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INFORMATION TECHNOLOGY AND EDUCATION IN A LESS PRIVILEGED SCHOOL OF NELSON MANDELA BAY

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ETHICS DOCUMENT 2

PERMISSION TO SUBMIT

DECLARATION

I, Nomfundo Mahleza, student number 200344617, hereby declare that the treatise for student's qualification to be awarded is my own work and that it has not previously been submitted for assessment or completion of any postgraduate qualification to another University or for another qualification.

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DEDICATION

This treatise is dedicated with love to my husband (Vuyani) for all the support and encouragement that he has given me throughout my studies. He lifted me up and gave me strength when I wanted to give up. For that I thank you Ndlovu, I am so grateful to have you in my life.

To my two little pumpkins, Ayabulela and Sisipho, you do not know how much I appreciate your unconditional love, encouragement and tolerance during my absence from home. Thank you very much for your support as well as your confidence you have in me as your mother. I love you guys.

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My missing brother " Luyanda Benjiwe" it is now 14 years but I still hope that one day you goner come back home .

TO THE MEMORY OF MY LATE MOTHER

VUYELWA "RADIE" BENJIWE

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ABSTRACT

Today's society requires citizens to have a greater knowledge of information technology (IT) than in previous decades. Strategy programs at a national level define the skill needed in an information society and encourage people to learn these skills (Ministry of Education, 2004). In order for everybody to have the opportunity to learn the basics of the new technology, computer science should be included in general education.

The development of technology, like Information and Communication Technology (ICT) has turned the world into a global village (Hashem, 2006). The key instrument in this globalisation is the personal computer. Computer–mediated communication is increasingly becoming the dominant means of communication, particularly in the developed and in some developing countries (Adebisi, 2008).

In a developing country, ICT is one of the prime ingredients for development. This generally means improvement of people's lifestyle through improved education, income, skills development and employment. Development should now also be viewed as a multidimensional process involving major changes in social structures, popular attitudes and a national progression of life from unsatisfactory to satisfactory (Servaes, 1999).

Since one of the goals of education is to prepare students for work and citizenship, schools are attempting to change their policies, practices and a curriculum to meet the challenge of making pupils ready for a future quite different than the immediate past (Turker & Codding, 1998).

The integration of ICT into the teaching and learning environment in secondary education in Port Elizabeth could change learning and teaching attitudes of learners and teachers and help to prepare them for future challenges. However, the success of this integration will depend on how the learners and teachers adapt to the changes and whether they can make ICT technologies part of their daily life. As it is, there is little or no information available regarding the extent of current ICT usage and access in these secondary schools. The research focuses on the availability, usage and the impact of ICT in education, particularly at a secondary school in the poverty-stricken area of Zwide in Port Elizabeth.

LIST OF ACRONYMS

IT	Information Technology
CS	Computer Skills
ICT	Information and Communication Technology
UNESCO	United Nations Educational, Scientific and Cultural Organisation
DoE	Department of Education
SMT	School Management Team
SGB	School Governing Body
CAT	Computer Applied Technology
OBE	Outcomes Based Education
HSRC	Human Science Council Research
SMS	Short Message Services
FET	Further Education and Training
HRC	Human Research Council
NEPAD	New Partnership for Africa's Development
SMME	Small Medium and Micro Enterprises
TV	Television
WWW	World Wide Web
CV	Curriculum Vitae
NDE	National Department of Education
FET	Further Education and Training
DC	Department of Communication

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CHAPTER ONE – INTRODUCTION AND CONTEXT

1.1 BACKGROUND

We are living in an era of dramatic change. However, conventional thinking and technology will not lead to conventional solutions to improve access to ICT in education. In fact if we continue to follow the conventional approaches that exist for ICT in education, the digital divide will in fact get worse, not better (Bracey & Culver, 2005).

The advent of the 21st Century has seen a number of technological developments which affect almost every aspect of our lives. Technology is increasing at an ever increasing rate: advances in operating systems, communication devices and methodologies are renovating the inventory of ICT on a daily basis.

Technology is everywhere all around us and is changing our lives and the way we make a living in modern society. Technology is increasing at an ever increased rate, advances in operating systems, communication devices and methodologies are renovating the inventory of IT on a daily bases. There is a lot of technology development especially in this advent of 21st century because we can communicate with each other by means of Facebook, E-mails and Cellular phones. It is proven that advances in technology in previous years have had huge impacts on an individual level as well as to society at large.

The development of technology, like Information and Communication Technology (ICT), has turned the world into a global village (Hashem, 2006). The key instrument in this globalisation is the personal computer. Computer-mediated communication is increasingly becoming the dominant means of communication, particularly in the developed and in some developing countries.

In a developing country, ICT is one of the prime ingredients for development. This generally means improvement of peoples' lifestyles through improved education, income, skills' development and employment. Development should now also be viewed as a multi-dimensional process involving major changes in social structures, popular attitudes and a national progression of life from unsatisfactory to satisfactory (Servaes, 1999).

1.1.1 INFORMATION AND COMMUNICATION TECHNOLOGY (ICT)

Information and communication technology (ICT) can be defined as a "diverse set of technological tools and resources used to communicate, and to create, disseminate, store, and manage information." These technologies include computers, the internet, broadcasting technologies (radio and television), and telephone (Tinio 2002, p.4). The arrival of the internet and broadband connection has made the application of information technology knowledge and skills a reality to the world (UNDP, 2003).

According to Mohanty and Vohra (2006) Information and Communication Technology (ICT) refers to the integration of computing technology and communication. It can be defined as anything which allows us to get information, to communicate with each other, or to have an effect on the environment using electronic or digital equipment.

Fleming (2002) explains that ICT technology is a tool which heralds new opportunities unexplored by other technologies that give the initiative to further development and improved effectiveness by contributing to such development. Fleming (2002) also makes it clear that ICT exerts a revolutionary impact on the way the world does business and, more importantly, on the way the world and its citizens communicate.

1.1.2 THE PROPOSAL OF ICT IN EDUCATION

Today's society requires citizens to have a greater knowledge of information technology. Strategy programs at a national level define the skills needed in an information society and encourage people to learn these skills. In order for everybody to have the opportunity to learn the basics of the new technology, computer science should be included in general education (Ministry of Education, 2004).

Most of South African studies concentrate mainly on recognizing the significance of including technology in education and believing that curriculum specialists can and must play a central role in the design of educational technology as well as in the construction of policies and integration of ICT in schools.

Computers were introduced into schools in South Africa during the 1980s, primarily to private schools that had independent funds as well as in some well-resourced government schools. Initially they were used for administration purposes (Howie, 2005, p 12).

ICT was endorsed in Curriculum 2005, introduced in 1998 in South Africa, but learners still differ when it comes to skills that they acquire through this curriculum. The application of ICT in schools is perceived as a means of transforming teaching and learning processes, and has been met with significant enthusiasm among the learners and teachers (Mfum-Mensah, 2003).

Integration of ICT into teaching and learning in secondary education in Port Elizabeth could change learning and teaching attitudes of learners and help prepared them for future challenges. The success of this integration will depend on how the learners and teachers adapt to the changes and whether they can make ICT technologies part of their daily life (Adebisi, 2008, p4). Most of the teachers have a vision for what they want their students to be like when they leave the schools and move to further their education or enter the work world. According to Servaes (1999) in a developing country, ICT is one of the prime ingredients for development. This means improvement of lifestyle through improved education, income, skills development and employment.

ICT as curriculum is significant in bridging the gaps between the changing technology and industry needs. The research aims to access whether the learners of Sakhisizwe High School are really participating in globalization through technology. It is generally accepted that computers are very important, especially at high school level because learners are being prepared for tertiary education where computers are not only a source of information through the use of the internet, but also an integral part of the educational process.

1.1.3 SIGNIFICANCE OF THE RESEARCH

This research is significant as it could contribute to highlight the importance of the use of ICT in education. Some implications of using ICT in the classroom include:

• ICTs have enormous potential for facilitating teacher training and enabling new forms of teaching and learning.

• Training that focuses first and foremost on curriculum skills and processes, rather than ICTs skills, can empower teachers to use ICTs purposefully and effectively in the classroom.

• Providing teachers and schools with 'professional' equipment and enabling them to use it for professional learning can raise their knowledge and status and that of their community; even - or perhaps especially - in contexts which might have previously undermined their dignity and self-esteem.

1.2 RESEARCH PROBLEM

Today's society requires citizens to have a greater knowledge of information technology strategy programs at a national level define the skills needed in an information society and encourage people to learn these skills (Ministry of Education, 2004).

The use of computers in schools is very important, especially at high school level because learners are preparing themselves for tertiary education or university and that is where the use of computers today is in great demand. It is also important for teachers to be computer literate so that they can be able to plough back their skills to the learners.

In this century technology is playing a vital role, and those that are technological skilled will have a better future in terms of getting job or forming their businesses. There is little information available regarding the extent of current usage in less privileged schools of Port Elizabeth However, there is a need to investigate the usage and impact of ICT as well as determining the extent of usage of ICT in less privileged school.

But in 2003, the ex-Minister of Education, the late Professor Kader Asmal ensured that every school has access to a wide choice of diverse, high quality communication services, resulting in most of the schools in South Africa having access to ICT resources (DoE, 2003). What is uncertain is whether they are using them and if they do, does it help to improve their quality of education; and what is the effect and impact on improving their learning and teaching, particularly at Sakhisizwe high school in Zwide which is located in the poverty stricken area of Port Elizabeth.

1.3 RESEARCH AIM AND OBJECTIVES/SUB-FOCI

The **primary goal** of the research is to investigate the impact, usage and the role of ICT in education focusing at less privileged school.

The **main aim** of this research study is to survey how the use of ICT can help to improve the education and learning of Sakhisizwe High school in Port Elizabeth?

SUB-GOALS AND OBJECTIVES:

- To determine how the use of ICT can help to improve the quality of education in less privileged schools**.**
- To determine the effect and impact of ICT usage at the school.
- To determine to what extent learners and teachers are ICT equipped.
- To determine the availability and accessibility of ICT resources within the school.
- To determine how technology has improved educators and learners skills and knowledge.
- To look at obstacles and barriers that affects the development of ICT in education**.**

1.4 SCOPE OF THE RESEARCH

This research focused specifically at Sakhisizwe High School in Port Elizabeth (PE). It is located in the urban area of PE known as Zwide location, but it is one of the municipality's poverty-stricken areas. It is the government-funded public school. Interviews and focus group discussions will be conducted in order to seek the information that will answer the research question.

1.5 RESEARCH METHODOLOGY

Any study needs a plan for what data will be gathered, how that data will be collected and analysed, and what comparisons will be made within it. This study will be based on a qualitative research model, using a descriptive research design. Data will be collected by means of two tools

- Focus group discussion
- Key informant interview

1.6 LIMITATIONS

The research focused specifically at Sakhisizwe high school in Port Elizabeth. It is located in the urban areas of PE, but it is one of the poverty-stricken areas. It is the government-funded public

school. This school is one of those classified as “previously disadvantaged” or “less privileged” school. An implication for this is that their problems will differ from those experienced by the more well-resourced schools.

1.7 CONCLUSION

ICT is the driving force in the information intensive global society. ICT professionals with skills and capabilities are scarce, that is why industry and policy makers see institutions or schools as the vehicle to produce skilled ICT learners so that they are able to function in the 21st Century.

The next chapter will review other studies that have been conducted in the usage of ICT in schools.

CHAPTER TWO – LITERATURE REVIEW

2.1 INTRODUCTION

Information and Communication Technology (ICT) refers to the integration of computing technology and communication. It can be defined as anything which allows us to get information, to communicate with each other, or to have an effect on the environment using electronic or digital equipment (Mohanty & Vohra, 2006).

2.2 OTHER STUDIES OF ICT IN EDUCATION

There has been some research done on Information and Communication Technology(ICT) in schools but not much has been written on the use and impact of it within high schools in South Africa as well as the ways of improving quality of education that means there are gaps need to be filled. Adebisi (2008) focused on accessibility of ICT for secondary schools within PE and exploring issues around fairness and equity with regards accessing ICT education. The other study, done by Tire & Mlitwa (2007), focused on access and usage of ICT in disadvantage schools. The study done by Addo (2003) was focusing on factors that influencing the use of ICT in schools, computer access to connectivity to secondary schools.

Howie *et al* (2005) on behalf of Human Research Council conducted (HRC) a study that focused mainly on the implementation, infrastructure and policy arrangements in South African Schools, but did not deal with results and effects of ICT in education.

ICT have become an indispensable tool in the fight against world poverty. ICT provide the developing countries with an unprecedented opportunity to meet vital development goals such as poverty reduction, basic health care and education far more effectively than before. Those nations that succeed in harnessing the potential of ICTs can look forward to greatly expand economic growth (Bracey & Culver, 2005). The use of ICT in South Africa can bring positive results such as addressing development and enhance the country's global competitiveness (The Department of Education, 2003).

It is generally believed that information age technologies can be used as an important facilitator in the development process of a learner and, in turn, provide a larger range of educated people across the socioeconomic divide. In short, ICT has a major role to play in education. In a developing country, ICT is one of the prime ingredients for development. This generally means improvement of people's lifestyles through improved education, income, skills development and employment. Development should now also be viewed as a multi-dimensional process involving major changes in social structures, popular attitudes and a national progression of life from unsatisfactory to satisfactory (Servaes, 1999).

Education has not been left out of this wave of change. Most of the developed countries have exploited the potential of ICT to transform their educational landscape at all levels of learning, particularly the instructional process (Kosakowski, 1998).

Today's learners are markedly different from those of the past. Influenced by a lifetime surrounded by media, computers and the internet, they bring with them different

expectations. Educators need to meet these expectations in order to motivate learners to move forward. One way to facilitate this movement is to use ICT as a teaching tool, so that learners, in turn, learn how to use ICT most effectively (Huang, 2004:734).

Some of the materials that were used before are not in use today. Moving from the old way of doing things can make things easy, for example we used to communicate with one another through posted letters that will take time to arrive, but now due to technology things have changed, it is quick and easy to communicate by means of cellular phones, e-mails, mix-it, etc.

Studies done by Howie et al (2005) on behalf of the Human Science Council Research (HSRC) focused mainly on the status of current ICT infrastructure and policy issues in secondary schools in South Africa although part of their research does deal with the impact of ICT. They exhaust the research on ICT in South African schools and do cover the issue and impact of ICT within secondary school.

Most school teachers have a vision for what they want their students to be like when they leave the schools and move on to further their education or enter the work world. Schrum and Levin (2006) focus on the impact of ICT in education for future purposes. They have concerns and visions that include an understanding of the role of technology in educating 21st century students.

The important role of computers in schools and in education has not been limited to researchers and academics. Available literature presents views of heads of states and governments, which in some cases helped shaped policy and legislation (Addo 2003, p.23). In South Africa our ex president, Mbeki (1996:37) stated that technology-enhanced learning could make education more interesting and targeted on the individual. He added that the Internet and World Wide Web (WWW), in particular, "offer an immediate and inexpensive opportunity for schools".

Research done by Adebisi (2008) focuses on accessibility of ICT for high schools in Port Elizabeth and discusses issues around fairness and equity with regards to accessing ICT education in secondary education. His research's primary goal was to investigate the extent of ICT adoption in secondary schools around Port Elizabeth area. But his research was not exhaustive as he could not include all schools in PE in the study and he also did not assess policy implementation at government level.

Fleming (2002) explains that ICT is a tool which heralds new opportunities unexplored by other technologies, and that it initiates further development and improved effectiveness by contributing to such development. He also makes it clear that ICT has a revolutionary impact on the way the world and its citizens communicate.

According to the SRN survey there are 2311 schools in South Africa with one or more computers (Doe, 2001). It is estimated, however, that at least 10% of South Africa`s almost 28000 schools have access to one or more computers. The implementation of ICT in schools is being facilitated by School Net which provides staff development and supports to schools introducing ICT. Provincial education departments do budgets for acquiring different technologies but simply cannot afford to purchase computers for all schools when so many still lack the basic needs. Therefore many parents and school governing largely in the more advantaged communities have to raise funds for computer and their installation. Power supply, communication and access to computers are clear stumbling blocks to the government's policies, and a discussion (Howie, Muller & Paterson, and 2005:12).

That means schools will still differ and gaps will remain when it comes to resources, although they are all government schools under one department. This statement is proven

by findings of (Tire & Mlitwa 2007, p.141) that the access and usage of ICT to disadvantaged schools as well as rural schools are inadequate. On another case study by (Mlitwa & Nonyane 2007, p94) the focus was on the lack of resources comparing both urban and rural areas. Their findings prove that urban areas are more advantageous in terms of ICT resources.

2.3 ROLE OF ICT IN EDUCATION

ICT have been infused into schools without fundamentally changing the way we learn and teach. In most cases they have been simply adapted to traditional school structures, classroom organisation and existing teaching practices (Anderson & Becker, 2001).

Nowadays the role of Information and Communication Technology (ICT), in the education sector plays an important role, especially in the process of empowering the technology into the educational activities. Education sector can be the most effective sector to anticipate and eliminate the negative impact of ICT. Technology in another side can be the most effective way to increase the student's knowledge (Kaka, 2008). Since the rapid development of science and industry and the consequent phenomenon of mass education, technology has become fundamental to education (Evans, 1995:95). There are several schools of thought regarding its goals in schools. Some educators perceive it as a means to teach various subjects, while others feel it to be a device that helps in developing thinking skills and thereby enhancing the intellect.

The application of ICT in schools is perceived as a means of transforming teaching and learning processes, and has thus been met with significant enthusiasm among the learners and teachers (Mfum-Mensah, 2003).

According to Crawford (1997) ICT in education:

- Is an interesting teacher – it can make teaching easier and more attractive.
- Is also a patient and responsive teacher – computer can give pupils immediate response.
- Is pupil-centred – unlike traditional didactic teaching, strategies for teaching IT will emphasise pupil-centred, resource-based learning.
- Supports open, independent and flexible learning – in the future, pupils might be expected to provide their own computer in the same way that they now bring other equipment to school.
- It is a powerful tool – it significantly extends what people can do and as a learning tool it is particularly effective.

The aim of ICT should be to engage students at three levels: technical, practical and critical. Students should not only learn to use technology (technical aspect) but they should also be able to use it practically in other activities as well as at the critical level, where students must learn to evaluate the appropriateness of the message, audience and method used (Mohanty & Vohra, 2006).

As schools increase their use of ICT to support teaching and learning, critical analysis is needed on how the technology are used across the curriculum. -Desk-top computers have been in most schools for more than two decades but as teachers grapple with how to use ICT to enhance learning environment, new technologies are continually coming on-to the market with improved software, networking, portability and management. (Yelland, Neal & Dakich, 2008).

It seems traditional training methods are no longer able to satisfy learners' learning needs and experiences. Although most of today's learners use some form of technology in their learning, they are actively encouraging their learning environments to be value-adding and more stimulating. Tomorrow's learners will demand access to more technological and media resources and will depend on their university's ability to deliver. It is argued that the effective use of ICT can help teachers to meet the changing requirement of education in a more efficient way. ICT provides the tools to explore and collect with greater ease, thus leaving enough time to analyse and integrate information (Mohanty & Vohra, 2006).

According to Tinio (2002), in the presence of ICT, teachers no longer have to rely on printed books and other materials housed in the libraries for their educational needs. With internet and web, learning materials in almost every subject can now be accessed from anywhere at any time of the day by an unlimited number of learners in developing and developed countries that have limited and outdated library resources.

Education is largely recognized as a route to information and knowledge literacy, and ultimately a significant step towards improving living standard and escaping poverty. Rural communities, consider education as a most precious gift that one can get in a lifetime, parents, principals, teachers and learners place a high value on education and the benefits that they think it can bring (HSRC, 2005).

In general, using technology amongst school children is strongly encouraged as it greatly enhances the learning experience specifically within the South African context. The potential positive effects of computer use by children include enhanced cognitive development, reduced barriers to social interaction, enhanced fine motor skills and visual processing (Straker et al., 2009).

Pelgrum (2001) identify some of the obstacles to integration of ICT in education are:

- Insufficient number of computers.
- Teachers lack knowledge / skills
- Difficult to integrate query instruction.
- Scheduling computer time.
- Insufficient peripherals.
- Not enough copies of software.
- Insufficient teacher time.
- Not enough supervision staff.
- Lack of technical assistance.

If the above barriers can be sorted out, that means our education will benefit so that we can have a good quality of teaching and learning.

It is widely acknowledged that students need access to information communication technologies (ICT) while they are at school to equip them with knowledge and skills to succeed in further study and in labour market (Howie, Muller & Paterson, 2005).

Collis and Carleer (1993: 1&2) provide other justification for using computer in schools. According to them:

- Computers produce increased attention span
- Increase positive attitudes about technology
- Enhance performance on standardised tests
- Reduce writing errors
- Increase co-operative learning
- Increase spelling skills
- Increase problem solving ability and serve as a deeper motivation for learning
- A spontaneous contact for discussions and an effective use of technology as a tool

2.4 ICT POLICIES IN EDUCATION

Policy development on ICT in education in South Africa date back to 1995, when the Technology Enhanced Learning Initiatives was established. It was followed by the feasibility study for the establishment of a Dedicated Educational Channel. In 2001, the National Department of Education and the Department of Communication jointly released a strategy for Information Technology in Education, which is believed to have laid the basis for the e-Education White Paper adopted in 2004.

According to Department of Education (2003), the e-Education policy goal is that every South African learner in the general further education and training bands will be ICT capable; i.e. use ICT 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.

The e-Learning policy intention is not just to build technical skills, but also to use ICT to extend and enrich educational experiences across the curriculum. The objective is to build digital and information literacy so that all learners become confident and competent in using technology to contribute to an innovative and developing South African society (Department of Education, 2003).

The current use of ICT in education policy framework has been evolving since 1996 and is embedded within a broader national government economic, social and development strategy, which includes:

- Attention at the highest level in government to the role of ICT in the promotion of economic growth, job creation, social development, and global competitiveness
- Linkages of South Africa's strategy to a broader pan-African mandate as expressed in the commitment to the New Partnership for Africa's Development (NEPAD) programme and its dedicated project promoting e-schooling
- Overhaul in the education and skills development system at all level.
- A dedicated policy on the transformation of learning and teaching through the use of ICTs, particularly in the formal schools and Further Education and Training College Sector(FET) (Isaacs, 2007).

The effective integration of ICT into educational system is a complex, multifaceted process that involves not just technology indeed, given enough initial capital, getting the technology is the easiest part, but also teacher competencies, pedagogy and curriculum among others (Tinio, 2002:3).

2.5 ICT AS A CURRICULUM

Curriculum was interpreted to mean not only what schools are supposed to teach and why, but also what they do teach and how (Plomp, Nieveen & Pelgrum, 1996).

The term 'curriculum integration' can be widely interpreted when applied to ICT in schools, or could be taken to mean merely the use of drill and practice programmes in a learning area. The term 'integration of ICT in the curriculum' is taken to mean the use of ICT as a resource and as a learning tool in part of, or across, the curriculum (Howie, Muller & Paterson, 2005).

According to Bracey and Culver (2005) there is an immense opportunity of ICT in education sector, for learners, teachers and administrators. Countries should analyze the opportunities that may present to use ICT in education, by weighing them against the constraints in their education systems. Education choices have to be made first in terms of objectives, methodologies, and roles of teachers and students before decisions on appropriate technologies can be made. No technology will fix bad educational philosophy and practice. Learning objectives should be aligned with learning technologies.

The integration of ICT into the new curriculum can benefit learners in at least two ways;

- Exposure to ICT will provide learners with valuable hands-on experience and the opportunity to learn skills that will be useful in an increasingly technology saturated work environment.

- Integrating ICT across the curriculum makes it possible for learners to become creators of knowledge in their own right, e.g. through seeking for information on the internet and then synthesing this information in the form of presentation or project (Howie, Muller &Paterson, 2005).

ICT was endorsed in Curriculum 2005, introduced in 1998 in South Africa, but learners still differ when it comes to skills that they acquire through this curriculum. The application of ICT in schools is perceived as a means of transforming teaching and learning processes, and has been met with significant enthusiasm among the learners and teachers (Mfun-Mensah, 2003).

2.6 ICT AS A TOOL OF EDUCATION

Fleming (2002) explains that ICT is a tool which heralds new opportunities unexplored by other technologies and that the initiative aims to further develop and improve effectiveness by contributing to development. Fleming (2002) makes it clear that ICT exerts a revolutionary impact on the way the world does business and, more importantly, on the way the world communicates.

ICT provides the tools to explore and collect information with greater ease, thus leaving enough time to analyse and integrate information. Computer is something necessary or useful for doing one's job. Tools can be physical, like computers or non-physical, like metaphors, stories or theories ICT provides the tool to explore and collect information with greater ease, thus leaving enough time to analyse and integrate information. It makes memorizing redundant by making information available at the click of a button. (Johanna, 2004).

For many others the computer is a tool and therefore students must be trained to use them efficiently for their work (Mohanty & Vohra, 2006). According to Castro (1999) ICT in education refers to the latter two goals, that is, training in the use of computers and as a means to develop thinking capabilities.

Using ICT effectively in education can help to improve the reach and quality of education. In particular, ICT can:

- Expand educational opportunities by making education available anywhere, anytime and to anyone.
- Improve learning outcomes by making learning more interactive and getting learners more involved in the subject matter.
- Improve motivation to learn by improving relevance of content and making learning more fun.
- Enable education to be tailored to individual learning needs and abilities.
- Enable locally relevant teaching materials, in local languages, to be created and disseminated quickly and affordably.
- Facilitate technology-skill formation, team-work abilities and other "21st century skills" among learners
- Bring about pedagogical improvements and learner-centred teaching.
- Provide conditions that permit and promote lifelong learning.
- Increase the effectiveness and efficiency of education planning and delivery (UNESCO, 2007).

A relevant education is more important today than ever before, as today's networked world demands a workforce that understands how to use technology as a tool to increase productivity and creativity.

As a tool, ICT has the potential to transform the way that education is delivered. ICT can facilitate differentiation and individualization in education: it makes it possible to tailor both the content and the presentation of the subject matter to the individual background, experience and needs of students (Hassana, 2007).In teaching with technology, issues about selection of pedagogical methods also become important. The use of old methods does not really exploit the benefits of technology. The use of technology can make the teaching interesting but it cannot improve the performance of learners (Mohanty & Vohra, 2006).

2.6.1 ADVANTAGES OF ICT ASSISTED TEACHING

According to research done by Mohanty and Vohra (2006) these are the advantages of ICT teaching over traditional classroom teaching:

- Learners are able to access high-quality teaching and learning at any time and place.

- Information previously available only through a professor or an instructor is accessible on demand through computers and the internet.

- Well-designed multimedia learning materials can be more effective than the traditional classroom methods because students learn more easily and quickly through illustrations, animation, different structuring of materials, and increased control of interaction with learning material.

- New technology can be designed to develop and facilitate higher order learning skills, such as problem solving, decision making and critical thinking.

- Interaction with teachers can be structured and managed through on- line communications to provide greater access and flexibility for both student and teachers.

- Computer mediated communication can facilitate team teaching, use of guest faculty from other institutions, and multicultural and international classes.

In developed countries, sophisticated computers and telecommunications are on the verge of reshaping the mission, objectives, content, and processes of schooling. This is part of a larger change in those nations from loosely coupled, mature industrial economies to a profoundly interconnected, knowledge-based global marketplace (Dertouzos & Gates, 1998).

Since one of education's goals is to prepare students for work and citizenship, schools are attempting to change their policies, practices, and curriculum to meet the challenge of making pupils ready for a future quite different than the immediate past (Tucker & Codding, 1998).

2.7 TEACHERS' ROLE IN ICT

Studies show that a pedagogical understanding of integrating new technologies into teaching and learning are as important as access to ICT infrastructure. Cox et al (2004) found that ICT resources in schools proved to be beneficial only if they were combined with good teaching and that the crucial component in the appropriate selection and use of ICT within education, is the teacher and his or her pedagogical approaches.

Educators view computers as resources to assist them in teaching the prescribed curriculum (Sheinold, 1997). In an international study of technology and classroom practices by Kozma (2003), the conclusion was reached that educators in many countries are starting to use computer technology as part of the curriculum. They are utilising computers to change their role from the main source of information to one where they provide students with advice, monitor their progress, and assess their performance.

Teachers are the backbone of every educational institution. For the effective deployment of ICT in schools; teachers have to play a pivotal role. In fact, only if teachers have a positive impression about the technology and are involved in its deployment, ICT can be effectively used in schools (Ruddock, 1991). It has been found that even ICT designed to facilitate self-directed learning works well only when teachers play an important role in facilitating learning (Papert, 1980).

A study by Harold Wenglinsky for the New Jersey-based Educational Testing Services showed that teachers who had prior training in computers were more effective in teaching ICT than those who did not have anything at all (Archer,2000).

UNESCO (2005) reveals that many educators are worried about how they can use ICT to streamline or improve what they are really doing. ICT is all about exploiting the full capability of this technology to open up an opportunity for both teachers and learners. Johanna (2004) makes it clear that ICT can be used in three different ways, i.e. management, instruction and learning, and action research.

2.8 THE IMPACT OF ICT IN EDUCATION

There is evidence from international research that ICT can help pupils to learn and teachers to teach more effectively. However there is not a simple message in such evidence that ICT will make a difference simply by being used. Findings suggest that although ICT can improve learning there are a number of issues that need to be considered if such technology is going to make a difference.

The computer enhances and makes organisational structures in modern societies possible. The integration of ICT into local and global network empowers individuals in business process and allows information to appear simultaneously in as many places as possible (Tinsley and van Weert, 1995:p5).

According to Howie et al (2005) ICT will provide learners with valuable hands-on experience and the opportunity to learn skills that will be useful in an increasingly technology saturated work environment. Secondly and very importantly, integrating ICT across the curriculum makes it possible for learners to become creators of knowledge in their own right, e.g. through seeking information on the internet and the synthesizing this information in the form of presentation or projects.

The research done by Adebisi (2008) focused on the accessibility of ICT for secondary schools within Port Elizabeth and exploring issues around fairness and equity with regards accessing ICT education in schools. But his research was not exhaustive as he could not include all schools in PE in the study and he also did not assess policy implementation at government level.

ICT is changing every facet of our lives. It is changing the way we do business, the way we live and, more importantly, the way we learn. In this new golden age of technology, we see more and more an increasing rift between those who have access to ICT and those who do not. This digital divide can be seen as an educational divide and thus we examine how ICT is influencing education

According to Costello (2000), a revolution in education is necessary and the technology that opened the digital divide can be used to radically improve teaching. The structure and content of education is now influenced by students who are able to access on-line information continuously on the web. Such access has been called e-Learning or electronic learning and can be described as technology enhanced learning or technology delivered learning (Jackson, 2002).

Holvig and Crisci (2001) provide the following evidence in support of positive impact of the use of technology:

- Empowerment – students feel more power in hand.
- Engagement – student get to collect data and analyze them.
- Authenticity – students feel that technology has helped them.

- Leading with technology – students feel technology will give them an edge in the latter part of life.

2.9 RESOURCES AVAILABLE IN SOUTH AFRICAN SCHOOLS

Despite the policies and good intention of integrating ICT into schools, there is a disparity in the implementation of ICT in South Africa schools. According to the Department of Education's White paper (2003), there are still more than 19000 schools without computers for teaching and learning. Nevertheless, there is an improvement in the Northern Cape, Gauteng and the Western Cape while Eastern Cape reported to be the least number of computers in schools and the use of computers for teaching and learning at schools. It is evident that there is a wide gap between the integration of computers into teaching and learning in the Eastern Cape as compared to Gauteng, the Northern Cape and the Western Cape.

According to the Department of Education's White Paper (2003) it is clear that it is difficult to compile an ICT profile for South African schools. Statistics are influenced by various factors, including the rapid redundancy rate and the level of usage and the sharing of ICT resources.

In South Africa, the NEPI report (1991; 31) notes that the proliferation of education departments under the previous political dispensation, managed and financed by 18 different ministries, resulted in gross discrepancies and inequity in the providing of resources. Hence a backlog exists in the education in terms of resources, including ICT.

2.10 NARROWING DIGITAL DIVIDE

Narrowing the digital divide means ICT resources must be provided who do not have them, and that their competencies to access and process the knowledge that these resources make possible must be developed. It is generally recognised that programmes to develop ICT capacity in a country should give priority to ICT in education. Learners need to develop ICT skills so that they can function effectively in the broad society and can contribute to the sustained use of ICTs within it. With this in mind, the South African Department of Education has defined the following as the key goal in its e-Education policy document (Department of Education, 2003).

According to Department of Education (2003) every South African learner in the general and further education and training bands will be ICT capable (that is, use ICT 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 digital divide is also proven by the study of Tira and Mlitwa (2007) when they were comparing the urban counter parts within the Mpumalanga. Their findings show that urban schools to be generally well resourced, whilst rural schools either lack the physical infrastructure or have few computers but lack software.

The Draft White Paper (DoE, 2003) explains that the digital divide occurs in a world experiencing increasing disparities between the rich and poor, among and within nations.

The digital divide is not only about connectivity and infrastructure disparities; it is also about:

- Local content development in terms of the number and quality of local websites, local language content and the use of local online content by key sectors;
- collective knowledge generation;

- Building a domestic knowledge economy and promoting online transactional capabilities for the consumer, business, and government sectors;
- The capacity of workforces to play roles in the internet age – this includes improving Internet access and educational offerings in schools and colleges, creating digital libraries for universities, promoting professional training institutes, and stimulating the economy to absorb these people;

- Overcoming cultural inhibitions and insecurities about developing competence for surviving the breakneck speed of the internet age and the creation of a risk-taking culture;

- Co-operation and collaboration between different sectors and also within the private sector; and
- Creating open investment climates for the incubation, launch, acceleration and initial-public-offering phases of ICT-related SMMEs.

2.11 CONCLUSION

This chapter focused on the integration, implementation as well as the role of ICT in education. The status of ICT in South African schools and the effort of the Department of Education have been discussed.

The next chapter will address the research methodology employed in the empirical part of the study.

CHAPTER THREE - METHODOLOGY

3.1 INTRODUCTION

"Methodology concerns what may be called `the how` of social science research"(Mouton and Marais, 1990:15).This chapter entails a detailed variety of methods and research tools used in the investigation of the status of ICT usage at Sakhisizwe High School in Port Elizabeth. The investigation included all stakeholders within the school and endeavoured to try to dig up their views, ideas, experiences, emotions and feelings. The focal point of this chapter lies in the description of the research design and methodology with reference to the research aim, objectives and research question.

Firstly during the research no names of people were used except the Principals name. The researcher used a group of learners from grade 10-12 from the Black and areas of Port Elizabeth. The reason being that, the chosen schools are the ones that were previously disadvantage schools and the when the present government took over it promised to change the bad situation in those particular schools. This chapter will discuss the research methodology, what methods were used and also the advantages and limitations of using such methods.The section on data collection includes the tools used to collect the data. There will be a brief description of how the data was collected is also provided.

3.2 RESEARCH METHODOLOGY

Research methodology refers to the procedure or processes used to conduct an inquiry. It addresses not only the proverbial "what, when, how and who" questions, but also refers to the "why" (Piantanida and Garman, 1999:30). According to Leedy (1993; 137) the word method is, very simple, a way of accomplish end results end results. It is how one operates a way to get the job done. The word 'method' is a word derived from two Greek elements: *meth* and *odos*. Meth means 'after', odos means 'away'. A method is therefore "after the way" that someone finds to be effective in solving problems of reaching an objective or getting a job done. Ology means" the study of" Therefore methodology is the study of a particular method.

Leedy (1997:121) asserts that methodology is merely an operational framework within which the facts are placed so that their meaning may be seen more clearly. It is particularly important to recognise that data and methodology are inextricably independent. For this reason, the methodology to be adopted for a particular problem must always recognise the nature of the data that will be amassed in the resolution of the data.

For the purpose of this research, the qualitative approach was adopted. The motivation for using the qualitative research tools, in discussing the role and the impact of ICT in Sakhisizwe High School, is the importance of exploring in-depth the issue rather than reporting in a word or to the feelings, opinions, emotions and experiences of the stakeholders within the school with regards the subject matter.

3.3 RESEARCH DESIGN

The research approach was qualitative in nature. A qualitative research study thing in their natural setting in an attempt to make sense of phenomena in terms of the meaning people brings to them (Mertens, 1998:160). This is related to this study because the method used in this research enabled one to accomplish what was wanted, which was to get the job done. This was to investigate the role, impact and usage of ICT in a less privileged school in Nelson Mandela Bay Area (NMBA).

The study needed to collect detailed (qualitative) information, employing different methods, with respect to how ICT can be used to enable quality teaching and learning in secondary schools of PE, specifically at Sakhisizwe High School in one of the poverty-stricken areas.

3.4 QUALITATIVE RESEARCH

In general, qualitative research involves looking at the things in their natural settings or talking to individuals about a particular topic or experience, and also depends on what people have to say. It explains the "why" through the analysis of unstructured information, while quantitative relies on the use of figures. Qualitative research is a broad approach to the study of social phenomena; its various genres are naturalistic and interpretive, and they draw on multiple methods of inquiry (Rossman and Rallis, 1998).

According to Bogdan and Biklen (2003:4), qualitative research is descriptive in nature, because qualitative research data is captured in words not in numbers. This research is an attempt to understand the participants at Sakhisizwe High School (principal, teachers, learners and school governing body) perspective views about the role and impact of ICT in their institution / school. And how the use of ICT can can improve the quality education in their school.

According to Denzin and Lincoln (2005), qualitative research involves an interpretive, naturalistic approach to the world. This means that qualitative researchers study things in their natural settings, attempting to make sense of, or interpret, phenomena in terms of the meanings people bring to them.

Mannen (1979) refers to qualitative research as an umbrella term covering an array of interpretive techniques which seek to describe, decode, translate and otherwise come to terms with the meaning, not the frequency, of certain more or less naturally occurring phenomena in the social world.

Rossman and Rallis (1998) offer eight characteristics of qualitative research and researcher:

- It is natural
- Draws multiple methods that respect the humanity of participants in the study
- Is emergent and evolving
- Is interpretive
- View social worlds and holistic or seamless
- Engage in systematic reflection in their own roles in the research

- Are sensitive to their personal biographies and how these shape the study
- Rely on complex reasoning that moves dialectically between deduction and induction.

This study focuses only on two methods of qualitative research. They are focus group discussions and informative interviews. Therefore, it was appropriate to apply mixed research tools. The study employed a practical action research paradigm (Creswell, 2008). But let's look at the origin and meaning of these methods that is and how it was helpful in this study.

3.4.1 FOCUS GROUP DISCUSSIONS

Focus group discussions had its origins in the late 1930s and generally consist of a set of people (anywhere from six to12) who come together for approximately one hour. The purpose is to discuss a specific topic (Lichtman, 2010).

A focus group discussion is a carefully planned and moderated informal discussion where one person's ideas bounce off another's, creating a chain reaction of informative dialogue. Its purpose is to address a specific topic, in depth, in a comfortable environment to elicit a wide range of opinions, attitudes, feelings or perceptions from a group of individuals who share some common experience relative to the dimension under study. The product of a focus group is a unique form of qualitative information which brings understanding about how people react to an experience or product (Anderson, 1996).

Wilkinson (2000) indicates that focus group discussions are very good forms of research enquiry especially when one seeks to explain the experience of something and also when one seeks to understand the human experience more.

Focus group discussions also allow for data gathering from a diverse range of participants to air their views in a more relaxed environment (Maree, 2007). The purpose of focus group discussion according to Krueger (1994) is to gain knowledge about a particular topic or need by interviewing a group of people directly affected by the issue. That was the reason this focus group discussion at the Sakhisizwe High School involved only the staff, learners and parent component as they are the ones that are affected by this issue of ICT in their school. Focus group data can be used to collect information for many purposes, such as conducting a needs assessment or evaluating a program.

Krueger (2000) argue that a major strength of the focus group interview is that it is a socially-oriented research procedure. He also maintains that it is natural for people to listen to others' opinions in forming their own: People are social creatures who interact with others. They are influenced by the comments of others and make decisions after listening to the advice and counsel of people around them.

THE PURPOSE OF USING FOCUS GROUP DISCUSSIONS

Wilkinson and Birmingham (2003:97) summarises the aims or purposes of using focus group discussions below:

- To gather insight to, or raise awareness of, an issue or topic
- To uncover complex motivations, attitudes or behaviours
- To prepare for a larger study
- To interpret previously obtained research results
- To develop new research questions and issues for further exploration
- To obtain market research data
- To develop understanding of consumers
- To stimulate new ideas and creative concepts
- To discern participants' needs when planning, improving or evaluating services
- To identify problems with existing services
- To learn how respondents talk in their own words about your focus of interest.

Focus groups are used widely because they provide useful information and offer the researcher a number of advantages. Steward and Shamdasani (1990) discuss the relative advantages of focus group:

ADVANTAGES

➢ Focus groups provide data from a group of people much quicker and at less cost than would be the case if each individual were interviewed separately.

➢ Focus groups allow the researcher to interact directly with respondents.

➢ The open response format of a focus group provides an opportunity to obtain large and rich amounts of data in the respondents' own words.

➢ Focus groups allow respondents to react to and build upon the responses of other group members.

➢ Focus groups are very flexible. They can be used to examine a wide range of topics with a variety of individuals and in a variety of settings.

➢ Focus groups may be one of the few research tools available for obtaining data from children or from individuals who are not particularly literate.

➢ The results of focus group are easy to understand. Researchers and decision makers can readily understand the verbal responses of most respondents (Steward and Shamdasani, 1990).

DISADVANTAGES

Although focus groups are important research tools, and have many advantages, they also have some limitations.

- The smaller numbers of respondents that participate in a focus group significantly limit generalization to a larger population.
- The interaction of respondents with the researcher has two effects. First, the responses from members of the group are not independent of one another, which restrict the generalizability of results. Second, the results obtained in a focus group may be biased by a very dominant member.
- The "live" and immediate nature of the interaction may lead a researcher to place greater faith in findings than is actually warranted.
- The open –ended nature of responses obtained in focus groups often makes summarization and interpretation of results difficult.
- The researcher may bias results by knowingly or unknowingly providing cues about what type of responses and answers are desirable (Denzin and Lincoln, 2000).

In this current study, although there were some good advantages in using a focus group discussion for the research, some limitations also existed during the research process

LEARNERS FOCUS GROUP DISCUSSION

The research consisted of six focus group discussion of eight learners per group ranging from Grades 10-12 as these are learners graduating to the workforce environment and higher institutions of learning, where what they have learned and have been taught in school will be put into practice The learners were divided according to their gender as well as their grades. The school timetable was used so that the discussion will take place during computer class. The focus group discussion guide consisted of four questions;

- Knowledge and accessibility of ICT
- Usage of ICT
- Effectiveness of ICT
- Impact of ICT

TEACHERS FOCUS GROUP DISCUSSIONS

Six teachers were involved in a focus group discussion, and they were not separated according to gender. The teacher's questionnaires (see appendix 4) is the same as the one that were used for the learners.

SCHOOL GOVERNING BODY / PRINCIPAL

A Key informant interview was used for the School Governing Body representative, who is also the chairperson of the body. The interview with her were consisted of the same questions with the principal but the different question to her is their involvement and the role they played as SGB in terms of ICT development in their school.

3.4.2 KEY INFORMANT INTERVIEW

Qualitative researchers rely quite extensively on in-depth interviewing, also referred to as a one-on-one interview. Kahn and Cannell (1957) describe interviews as a conversation with a purpose; it may be the overall strategy or one of several methods employed in a study.

The purpose of key informant interviews is to collect information from a wide range of people. It has two models of interviews described by Wilkinson and Birmingham (2003) as:

- Unstructured – it is a very flexible approach. Areas of interest are established by the researcher but the discussion of issues is guided by the interviewee. They are difficult to steer if the discussion gets away from the key subject matter, and they can prove extremely difficult to analyse.
- Semi – structured – There is less flexibility. The interviewer directs the interview more closely. More questions are predetermined than with the unstructured interview, though there is sufficient flexibility to allow the interviewee an opportunity to shape the flow of information.

Wilkinson and Birmingham (2003: 63) outline the advantages and disadvantages of using interviews:

ADVANTAGES OF INTERVIEWS

- Because of the researcher direct involvement it's possible to get 100 percent response rate for your questions.
- The researcher can decide on follow –up questions
- The researcher can hear far more than just what the participant tells you. It's easy to observe body language and interpret the tone of a response to a question.
- Participants often see interviews as opportunities to voice opinions and 'let off steam' about subjects.
- They provide vast amounts of rich and useful data for further analysis.

DISADVANTAGES OF INTERVIEWS

- A good interviewer requires considerable training in interview techniques.
- Interviews are time consuming and costly to conduct.
- Data generated through interviews can prove difficult for the lone researcher to analyse.
- Interpretations of interview data may differ between researchers
- Unless strictly controlled, interviews can easily meander from the main subject.

In this study, semi structured interviews were conducted with School Principal and the SGB chairperson. Using an interview schedule (see appendix 5 & 3) which was especially designed according to criteria found in literature study.

3.5 SAMPLE

According to Brink (1996:133), a sample is a portion or subset of the units that comprise the population. A population is referred to as all the constituents of any group of people, events or objects who, for research purposes, are designated as the focus of an investigation (Drew, Hardman and Hart, 1996:254).

Sampling therefore, is a process of selecting a number of participants for a study in such a way that the individuals represent the larger group from which they are selected. Sampling is the process of drawing a sample from a population. A sample is usually much smaller in size than a population. When sampling is done, the characteristics of a subset (the sample) selected from the larger group (the population) are studied (Burker & Lorry, 2000:156).

For this study, the targeted sample was six teachers, 48 learners, the principal and the SGB member at Sakhisizwe High School. This was done after obtaining permission from the school principal, Mr Mzimkhulu Qunta. Focus group discussions were conducted with learners and teachers who were willing to participate in the research. The focus of the research was on the grade 10-12 learners and their teachers. There were six groups for learners in total, consisting of eight learners per group from each grade. Another group was conducted with one group consisting of six teachers. The school is situated in the Zwide areas of Port Elizabeth, where the majority of people staying there are black people. The school is in an area where the crime and unemployment rate is very high, not even the teachers are safe.

3.6 DATA COLLECTION

According to Groenewald (1986) various methods and tools can be used in a qualitative study. But for this study the data was collected by means of focus group discussion and Key informant interviews.

- **Focus group discussion** –

  It consists of six groups of learners that are grouped according to their gender and grades. It is used instead of face-to-face interviews with minors in order to avoid ethical issues related to interviewing minors. Also six teachers took part in this discussion.

- **Key informant interview** –

  According to Johnson and Weller (2002), there are two types of key informant interviews, the bottom-up key informant interview, which assists in the clarification of less well understood topics and knowledge domains, and contribute to the construction of more valid structured interviewing format, such as structured questionnaire. The second one is the top-down informant interview, which aids in the validation and alteration of existing structured questionnaires, leading to more valid adaptation of existing interviewing forms.

The school principal and the SGB chairperson are the one that do informant interview in this study. Informants are selected in terms of their knowledge, experience and understanding of a given topical area

Maree (2007) recommends the one-on-one interviews because it allows participants to be able to express themselves and be able to contribute their ideas, and thus this type of interviews will be conducted with SGB members, and the Principal of the school.

It was ensured that each interviewee clearly understood what was required during the research process. Clarification of terms used was provided and simplified so that everyone could understand every word. After every discussion or interview the participants were thanked verbally to show appreciation and their willingness in this research.

The researcher was the facilitator and the partner was the note taker.

3.7 DATA ANALYSIS

Leedy and Ormod (2001:161) perceive data analysis as a complex and time consuming process. This is due to the fact that to be able to analyse data, a researcher needs to read the data repeatedly to get a sense of what is contained.

In this study, data was organised categorically and chronologically using the method of Tesch (Cresswell, 1994:53). This involves the transcripts of all the interviews and discussions conducted. This was done by reproducing the exact words the interviewers' used. The researcher started to analyse the data and draw some conclusions and compiled the next chapter.

Although there were no audio tape notes were carefully taken by the note taker as the researcher was the facilitator. Semi structured questions for the principal and school chairperson was transcribing see (appendix 3 & 5) as well as focus group discussion guide for teachers and learners (see appendix 2 & 4).

3.8 CONCLUSION

This chapter described the methodology used in this research project.

The next chapter focuses on the interpretation and the discussion of the findings of the report.

CHAPTER FOUR – FINDINGS AND RESULTS

4.1 INTRODUCTION

The research methodology used to gather information related to ICT usage, access and impact at Sakhisizwe High Schools in the Nelson Mandela Metropolitan (NMBM) was presented in the previous chapter.

This chapter summarizes the results of focus group discussions and key informant interviews conducted during the course of the study. The research was investigated at Sakhisizwe High School in one of the poverty stricken areas of Zwide in Port Elizabeth. Focus group discussion was used for teachers and learners whilst key informant interviews were used to interview the principal and SGB member. The findings are discussed below.

4.2 FOCUS GROUP DISCUSSION

TEACHERS

Six teachers out of 19 were interviewed at Sakhisizwe High School as the reason for this sample is indicated in chapter 1.

Knowledge and accessibility of ICT

The teachers view ICT as a tool to access information and as something that makes life easier. They know that ICT is about technology and modernisation. The following were examples of tools that teachers are familiar with: cellular phones, fax machines, computers and photocopiers. They then use computers for administration purposes such as compiling tests, assessment sheets, class lists and printing class activities.

Their learners are doing computer literacy just to be familiar with computer basics. Computer literacy is done by all learners from grades 8-12 and there is no examination of the subject. There is no curriculum that is being followed at Sakhisizwe High School compared to schools that do CAT (Computer Applied Technology), because the schools that do CAT have same syllabus and policy irrespective of being privileged or less privileged school. The privilege of those schools that do CAT is that when they finished grade 12, CAT is recommended as one of their school subject whilst the learners at Sakhisizwe High School are just doing it for fun. Teachers do not evaluate and record their students' computer skills because they are not well trained and also as the researcher stated earlier on, that these teachers that were interviewed are not computer teachers, there is a facilitator (not a professional teacher) that teaches learners computer basics.

Teachers gained their knowledge of ICT by using computers at home and visiting internet cafes and learned from their children. There is no formal training that was offered to them in terms of ICT. Teachers used the school resources in their free periods as it is risky to access computers at school after hours due to environmental factors for example in-adequate school security.

The school consists of 19 teachers, six management staff and one administrative staff member, but all of them are using one computer including the principal himself. The computer was donated to them by Pickwick Company. St James High School has the same

problem that is encountered by Sakhisizwe High School whereas they are not situated in the same area in Port Elizabeth, but both schools are less privileged in terms of resources and environmental factors (Mooi, unpublished 2011). Yet at Pearson High School (one of the privileged schools) teachers are frequently using computers and data projectors in their daily functions (Mdlongwa, unpublished 2011). They are also able to file their documents, send e-mails to parents and use it for general administration. Teachers have full access to internet and computers 24 hours a day and can use computer room as they wish. Their administrative staffs have their own computers for their personal use (Mdlongwa, unpublished 2011). The above statements prove that privileged teachers used computers more often and have more experience compared to their less privileged counterparts.

Effectiveness and Impact

Teachers at Sakhisizwe High School agree that ICT has improved their lives, skills and knowledge. Computers save them time, and enable them to do their work faster, more neatly and more efficiently. It is now easy for them to access information from websites compared to the past where one had to go to the library, paging books and wasting time. They can now google and get information in no time. Teachers can now hire educational DVDs and CDs to empower themselves and teach learners. ICT has improved their communication and social networking.

Teachers felt that photocopy machines made their lives easier as they could make copies for children instead of writing notes on the board as it was the case before. Teachers felt that their learners did not use technology fruitfully; they played games rather than using ICT to better their education. However they were satisfied that learners could at least switch on and switch off the computers. Teachers insisted that increasingly, computers are part of their daily lives. Each time they bought something, the cashier scan the barcode, they use ATM to do their banking as the result there is a new system of internet banking where we pay and transfer money by using computer.

Challenges

Lack of resources and funds

There are not enough computers at Sakhisizwe high School, where 770 learners were using 20 computers and these are outdated, old and incompatible. These computers were scrap from the Department of Education. The principal picked them from the Bridge Warehouse where the department keeps them to be destroyed at a later stage. The principal of Sakhisizwe High School asked the department to donate them to his school instead of destroying them. He then collected these bits and pieces of computer parts and hired skilled people to assemble and repair them at his own expense.

There is no money to upgrade them or to maintain them. The school never received computers from the Department of Education, only those schools that are excelling in their Grade 12 results that have been offered free computers. The Department of Education does not offer any formal ICT training, yet in this 21st Century everybody must be computer literate. But privileged schools like Pearson High School have a yearly budget of R190 000 for maintaining ICT resources, and they also buy their own computer equipment through contribution from parents' school fees and the school budget (Mdlongwa, unpublished 2011).

Non-payment of school fees at Sakhisizwe High School is another challenge that makes it difficult to manage the school. The teachers indicated that they will be glad to have internet at their school; they know how important it is in terms of empowering them with knowledge of their subjects or learning areas. However the affordability and maintenance thereof is

impossible for them unless they can get a sponsorship from local companies or from individuals from the community.

High crime rate

Also there is a lot of burglaries and theft of cables that makes it much more difficult for the school to have these facilities, even the little they have is at risk of being stolen by the thieves.. The school does not have enough funds to install security system or hire a caretaker. But all less privileged and middle class schools are encountering similar challenges when it comes to crime. To mention one example, Douglas Mbopa High School in Motherwell being one of the less privileged schools in the township are also having similar challenges of burglaries and theft of cables (Sonkwala, 2011). Lack of funds and high rate of crime can be the cause of not having computers in less privileged schools, which might result in poor quality of education.

LEARNERS (GIRLS GR 10-12)

Knowledge and accessibility

Learners knew that ICT refers to computers, internet, fax and cellular phones, transport, and television. They were not aware about the abbreviation ICT stood for. One of the ICT resource used by learners was their phones, which they used to visit websites such as Face Book and Mix It. They also used it to communicate with friends and family or to search information for the school projects. Not all learners have latest phones that can access these websites. There are ICT instruments available at Sakhisizwe High School, for example a television set, computer, phones and photocopier, however learners can only access computers during computer periods. This is different to Victoria Park High School where learners have access to computers, printers and internet during computer periods and break time (Sonkwala, unpublished 2011).

During computer period learners are taught computer literacy (basics), not (CAT) as a subject. There is a difference between computer literacy and CAT, literacy is just a foundation on how to use computer, open and close it, they are taught how to write a letter, draft CV's and spread sheets. However CAT is an examination subject which follows a set curriculum. The children at Sakhisizwe High School are not aware of their total number; however they know that the entire school children use 20 computers. This results to a ratio of one is to eight (1:8) compared to Victoria Park High School where they have 300 computers used by 810 learners only that resulted in a ratio of (1:1) (Sonkwala, unpublished 2011).

The majority of learners at Sakhisizwe High School do not have computers at home; they rely on those that are at school, irrespective of their condition. They also rely on the resources of Ubuntu Education Fund (a non-profit organisation), based in Zwide Township. Ubuntu assist and invests in under-resourced schools by developing computer labs and libraries to create an on-going resource for learners, teachers and the greater community (Ubuntu, 2005).

The schools situated in more privileges areas like Pearson High School (situated in Summerstrand, one of the wealthiest areas in Port Elizabeth), all learners are comfortable and familiar with ICT resources. Almost all learners have computers and internet at home and they were computer literate before coming to Pearson High School (Mdlongwa, 2011).

Usage

The computers improved learners' knowledge because now they are able to do their CV, draw graphs and write letters, do formatting and spread sheets independently. They are now familiar with computer basic skills, but are not frequently using it and are not exposed to computer programmes At Sakhisizwe High School computer is not used as a subject compared to other stricken poverty school, for an example Douglas Mbopha High School where they have few computers but they are doing it as a subject (CAT) with curriculum, tests and examinations (Sonkwala, 2011). Computers at Douglas Mbopa High School are in good condition hence these learners are assessed. This assessment forms part of their year mark (Sonkwala, unpublished 2011).

Effectiveness and Impact

They believe that ICT makes life easier because now it is quick to send money, postage or make payments by means of debit card.

They are now able to communicate and research information using Google. Learners appreciate the knowledge and skills that they have acquired, they believe that these basics will make them find better jobs, and they can go to university knowing how to use computers, do assignments and research. Some have found jobs during weekend with the little computer skills that they have learnt at school. At least now they felt part of the modern world, as if they have a chance and hope of moving forward.

Challenges

Sakhisizwe High School learners want to do computer as a subject, i.e. CAT because they feel that outside world needs a written document concerning skills acquired in order to get a job. They are bored of doing same basis from grades 8 – 12. Computer is taught by an ordinary person, not a qualified teacher. All learners attend computer class only once a week.

More computers are needed so that the ratio of learners to one computer can be reduced. The high rate of crime is the other major problem because when a computer is stolen, it takes long before it is replaced due to a lack of funds. There is no privacy in their computers because pin codes are displayed in front of each computer and is used by everybody. For instance, if they open their personal files to keep their work, next group of learners are able to delete or stole the activities. The learners indicated that no internet available in order to do their research and sometimes they stay without electricity because of prepaid system. The school uses the prepaid electricity system but sometimes funds are unavailable to buy it or electricity machines at the shops are off line.

Learners are not allowed to use the computers after school because there is no security as compared to Pearson High School were learners have access in internet and computers for 24 hours a day and can use computer lab as they wish to do, with full security of alarms system and security gates. As long they are inside the school premises they are safer (Mdlongwa, 2011).

Solutions

They wish that the Department of Education can offer them with more computers and employ a qualified teacher in order to do computer as a subject. Computer class should be offered every day. Learners must pay their school fees so that when a computer breaks down, it can be repaired immediately, security system and internet can be installed in the computer class.

LEARNERS (BOYS GR10 -12)

Knowledge and accessibility

ICT to them is about technology and improvement in life style. To them IT and ICT is one and the same, there is no difference. The computer tools that they knew are: telephones, computer, cars, play stations, fax machines, DVD, TV, radio, PSP, X-box and Play Station games. They can use computers in order to do school work as well as understanding of computer language.

The ICT resources that are available in their school are: computers, TV, photocopier, fax machine and telephone. There are only 20 computers used by grades 8 – 12. They do computer literacy which is compulsory for every learner. This is similar to what happens at Pearson High School where 358 learners from grades 8-9 have access to 70 computers and computer literacy is compulsory. Teachers at Pearson High School believe that grades 8-9 learners must do computer basics, there after they choose to do it as subject (CAT or IT) depending on subject grouping (Mdlongwa. 2011).

Usage

They use their computers to play games, draw graphs, write their CVs and do spread sheets. They are able to open folders to arrange their activities in an order. They can type and print their projects but they are only allowed to work during break times which is similar to what is done at Victoria Park High School. Victoria Park High School learners have access to internet and they can google the information of their project (Sonkwala, 2011). Not all learners are familiar and comfortable with the use of computers because most of them do not have computers at home compared to Pearson High School children where almost all learners have computer and internet at home (Mdlongwa, 2011).

They also use ICT for their own personal life, especially those who have computers at home, they play games and music, social networking like face book and mix it.

Effectiveness and Impact

Teachers enjoy the challenges of the computer, and find they have a new enthusiasm for their work. They said they were very bored with teaching, but since they got computer and knowledge, they can feel new areas to explore have been opened up.

The computer basic skills that they have can be used to upgrade their skills after finishing school e.g. to do computer courses. They can be able to research on their own without any supervision when they do their projects. The impact of technology on learners is that they are able to know what is happening around the world through TV, websites, radio and internet. One can be able to open a business or get a better job by just using google. But some Grade 12 learners at Sakhisizwe High School felt that computer literacy is time wasting especially those because they have been doing basics from Grade 8 and have not progressed at all. There are no challenges and they have did not learn, or were not exposed to, different programmes.

Challenges

Their school has no proper computers as most of them are damaged. These computers need to be repaired but due to no funds available they are useless. The principal is the one that used his own money to repair the computers when possible.

Learners are demotivated because they are doing the same thing from grades 8 – 12, there are no challenges. That is why they want to do it as a subject so that they can be tested and examined.

Lacks of security, or caretaker at their school, is allowing thieves to steal or break in frequently.

Solutions

Learners at Sakhisizwe are in need of any good Samaritan who can help them, including Department of Education, by offering them computers or to upgrade and repair those that are already available, but are not in good condition and unusable. They fully agree that their principal is going extra miles to see to it that they do have computers just like any other school even he spent his family money to make sure that they received quality education by paying the facilitator and repairing the damaged computers.

Department of Education must hire a qualified teacher so that they can be able to do computer studies as a subject because is the one that is in need in the 21st Century. They feel that even parents and learners must pay school fees so that their standard of education can be improved, also they wished that the government can subsidise them as they do to their neighbouring school, which is a no-fee school. These schools are in the same vicinity as Sakhisizwe High School and the area is faced with a high unemployment rate resulting in poverty and crime.

4.3 KEY INFORMANT INTERVIEWS

SCHOOL GOVERNING BODY

Knowledge of ICT

The School Governing Body (SGB) chairperson is a woman. She was not familiar with the term ICT until it was explained, whereupon she mentioned that she was familiar with some ICT resources, such as the TV and cell phones.

She knows that learners have access to computers at the school because when she visited the school during the day, she usually saw learners in computer class busy working on them. She felt that ICT must be taught in their school as it is a demand for this generation.

Role of ICT

The chairperson stated clearly that they do not have any means in terms of money to assist the school with ICT resources, as most of them are unemployed. As a school body they encourage the parents to approach their bosses at work to beg for the unusable computer parts even if they are old.

As parents they assist the school by giving their full support when there is any fund raising effort. Those that are not working they came to school on weekends to help the principal when he assembles those computer bits and pieces, even though the only support and help that they can give is moral support.

She told the researcher that the school can only afford to install burglar bars in the computer classroom, and as parents they look after the school because most of them stay closer to the

school. They do not have money to install an alarm system and to pay a security, even the day-time caretaker is the parent who volunteers his services to assist.

Impact / Benefits

She indicated that computers seems to be good because everywhere people are using them, even to earn their wages or when paying for groceries, It is in everyday use. That is why she felt that it is necessary for the school to do have computer courses so that the learners can be equipped to get better jobs when they finished school. But she was not aware of the difference between computer literacy and CAT and IT.

Challenges about ICT development

The same challenges of theft and electricity problems mentioned by other study participants were also mentioned by the SGB chairperson. She also mentioned that there is a lack of funds because parents do not pay into the school fund. Even though schools are located in the same area the Department of Education classifies each school differently when it comes to government subsidies. There are schools that are located near this school that are regarded as no-fee schools whilst this school is rated as a Quintile 4 school, i.e. one where the parents can afford to pay school fees. She challenged the Department of Education to clarify the matter of school fees.

She stated clearly that as parents they are not educated but they want a proper education for their children. The challenges experienced at this school is quite different to that experienced at Pearson High School, where the SGB indicated that their main challenge is that they have ambition to have ICT resources in all the classrooms and they want to get all teachers to a good level of understanding with regards ICT and making all the teachers comfortable with using tools of ICT in their teaching (Mdlongwa, 2011).

THE SCHOOL PRINCIPAL

Knowledge and accessibility

The school principal is aware of the importance of ICT especially in this world that is full of technology. He views ICT as a tool to access information and as something that makes life easier. That is why he goes extra miles to ensure that their learners have at least a basic knowledge of computer skills, even if it is not advanced.

The school has 20 computers for 770 learners, which means that not all learners from grades eight to twelve are doing computer literacy as a subject. The reason why they are not doing it as a subject is that the computers are not up to standard as they are old and out-dated. Irrespective of having few computers, he makes sure that the teachers and learners have access in ICT resources, but unfortunately the school cannot afford access to the internet as they lack the funds.

He is not happy about the school's standard regarding the usage, effectiveness and the impact for both teachers and learners, but he feels that the basic infrastructure that they have, can improve the skills and knowledge of learners. The school taught a computer course in order to at least give learners the most basic skills. CAT is not a formal curriculum subject and is not examined. He would like his school to do CAT as a subject but.

Usage

Teachers are allowed to use the administration computer only when they are free in class or at break time. This computer was donated to the school long time ago, but it is a much better one than the ones that are used by learners. This computer caters for the principal, secretary, five School Management Team members and 19 teachers. Staff members are not using learners' computers because they are always occupied, as he stated earlier on that all learners are doing computer as it is compulsory and are not enough for the whole school. The ratio of computers to student's is 1:8.

The staff, i.e. teachers, secretary and principal, all uses their only one administration computer to run the school smoothly. For instance teachers and School Management Team members are able to compile their class list, test, worksheets, reports as well as playing DVDs that are empowering themselves in their learning areas whilst the secretary is doing office work properly by filing important document in folders and writing letters that must reach the parents as well as SGB members. The principal uses the computer frequently for official documentation.

Effectiveness of ICT

The principal is in full agreement that ICT has improved the knowledge of everybody in their school, as it makes their lives easier and quicker. Teaching now is more advanced than in the past, because teachers can now get their academic information quicker, by means of google or playing DVDs about the subject matter that they teach but on their own expense as the school does not have advanced ICT resources like internet. The principal also indicated that computer save his time, and enable him to do his work faster, neatly and more efficient. It is now easier to get hold of everyone. Learners can now create their files, CVs and are be able to use computer programmes like Word, spread sheets and are able to do formatting.

However, findings of a study conducted at the Victoria Park High School in Walmer, indicate that the principal feels that:

- ICT is essential in this ever changing world of technology.
- He is concerned with the cost of keeping up technology.
- He believes that the introduction of ICT has improved administrative function at school: e.g. school fees accounts sent via email to parents who have e-mail and those that do not have they received sms (Sonkwala, 2011).

Impact/ Benefits

Teachers now are able to download any information and new ideas that they need for their learning areas. He now received clear and clean schedules from the teachers instead of struggling to look at different hand writing of his teachers. His office now is very spacious because there are no hard copies files that are lying around, all files and school records are now kept in their computer. As the school does not have enough funds to buy resources or to have science laboratory, teachers use DVDs and TV to demonstrate their science experiments in class. The fact that teachers now type and mark tests using a computer, has made life easier for them. They can at least understand computer basic skills and the advantage of having them in their homes have improved their use.

Challenges

Shortage of computers

One of the major obstacles or problems of ICT in education at Sakhisizwe High School is the lack of sufficient computers.

He needs more computers (he begs to anyone even if it is old or out-dated) they are going to make plans to repair it. They also in need of Internet so that learners and teachers can be able to find their research for their projects.

Lack of funds

He repairs the damaged computers and paid the facilitator from his own pocket. He wishes that the government to provide professional ICT training to all teachers in his school. They are regarded as one of the school that can afford to pay school fees by the DoE. As the result they are graded as a Quintile 4 school, which is similar to a Model C schools.

The main problem is that parents do not pay school fees.

Crime

He needs security because their big challenge is theft. Burglaries occur daily as the area is the poverty stricken and has a high unemployment rate resulting in crime.

The computer classroom is always the target of these thugs, because they want the computers and the cables.

Principals comment

The principal said he would love to give their learners a chance to learn computer as an examination subject that is CAT, as all South Africans of the future need to be computer literate. But it is not possible with their limited and out-dated resources. The school have plans of raising money so that one day they will be able to buy more and advanced computers. Nevertheless they start by embarking all learners to have basics of computer skills.

4.4 CONCLUSION

Information and Communication Technology (ICT) plays an important role in the education sector, especially in the process of empowering educational activities.

The findings confirm the pattern reported in the literature review that privileged schools enjoy more resources than the unprivileged, with negative implications on the quality ICT studies, as well as education at large. There is still a gap between privileged and less privileged schools and not all can afford a good quality education.

Although the government has made huge improvements in providing computers and Internet access to public schools, many blacks and poor students still lack computer access outside of regular school hours. Research indicates that almost 15 years of democratic

dispensation where the agenda of the government has been to bring about a more equitable education systems, which places more emphasis on the learner, by the introduction of an Outcomes Based Education (OBE), learners from the disadvantaged communities are still not doing well at school. (Fisher et al, 2006).

The South African government must equip teachers with ICT skills so that they can be able to plough it back to the learners irrespective of their background. There is also a great need to provide adequate security at schools where the crime rate is high.

CHAPTER FIVE - CONCLUSION

5.1 INTRODUCTION

This chapter provides a synthesis and summary of the findings, recommendations and suggestions for further research. The aim of this research was to investigate the role, and the impact of ICT in education at Sakhisizwe High school. The main research purposes guiding the problem statement were as follows:

- To determine how the use of ICT can help to improve the quality of education in less privileged schools.
- To determine the effect and impact of ICT usage at the school.
- To determine to what extent learners and teachers are ICT equipped.
- To determine the availability and accessibility of ICT resources within the school.
- To determine how technology has improved educators and learners skills and knowledge.
- To look at obstacles and barriers that affects the development of ICT in education.

5.2 SUMMARY OF FINDINGS

The response from the study participants revealed that Sakhisizwe High School is still faced with challenges in terms ICT resources, ICT development, usage, accessibility, the role and impact of ICT in their school. In short the findings can be summarised focusing on the research question as well as aim and objectives questions;

ICT CAN IMPROVE THE EDUCATION

Teachers and learners of Sakhisizwe were fully agreed that ICT can improve their skills and education .Because if you have ICT resources like computer and internet; it is easy to get information from websites as compared in the past. ICT can enhance their quality of education in several ways, e.g.:

1. By increasing learner motivation and engagement as well as enhancing teacher training.
2. ICT will provide learners and teachers with wider experience and knowledge.

Teachers believe that ICT are also transformational tools which can promote the learners to be independent and creative in their studies and that these tools can also be used to create a

learner-centred environment. Computers help to access information in different ways. Many studies argue that more skilful and advantaged learners will always learn better than disadvantaged students. Less privileged students will probably remain the same or they might even narrow a little, but it is unlikely that the gaps will increase if the students have equal access to ICT use in schools (Adebisi, 2008: 86). This statement proves that it is impossible yet for Sakhisizwe to improve their quality of education in terms of ICT with the current resources, but never the less they are trying their best not to be left out in this changing technological era.

EFFECT AND IMPACT OF ICT IN EDUCATION

Teachers believe that ICT improves their lives because it saves time and that they are now able to use it to make learning outcomes more possible than previously. ICT gave them time to do different things that would not be possible without the technology e.g. they can now send money and pay debts without being in a hurry to reach the bank before closing time. Learners and teachers are involved in activities through the motivational influence of technology as well as social engagement. Teachers and learners feel that ICT present things in new ways and they can also access information that would be difficult to access. They can now google in their cellular phones and get the information within no time instead of wasting time by paging many books at the library. It is easy for teachers to make copies rather than writing notes on the board and also their files are neat and tidy because they now file them electronically.

They believe that ICT can empower all of them as learners and teachers, and promote change in their school. Learners can be able to research information on their own when they do their assignments without relying on anyone. ICT help them to be able to get information anytime and everywhere, that means they can learn even if they are not at school but Sakhisizwe High School case is exceptional because most of them do not have computers at home.

The computer basic skills that the learners have can be used to upgrade their skills after finishing schools. Teachers also stated that ICT gave them confidence of being future managers that are ICT friendly. A further impact of technology on learners and teachers is that they are able to know nearly immediately what is happening around the world.

The principal is now able to communicate with Education Officers by means of telephone, email (from his cellular phone) but it costs him a lot, faxes and SMS as well as conveying meetings with donors and SGB members, using the same means.

AVAILABILITY AND ACCESSIBILITY OF RESOURCES

The school have ICT resources but they are not up to standard and not enough. Resources like fax machine, photocopier machine, telephone, television, printer are available but teachers have access only at break time or during their free periods. Learners have access to computers only when it is their turn to attend computer class that is once a week, this proves that learners from less privileged school lag behind in terms of ICT skills and access to internet usage compare to their counterpart. There is no internet at school as well as in their homes; they rely on Ubuntu Education Fund, an NGO that is based closer to their school. Even the library that is next to the school used to have computers with internet and it was useful for teachers and learners, but now there are no computers there anymore. Less privileged school like this teachers and learners are disadvantaged in accessing ICT both at home and at school due to lack of infrastructure, finances and poor security.

IMPROVEMENT OF SKILLS AND KNOWLEDGE

They all agree that ICT has improved their skill and knowledge irrespective of the conditions of their resources that they have. Teachers can also equip themselves with knowledge by means of researching information from various websites. Teachers are not taking a backseat and waiting for government to offer them proper computer training, they empower themselves by asking for help from those that have knowledge. The school also bought some computer guidance book so that those that are computer illiterate can upgrade themselves. Teachers now are able to use the computer to compile their class list, test, worksheets, and assessment sheets.

Learners' skills and knowledge are also improved because now they have basic- computer skills, they are now able to do their CV, draw graphs and write letters do some formatting, and use spread-sheets. At least now they can use the computer independently and do their projects and research. They are now familiar with technological terminology and believe that the little knowledge they have can help them to meet the standard of tertiary institutions or to get some jobs. They can now empower themselves with knowledge by googling information themselves without a teacher's assistance.

CHALLENGES AND OBSTACLES TO THE DEVELOPMENT OF ICT

Less privileged schools have the same opinions when it comes to challenges that they were facing in their environment. As it was stated earlier that the school located in a poverty-stricken area and the unemployment and crime rates in the area are high. There is a lot of theft and burglaries in their school especially of cables and electric wires. It is proven that this norm is also happening to another town that are less privileged. See appendix 8, the school in Mdantsane is having the same problem of burglary because is in a poverty area where crime rate is too high.

The school has a big number of learners but only has a few computers available, which means that not all learners have access. The problem now is that learners are moving to other schools that offer CAT as it seems as a demand in this era. A lack of a professional ICT teacher is the other problem, because this prevents them from doing CAT that is based on a curriculum. Due to the lack of funds the school cannot afford to repair damaged computers, or upgrade computers and to pay the internet. There is no money even to hire security personnel to patrol school grounds, technical staff or the facilitator. In order to assist, the principal is paying these staff members from his own funding. There are some barriers that affect the development of ICT in this school, including a lack of confidence from teachers and learners due to not having sufficient knowledge and skills, a lack of competence and a lack of access to the computers.

5.3 CONCLUSION

This study explored the access to and use of ICT at Sakhisizwe High School in Nelson Mandela Bay. The study indicates that the school is faced with many challenges in terms of ICT development.

In a nut shell the education ministry's ambitious goal of seeking to ensure that learners and teachers in public schools will be ICT capable in 2013 is impossible to achieve if there are schools like Sakhisizwe High School that are still lagging behind in terms ICT development and resources. The South African government must see to it that all public schools are treated equally so that in the end South Africa can have a better future generation that is ICT empowered with skills and knowledge irrespective of colour or race or wealth.

Furthermore most teachers and learners in less privileged school do not have opportunities to access ICT resources in their environment, as compared to more privileged schools. Privileged school learners and teachers have a satisfactory access to ICT resources after school hours to complete their assignments while those in less privileged area do not because of the environmental factors. In less privileged schools there is also a lack of professional trained ICT expects that can assist when there is a technical problem. However in terms of affordability in resources privileged schools are empowered to improve their livelihood, while less privileged learners and teachers are disadvantaged by lack of access to ICT that provides critical development opportunities.

5.4 RECOMENDATIONS

Every year the Department of Education issues an ICT survey form to all public schools to be completed. The specimen of this form is attached as an appendix 6 in this treatise. This form has a main statement that is written in bold: "The ICT survey for schools is the most important source of information regarding the ICT situation at your institution. The information collected will contribute to the ICT data base of the province and will be value to the management, administration and supply of ICT resources and governing of schools" (Department of Education, 2011).

The questions in this form cover everything that can develop at all schools when it comes to ICT and education. If each and every school can be assisted according to their needs as revealed in this form, these challenges and obstacles will be things of the past. However, it appears as if schools have been completing these forms every year but in vain.

The following recommendations may improve the quality of ICT education as well as effective access to less privileged schools:

- The government must bring on board all public, private sectors, donors and NGOs in order to improve ICT in education as it is the cornerstone of economic growth.
- All learners must be subsidised by the government irrespective of what they can afford to pay.
- Teachers must be trained in order to be able to use ICT resources efficiently and with confidence.

- Government should provide ICT resources to all schools, and make sure that ICT becomes a compulsory subject in all schools. Government need to assist schools by providing effective security to cater for school resources.
- Municipality bills must always be paid, so that the electricity to the schools cannot be suspended due to government non-payment.
- Teachers training colleges must include ICT as one of their core modules in order to empower teachers.
- The schools must be provided with upgraded computers as well as internet facilities.
- Resources such as libraries and resources centres that are well equipped with ICT facilities need to be established for the benefit of teachers, learners and parents.
- Community at large should take ownership of their schools and protect them from burglary, also not to buy stolen goods from schools.

All the above recommendations are the pillar stone of developing South African Education to include ICT, which is vital in this 21st century. If government can consider these recommendations, it will mean schools will be able to provide an improvement of skills and knowledge in terms of ICT.

AN UPDATE

"Selfless Bay Principal Qunta, Citizen of the year".

As the researcher was busy editing the treatise, there was good news that the Sakhisizwe High School principal, Mr Qunta, was nominated as the Citizen of the Year 2011 in the entire Nelson Mandela Metro (The Herald, 24 October 2011). See appendix 11

According to Heather Roberts, editor of The Herald, Citizen of the Year is a great opportunity to celebrate the unsung heroes and heroines from the Nelson Mandela Bay Metro and surroundings. These are persons who go the extra mile beyond the call of duty to make a tangible difference to the lives of others. The beauty of the annual event lies in its interactivity with the broader community, in particular Herald readers who nominate candidates. Mr Qunta's motto is "my child is your child".

Mr Qunta reported that after being recognised and honoured, his phone rang continuously as people were donating anything that is called computer or parts to him. As a result his school has now 32 computers at the time of concluding this study. His generosity was displayed once again because he donated some computers from his school to five other primary schools around his school. He also hired a facilitator to train the scholars computer basics at these primary schools at his own cost. It would be a great gesture if the Department of Education can show appreciation by donating more resources such as computers to all the under privileged schools to encourage other principals to follow the example of Mr Qunta. Yusuf Lorgat, public relations officer at Al Fida Foundation also sponsored Sakhisizwe High School with scientific calculators, software and other equipment for the computer laboratory.

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APPENDIX 1

Letter to School

8 Falkirk Street

Rowallan Park

Port Elizabeth

6025

25 JULY 2011

Sakhisizwe High School

Spondo Street

Zwide

Port Elizabeth

6001

Dear Principal

My name is Nomfundo Mahleza. I am a student at Nelson Mandela Metro University (NMMU) in Summerstrand, South Campus and I am currently completing my Masters Degree in Development Studies. One of the requirements of the fulfilment of my degree is that I conduct a research project. The topic of my research project is: "The Study of the use of Information and Communications Technology (ICT) in schools in the Nelson Mandela Bay Metropolitan Area".

I am writing this letter to seek permission to conduct my research at your school. The activities will include conducting two key informant interviews: one with the Head of the Information Technology Department and the other with you or a nominated representative. Further I will also conduct focus group discussions with a group of about eight teachers and with the school governing body, as well as with at least four to five groups of about eight learners per group from Grade 10 to 12. The intended timeframe for the study is from August 1 – August 12, 2011. It will take about one day to complete all the interviews and focus group discussions with all the stake holders concerned. Where possible, all activities will be conducted with minimum disruption of school activities and tuition. **The information you provide will be considered strictly confidential.** If you have any queries or questions please feel free to contact me on 0782450049, or my research supervisor Dr Gwendolyn Wellmann on 082 509 2799 or via e-mail on: wellbunch@yahoo.co.uk .Alternatively you can also contact the Department of Development Studies at NMMU on (041) 504 2779/ 2753

Regards

Nomfundo Mahleza

APPENDIX 2

LEARNER'S FOCUS GROUP GUIDE

Focus Group Guide-Topic: ICT usage, access and impact in Secondary Schools in the Nelson Mandela Bay Metropolitan (NMBM) (Learners)

The broad questions covered in the focus group discussions

The purpose of this study/research is to determine the following with regards ICT at the school:

- The accessibility of ICT at your school
- The usage of ICT at your school
- The effectiveness of ICT at your school and
- The impact of ICT at your school

Below is a general guide for leading our focus groups. We may modify this guide as needed as each focus group will inform the subsequent groups. Before the group begins, conduct the informed consent process, including discussion about confidentiality of research.

Introduction (5min)

- Welcome participants and introduce yourself.
- Explain the general purpose of the discussion and why the participants were chosen.
- Discuss the purpose and process of focus groups
- Explain the presence and purpose of recording equipment and introduce observers.
- Outline general ground rules and discussion guidelines such as the importance of everyone speaking up, talking one at a time, and being prepared for the moderator to interrupt to assure that all the topics can be covered.
- Address the issue of confidentiality.
- Inform the group that information discussed is going to be analyzed as a whole and that participant names will not be used in any analysis of the discussion.
- Read a protocol summary to the participants.

Knowledge and Accessibility of ICT (15 min)

Questions to be asked under knowledge and accessibility of ICT at school include the following:

- What do you know about ICT/IT?
- What is ICT used for?

- Do you have access to the instruments of ICT like computers and the internet at your school?
- Do you have ICT as a subject?
- Do all learners take ICT as a subject?

Usage of ICT (10 min)

Questions to be asked under usage of ICT at school include the following:

- What do you use computers for at your school?
- What ICT instruments have you used before?
- Do you use ICT in your personal lives besides at school?

Effectiveness of ICT (10 min)

Questions to be asked under effectiveness of ICT at school include the following:

- Do you think ICT improves your skills and knowledge?
- How effective do you think is ICT in education?

Impact of ICT (15 min)

Questions to be asked under impact of ICT at school include the following:

- What impact has ICT had in both your education and personal life?
- What challenges are you facing with regards ICT at your school/
- What do you suggest that can be done in order to overcome the challenges you stated previously?

Summary/Conclusion (5 min)

- Closing remarks
- Thank the participants

APPENDIX 3

SCHOOL GOVERNING BODY FOCUS GROUP GUIDE

Focus Group Guide for School Governing Body (SGB)-Topic: ICT usage, access and impact in Secondary Schools in the Nelson Mandela Bay Metropolitan (NMBM)

The broad questions to be covered in focus group discussions

The purpose of this study/research is to determine the following with regards ICT at your school:

- The knowledge and accessibility of ICT at your school
- Your involvement in ICT at your school and
- The impact of ICT at your school

Below is a general guide for leading our focus groups. We may modify this guide as needed as each focus group will inform the subsequent groups. Before the group begins, conduct the informed consent process, including discussion about confidentiality of research.

Introduction (10min)

- Welcome participants and introduce yourself.
- Explain the general purpose of the discussion and why the participants were chosen.
- Discuss the purpose and process of focus groups
- Explain the presence and purpose of recording equipment and introduce observers.
- Outline general ground rules and discussion guidelines such as the importance of everyone speaking up, talking one at a time, and being prepared for the moderator to interrupt to assure that all the topics can be covered.
- Address the issue of confidentiality.
- Inform the group that information discussed is going to be analyzed as a whole and that participant names will not be used in any analysis of the discussion.
- Read a protocol summary to the participants.

Knowledge and Accessibility of ICT (15 min)

Questions to be asked under knowledge and accessibility of ICT at school include the following:

- What do you know about ICT/IT?
- What is ICT used for?

- In your view do you think learners at your school have access to the instruments of ICT like computers and the internet?
- In your view do you think ICT should be taught as a subject at school?
- In your view does ICT assist learners at your school?

Involvement in ICT (15 min)

Questions to be asked under involvement of ICT at school include the following:

- What do you do to make sure that ICT resources are available in your school?
- What is your role in ensuring maintenance of ICT in your school?
- What is your involvement in making sure that the computers/hardware are kept safely at school?

Impact of ICT (15 min)

Questions to be asked under impact of ICT at school include the following:

- What impact has ICT had in both the education and personal lives of your children?
- As SGB members what are some of the challenges that you are facing with regards ICT at your school?
- What do you suggest that can be done in order to overcome the challenges you stated previously?

Summary/Conclusion (5 min)

- Closing remarks
- Thank the participants

APPENDIX 4

TEACHER'S FOCUS GROUP GUIDE

Focus Group Guide for Teachers-Topic: ICT usage, access and impact in Secondary Schools in the Nelson Mandela Bay Metropolitan (NMBM)

The broad questions to be covered in focus group discussions

The purpose of this study/research is to determine the following with regards ICT at your school:

- The accessibility of ICT at your school
- The usage of ICT at your school
- The effectiveness of ICT at your school and
- The impact of ICT at your school

Below is a general guide for leading our focus groups. We may modify this guide as needed as each focus group will inform the subsequent groups. Before the group begins, conduct the informed consent process, including discussion about confidentiality of research.

Introduction (5min)

- Welcome participants and introduce yourself.
- Explain the general purpose of the discussion and why the participants were chosen.
- Discuss the purpose and process of focus groups
- Explain the presence and purpose of recording equipment and introduce observers.
- Outline general ground rules and discussion guidelines such as the importance of everyone speaking up, talking one at a time, and being prepared for the moderator to interrupt to assure that all the topics can be covered.
- Address the issue of confidentiality.
- Inform the group that information discussed is going to be analyzed as a whole and that participant names will not be used in any analysis of the discussion.

Read a protocol summary to the participants.

Knowledge and Accessibility of ICT (15 min)

Questions to be asked under knowledge and accessibility of ICT at school include the following:

- What do you know about ICT/IT?
- What is ICT used for?

- Do you have access to the instruments of ICT like computers and the internet at your school?
- Do you have ICT as a subject at your school?
- Do all learners take ICT as a subject?

Usage of ICT (10 min)

Questions to be asked under usage of ICT at school include the following:

- How accessible are computers to teachers during their working hours?
- What do you mainly use computers at your school for administrative purposes or teaching purposes?
- How frequently do you make use of computers at your school?

Effectiveness of ICT (10 min)

Questions to be asked under effectiveness of ICT at school include the following:

- Do you think the introduction of ICT has improved your own skills and knowledge?
- Do you think the introduction of ICT has improved the skills and knowledge of the learners at your school?
- Has ICT improved the administrative functioning in your school?

Impact of ICT (15 min)

Questions to be asked under impact of ICT at school include the following:

- What attitude do learners have towards ICT as opposed to traditional methods of teaching?
- What challenges are you facing as an educator with regard ICT at your school?
- What challenges are you facing with regard ICT at your school?
- What do you suggest that can be done in order to overcome the challenges you stated previously?

Summary/Conclusion (5 min)

- Closing remarks
- Thank the participants

APPENDIX 5

PRINICPAL QUESTIONAIRE

Semi-structured questionnaire- interview guide for Principal

Introduction

My name is Nomfundo Mahleza I am a student at Nelson Mandela Metropolitan University (NMMU) in Summerstrand, South Campus and I am currently completing my Masters Degree in Development Studies. One of the requirements of the fulfilment of my degree is that I conduct a research project. The topic for my research project is: "The Study of the use of Information and Communications Technology (ICT) in schools in the Nelson Mandela Bay Metropolitan Area". Findings from the project will help in the future development of ICT in schools across Port Elizabeth. Your answers will be kept anonymous but we may quote some of the things you tell us in some of our reports, without attributing them to you. Please do let me know if you want more details about this project or have any other doubts which I might not have addressed.

BROAD TOPIC AREAS FOR DISCUSSION	QUESTIONS FOR PRINCIPALS	POSSIBLE PROBES (FOLLOW UP QUESTIONS)
1. KNOWLEDGE AND ACCESSIBILITY	WHAT DO YOU KNOW/THINK ABOUT ICT? IS ICT TAUGHT AS A SUBJECT AT YOUR SCHOOL? DO ALL LEARNERS AT YOUR SCHOOL TAKE ICT AS A SUBJECT? DOES YOUR SCHOOL HAVE ACCESS TO THE INSTRUMENTS OF ICT LIKE COMPUTERS/INTERNET?	HOW IMPORTANT IS ICT IN YOUR SCHOOL'S DEVELOPMENT? HOW MANY LEARNERS TAKE ICT AS A SUBJECT?
2. USAGE OF ICT	HOW ACCESSIBLE ARE COMPUTERS TO TEACHERS DURING THEIR WORKING HOURS? WHAT IS THE MAIN USE OF COMPUTERS AT YOUR SCHOOL FOR ADMINISTRATIVE PURPOSES OR TEACHING PURPOSES? HOW FREQUENTLY DO YOU MAKE	WHICH OTHER MEMBERS OF STAFF USE COMPUTERS BESIDES TEACHERS AT YOUR SCHOOL?

	USE OF COMPUTERS AT YOUR SCHOOL?	
3. EFFECTIVENESS OF ICT	**DO YOU THINK THE INTRODUCTION OF ICT HAS IMPROVED YOUR OWN SKILLS AND KNOWLEDGE?** **DO YOU THINK THE INTRODUCTION OF ICT HAS IMPROVED THE SKILLS AND KNOWLEDGE OF THE LEARNERS AT YOUR SCHOOL?** **DO YOU THINK THAT THE INTRODUCTION OF ICT HAS IMPROVED THE ADMINISTRATIVE FUNCTIONING IN YOUR SCHOOL?**	**DO YOU THINK THAT THE INTRODUCTION OF ICT HAS IMPROVED THE SKILLS AND KNOWLEDGE OF TEACHERS AT YOUR SCHOOL?**
4. IMPACT OF ICT	**DO YOU THINK THE INTRODUCTION OF ICT HAS CONTRIBUTED TO MORE EFFECTIVE TEACHING AND LEARNING AT YOUR SCHOOL?** **WHAT SOME OF THE CHALLENGES WITH REGARD ICT AT YOUR SCHOOL?**	**CAN YOU GIVE PRACTICAL EXAMPLES OF HOW THIS HAS HAPPENED?** **HOW DO YOU HOPE SOME OF THESE CHALLENGES CAN BE OVERCOME?**
5. Summary & Conclusion- Thank interviewee and Closing Remarks!		

APPENDIX 6

EC ICT IN EDUCATION SURVEY 2011

APPENDIX 7

PRINCIPAL QUNTA CITIZEN OF THE YEAR

APPENDIX 8

NEW COMPUTERS LIGHTEN THE LOAD