching and learning activities. The ICT hardware that these schools have includes desktop computers, laptops, digital data projectors, fax machines, televisions and digital photocopiers. These schools also use software such as SA-SAMS, EMIS and cami-maths. However, access to ICT hardware and software is not the same in urban, peri-urban and rural schools. In general, the urban primary schools seem to be better off in terms of access to computers than the peri-urban and rural primary schools. For example, Davidson Primary School which is an urban primary schools has access to most current ICT hardware and software. These technological advances are also enjoyed by Alice Premér which is an urban school. On the other hand, rural primary schools in Nkonkobe area seem to be worse off (when compared to urban and peri-urban primary schools) since they have very limited access to ICT hardware and software For example, Mankazana Primary does not even have computers. The only form of ICT hardware they own and use for teaching and learning purposes is a television. Similar ICT deprivation levels were observed at Readsdale primary which also does not have computers or laptops. The only form of ICT they use are cellphones for group communication with parents. The net effect of these low levels of ICT access in rural schools in Nkonkobe is that educators and learners in these schools do not fully enjoy the benefits of this new technology in teaching and learning activities. They are thus lagging behind their counterparts in urban and peri-urban primary schools who use the most recent ICT hardware and software in their educational activities. The study also proves that there are always people who are tradition bound and very conservative and will resist change of any kind (see the diffusion and innovation discussion above). Younger people also accept change easily because they do not have a long history which has cemented their ideas. Younger people learn new things more readily than older people hence the diffusion of innovation theory.

The available ICT hardware and software was used for a variety of teaching activities in the target schools. For example, internet connectivity at Davidson Primary School allowed the educators and learners to do their research online, while at Alice Primary digital data projectors were used in classroom teaching. At Ntselamanzi Primary ICT is used for administration purposes only while at Alice Premer ICT is used for administration as well as for doing research and typing some worksheets. The rural schools are using television (Mankazana Primary School) for teaching and learning while Readsdale Primary is using bulk sms's to communicate with parents. The use of these different types of ICT had positive impacts on teaching and learning. This was confirmed by the teachers who argued that "ICTs make learning and teaching interesting and easy" (Respondent 3, interviewed at Davidson Primary School, on 15 August 2013) ….) while another one also felt that it is necessary to use ICTs in schools because "it broadens the learning process of learners. They learn how to search for information on the internet, send emails and type documents" (Respondent 2, interviewed at Davidson Primary School, on 19 August 2013). ICT usage in teaching and learning is thus enhancing the depth and quality of teaching and learning in Nkonkobe area schools with access to this new technology. As confirmed by the educators, learners enjoy using technology as they learn thus improving their understanding of different concepts they are taught.

There are however challenges observed in relation to ICT access and usage in some of the target schools. For example, some schools such as Mankazana and Readsdale do not have desktop computers and laptops. In some schools (Alice Primary and Ntselamanzi Primary) it seems only the principal and the clerk have unlimited access to the computers while the other educators and learners have very limited access. Furthermore, some of the primary schools have older teachers who are less interested in ICT usage in teaching and learning. These educators do not want to change to new teaching technology. Many are scared of computers because they have not had the opportunity for hands on experimentation. They fear they will break the machine whereas children are very willing to play around. They can't get familiar with computers until they are exposed to them. This would be an important first stage to changing their attitudes. They want to remain in their comfort zone using old methods of teaching and learning that emphasizes use of textbooks and the chalkboard. It was also observed that some of the schools, especially those in

remote rural areas, do not have access to the internet. This lack of internet access is negatively affecting educators and learners in these schools since they cannot do online research for their teaching and learning activities.

5.2 Recommendations

Based on the above empirical findings and identified gaps in ICT implementation in some Nkonkobe primary schools, the study makes the following knowledge change, policy and programmatic recommendations:

There is a clear need to improve the availability, access and usage of basic ICT hardware such as desktop computers, laptops, digital data projectors, white projection boards and digital photocopiers in most peri-urban and rural primary schools. The responsibility of sourcing this ICT hardware must be shouldered by the Provincial Department of Education, Fort Beaufort Education District and the concerned schools. This hardware can be sourced from public and private sources of funding.

There is also a need to continue to improve educators' knowledge about ICTs emphasizing their positive contribution to teaching and learning. This should also entail capacity building courses and workshops wherein educators are trained on basic, intermediate and advanced computer skills. Such skills training will ensure that educators value the use of computers in teaching and learning and thus use them as a teaching instrument for the benefit of learners.

Improving internet access and connectivity in schools is also an area that requires urgent intervention. While some urban and peri-urban primary schools have internet access, it was established that rural schools do not have internet access. The Provincial Department of Education, Fort Beaufort Education District, private internet services providers such as mobile phone companies and the concerned schools should work together to ensure internet access in these schools so as to enable educators and learners in these remote areas to use the internet for their teaching and learning activities.

Since the majority of educators and learners have cellphones, it is recommended that schools move towards using these gadgets for sharing e-learning material, internet access and general communication for education purposes. This will entail the development of an application (app) that functions as a platform for teaching and learning activities. Educators and learners will then install this app in their cellphones for virtual usage for teaching and learning activities.

Schools should also be encouraged to introduce computer science as a subject so that computers are taught from a very early age on a regular basis as is the case at Davidson Primary School. Such a subject will thus expose learners (and educators) to computers and how these can be harnessed to improve teaching and learning activities in the classroom and through virtual networking.

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APPENDICES

APPENDIX A

Key Informant Interview Guide: Fort Beaufort District ICT officials

Interviewer: Silas Mlulami Chitha (Master Student – UFH)

Interviewee: _____

Date: _____

Venue: _____

Questions

1. The Department of Education's Policy on the Implementation of ICT in Education (August 2004) states that "Every South African 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 to achieve personal goals and to be full participants in the global community) by 2013". What is your view on this statement?
2. How many former 'model C' primary schools have computers in the Nkonkobe (Fort Beaufort District) area?
3. How many 'previously disadvantaged' primary schools have computers in the Nkonkobe area?
4. What is the Fort Beaufort District Education's strategic plan concerning ICT implementation in schools, especially primary schools?
5. What do you think is the role of ICTs in teaching and learning in Nkonkobe primary schools?
6. Is there any visible impact of ICT use to improve teaching and learning in Nkonkobe Primary Schools that are using ICTs?
7. Do you have any projects (public or private) in the district that are providing internet connectivity to schools? If yes, can you mention examples?

8. Do you have any structures in place that are meant to support schools wanting to implement ICTs?
9. Do you have any suggestions with regards to mechanism that can be used by Nkonkobe primary schools and the district office in particular to improve the current situation and enhance the use of ICT's in teaching and learning?

APPENDIX B

QUESTIONNAIRE FOR SCHOOL TEACHERS

School Name: _____

Name of Educator: _____

Date: _____

Venue: _____

Personal Data

Put an "X" where applicable

1. How old are you?

20 – 30	
31 – 40	
41 – 50	
51 – 60	

2. Gender

Female	
Male	

3. Post level

Post level 1	
Post level 2	
Post level 3	
Post level 4	

4. Highest qualification

Certificate	
Diploma	
Junior Degree	
Honours	
Masters	
Phd	

SECTION A

1. Are there any computers in this school?_____
2. How many?_____
3. For how long have you had these computers? _____
4. Where are these computers located?

   _____
5. Who is allowed to use these computers? _____
6. When are those who are allowed able to use those computers?

   _____
7. What do they use them for?

   _____
8. Do you have a computer at home? Y/N _____
9. If yes what are you using it for?

   _____

SECTION B

Role of ICTs in teaching and learning in Nkonkobe Primary Schools.

1. Do you ever use ICTs in your school? Yes/No. _____

   1.1 If yes what type of ICTs are you using?

   Computers
   Projector
   Television
   Fax machines
   Photocopier
   Internet
   Other (please specify)

   _____

2. Do you get any ICT support from the department? Yes/No. _____

   2.1 If yes, what form of support do you get from the department?

   _____
   _____
   _____
   _____
   _____
   _____
   _____

SECTION C

The impact of ICTs in improving teaching and learning in Nkonkobe Primary Schools.

1. Do you think it is necessary to use ICTs in schools? Yes/No. _____
2. If yes why?

   _____
   _____
   _____
3. If no why?

   _____
   _____
   _____

4. Would you say that ICTs have an impact on teaching and learning? Yes/No. _____
5. If yes, can you briefly explain how ICTs impact on teaching and learning?

   _____
   _____
   _____
6. Do you think the current situation of ICT implementation is adequate? Yes/No. ____
7. If yes, why?

   _____
   _____
   _____
8. If no, why?

   _____
   _____
   _____

SECTION D

Suggestions to enhance the involvement of ICTs in teaching and learning in Nkonkobe primary schools

1. Do you have any suggestions on how to improve the current situation with regards to ICT implementation in Nkonkobe primary schools?

   _____
   _____
2. Where do you see ICT implementation in schools in the coming ten years?

APPENDIX C

In-depth semi-structured interview guide for teachers

a) Role of ICTs in teaching and learning in Nkonkobe Primary Schools.

i. What is the role of computers in teaching and learning in Nkonkobe Primary Schools?
ii. Are the (ICTs) computers available in Nkonkobe Primary Schools?
iii. What are the ICTs used for in Nkonkobe Primary Schools?
iv. Do you get any support from the department with regards to ICTs?

b) The impact of ICTs in improving teaching and learning in Nkonkobe Primary Schools.

i. Is it necessary to use ICTs in schools for teaching and learning?
ii. Is there any procedure in accessing the computers in school/department?
iii. Is there any knowledge of ICT usage in teaching in your school?
iv. Is there any ICT effectiveness in teaching and learning in Nkonkobe Primary Schools?
v. Is there any improvement in student performance and pass rates that can be attributed to the ICT use?
vi. Are the students generally ICT literate?

c) Suggestions to enhance the involvement of communities in matters of local governance in Alice town.

i. What can you suggest to improve the current situation with regards to ICT implementation in Nkonkobe primary schools?
ii. Are there any positives with present ICT use in your school?
iii. What do you think is the future of ICTs in Nkonkobe Primary Schools.

APPENDIX D

The following table shows the list of people interviewed

Name of respondent	Age group	Gender	School
Educators			
Respondent 1	41 - 50	Male	Davidson Primary
Respondent 2	20 - 30	Female	Davidson Primary
Respondent 3	31 - 40	Male	Davidson Primary
Respondent 4	31 - 40	Male	Davidson Primary
Respondent 5	41 - 50	Female	Davidson Primary
Respondent 6	20 - 30	Male	Davidson Primary
Respondent 7	51 - 60	Female	Alice Primary
Respondent 8	31 - 40	Female	Alice Primary
Respondent 9	41 - 50	Female	Alice Primary
Respondent 10	31 - 40	Female	Alice Primary
Respondent 11	51 - 60	Female	Ntselamanzi Primary
Respondent 12	51 - 60	Female	Ntselamanzi Primary
Respondent 13	51 - 60	Female	Ntselamanzi Primary
Respondent 14	51 – 60	Male	Alice Premér
Respondent 15	51 - 60	Female	Alice Premér
Respondent 16	41 - 50	Female	Alice Premér
Respondent 17	41 - 50	Female	Alice Premér
Respondent 18	41 - 50	Male	Readsdale Primary
Respondent 19	41 - 50	Female	Readsdale Primary

Respondent 20	41 - 50	Male	Mankazana Primary
Respondent 21	41 - 50	Female	Mankazana Primary

The following table shows the list of Key Informants interviewed

Name of respondent	**Age group**	**Gender**	**School**
Respondent 1	40 -50	F	Fort Beaufort Education District Official