



**MIDLANDS STATE UNIVERSITY**

**FACULTY OF EDUCATION**

**DEPARTMENT OF ADULT EDUCATION**

**AN INVESTIGATION INTO THE CHALLENGES THAT ARE BEING  
FACED IN THE USE AND TEACHING OF COMPUTERS IN  
SCHOOLS: A CASE OF SIX SECONDARY SCHOOLS IN CHIHOTA  
DISTRICT MASHONALAND EAST PROVINCE, FOR THE PERIOD  
(2012-2017).**

**BY**

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**A RESEARCH PROJECT SUBMITTED TO THE MIDLANDS STATE  
UNIVERSITY IN PARTIAL FULFILMENT OF THE REQUIREMENTS  
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EDUCATION PROGRAMME**

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## APPROVAL FORM

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I Philip, Kungeni, Reg Number: (**R144902X**), do hereby declare that this Dissertation is my own original piece and to my best knowledge has not been submitted for a similar Bachelor's Degree in another University. All quotes for three lines or less were denoted by quotation marks. Any citation of more than three lines was identified in a single spacing and all sources have been acknowledged.

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## **DEDICATION**

This research is dedicated to my wife Lydia, sons Clive and Noel, my daughter Michelle, my late mother and all the entire Kungeni family. I love you with all my heart.



## **ABSTRACT**

This study sought to find out the challenges being faced in the use and teaching of computers in secondary schools in Chihota District, Zimbabwe. Six secondary schools in the Chihota rural area participated in the study. Questionnaires and interviews were used as research instruments. Literature related to the topic was reviewed in Chapter Two in order to get an insight on the topic so as to develop a framework upon which findings were based. The findings revealed that there were problems in the use and teaching of computers in schools. The major problems were lack of a dedicated ICT policy on education, shortage of computer equipment, shortage of computer teachers and technical personnel, inadequate funding to procure and repair computers and lack of electricity. The study recommended the government to put in place a dedicated policy for the use and teaching of computers in education. The policy would make it possible for the government to fully support the education sector by providing the necessary resources for the full implementation of the programme. Schools on the other hand were recommended to create specific computer budgets to buy computers, computer software and cater for computer repairs. Schools were also recommended to send their computer teachers for computer refresher courses and also buy reliable standby power supply equipment such as powerful generators and UPS systems in the event that there were power outages. Finally, school heads were recommended to engage the corporate world and form PPPs with whom they could ensure the smooth running of computer departments.

## **ACRONYMS/ ABBREVIATIONS**

BEP	Basic Education Programme
CIUEM	Centre of Informatics at the University of Eduardo Mondlane
E-mail	Electronic Mail
GIS	Geographic Information Services
H.E	His Excellency
ICT	Information communication Technology
IDRC	International Development Resource Centre
ISPA	Internet Service Provider Association
IT	Information Technology
MOE	Ministry of Education
MSU	Midlands State University
ODL	Open and Distance Learning
PTA	Parents Teachers Association
PPP	Public Private Partnership
SDC	School Development Committee
UPS	Uninterrupted Power Supply
WorLD	World Links for Development

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# **CHAPTER 1: RESEARCH PROBLEM**

## **1.0 INTRODUCTION**

The world at large has seen the taking on board of Information Communication Technology (ICT) in almost every aspect of people's lives. The Millennium Development Goals set by the United Nations (UN) in 2000 and re-visited in 2016 highlighted the importance of ICTs in the global development agenda. The eighth goal drew attention to the need to ensure that the benefits of new technologies, especially ICTs are made accessible to all (World Summit on information Society, 2003). Production of information and knowledge is growing at an accelerated pace and ICTs serve as a conduit in the generation, dissemination and sharing of knowledge (Anderson, 2008). The education sector plays a pivotal role in information and knowledge production hence the need to ensure that teachers and pupils are not left behind. In an endeavour to ensure that the country advances its technology base, Zimbabwe, through the Ministry of Primary and Secondary Education, introduced computer education in the school curriculum. However, the introduction of computer education failed to take off in the majority of schools, primary and secondary, rural and urban due to a myriad of challenges. This chapter marks the beginning of a study carried out to find challenges being faced by schools in the use and teaching of computers in Zimbabwe: a case of six schools in Chihota District of Mashonaland East Province. The first chapter covered the background to the study, statement of the problem, research questions/hypothesis, significance of the study, delimitation of the study, limitations of the study and a summary of the chapter.

## **1.1 BACKGROUND TO THE STUDY**

While the use of ICTs has continued to dominate in western and Asian countries, African countries are still experiencing challenges in its implementation. This has continued to widen the digital and knowledge gap between the developed and the developing countries, Africa in particular. In a recent study by Kiptalam et.al (2010), they observed that access to ICT facilities is a major challenge facing most African countries, with a ratio of one computer to 150 students in developing countries against a ratio of 1 to 15 students in the developed countries. ICT education is now part of the educational experience of children in most parts of the world. Taught as either a discrete subject or embedded within the curriculum, ICT education is increasingly being regarded as a new “literacy,” alongside reading, writing and numeracy.

According to Ledbetter and Wainwright (2008), computers used to be found only in large organisations, such as universities, where their use was for doing complicated calculations. Ordinary people would never see one. Nowadays, computers affect almost all our lives. They range from enormously powerful machines that can forecast the weather for a week ahead to tiny micro-processors, which can be programmed to do just one thing, such as controlling a washing machine. People in various spheres of employment require to know the basics of computers since they are being used in every aspect of life as highlighted earlier. The counting sector has not been spared by this growing trend. Most accounting firms and departments are using computers extensively in carrying out their tasks. Globalisation has also brought about the need for people to be computer literate. Most organisations are employing a workforce from all over the world and these employees use ICTs to communicate with their head offices. They use electronic mail (e-mail) to send the work they would have accomplished. The worldwide workforce can now engage in meetings through the use of video conferencing. The employment of a

worldwide workforce has also brought about the issue of electronic scabbing. This has been an advantage in the business sector because there is the swapping of duties from striking clerks in one location of the country to non-striking workers in another.

There is also an increasing trend of students who have embarked on Open and Distance Learning (ODL) with international universities. These students communicate with their colleges through the use of ICTs. They can also use the internet widely for research purposes.

The Government of Zimbabwe, through the Ministry of Primary and Secondary Education has come up with a policy of making all its teachers and pupils computer literate. It is against this background that the State President and Commander-In-Chief of the Defence Forces, His Excellency Comrade Robert Gabriel Mugabe embarked on a computer distribution programme in schools across the country since 2005. Private companies and individuals have also complemented his efforts by donating computers to various schools in the districts and the country at large. However, despite such efforts, document analysis carried out in districts in Mashonaland East Province shows that the majority of schools are not offering the subject. This has been the situation prevailing even in the schools which received donations of computer packages for free. This, therefore, has prompted this current research study to find out why computers are not being used or taught in the majority of schools despite the significance of the subject to national development and also in the face of support from the political and corporate world. The study therefore aimed at coming up with those challenges hindering the use and implementation of computer studies in the school curriculum in Zimbabwean schools located in the Chihota District of Mashonaland East Province with a view finding a solution to the problem.

## **1.2 STATEMENT OF THE PROBLEM**

The fact that computer use in education has been affected by a number of challenges in the majority of Zimbabwe's rural schools brings fears that the technological development that the country had envisaged may be a pipeline dream for the country. In view of these challenges, it was pertinent for this study to look into factors militating against the use and introduction of computer education in rural secondary schools. The study sought to find challenges being faced by most rural schools in the use and teaching of computers in their bid to produce pupils who are computer literate in preparation of their integration into the world of industry.

## **1.3 RESEARCH QUESTIONS/HYPOTHESIS**

This research was guided by the following research questions:

**1.3.1** What is Government policy on teaching of computers in Zimbabwe?

**1.3.2** Are there enough computers in schools for learning purposes?

**1.3.3** Are there qualified computer teachers in rural schools?

**1.3.4** Is there a budget for the purchase and maintenance of computers in schools?

**1.3.5** What are the problems militating against the use and teaching of computers in schools.

**1.3.6** Are donated computers still existing or functioning?

**1.3.7** What are the recommendations for solutions to the problem?

## **1.4 SIGNIFICANCE OF THE STUDY**

This study is of significance to a number of stakeholders that is to say; the government, schools, teachers, students, industry and myself as a student at Midlands State University (MSU).

### **1.4.1 Government**

An ICT literate population brings pride to the government as it reflects on its ability to make sound policies aimed at advancing its population socially and economically. It follows that professionals from a country that successfully implements ICT policy in its education system are able to fit well in the global arena in terms of employment. According to Crede and Mansell (1998), ICTs are crucially important for sustainable development in developing countries. Thioune (2003) notes that for the past two decades most developed countries have witnessed significant changes that can be traced to ICTs. The changes have been witnessed in almost all aspects of life; economics, education, communication and travel. An information society is one that makes the best possible use of ICTs. Martin (1995) supports this view by describing it as a society in which the quality of life, as well as prospects for social change and economic development depend increasingly upon information technology and its exploitation. In such a society, living standards, patterns of work and leisure, the education system, and market place are all influenced by advances in information and technology. Zimbabwe's Draft National ICT policy document (2015) advocates for the use of ICTs in all spheres of life in the country such as e-Government, e-Commerce, e-Employment, ICT in education, ICT in health, ICT in science and ICT in agriculture. This, if religiously supported and implemented places the government in a position well desired by its population.

### **1.4.2 The School**

No parent wants their children to be left behind in terms of technological advancement. The moment schools start churning out students with modern ICT skills, parents from different economic backgrounds flock to have their children enrolled in such schools. The schools benefit immensely from the support they get from parents from wealthy backgrounds through timeous payment of school fees and levies and sometimes donations in cash or kind to upgrade and improve their ICT departments. Such schools tend to have advanced technology and high pass-rates because of the benefits offered by the internet in education. The World Wide Web also affords school heads the opportunity to emulate how schools are best administered in the global world.

### **1.4.3 Teachers**

Teachers are the biggest beneficiaries of the use of ICTs in education. Instead of handwritten lesson plans and schemes they simply use computer packages such as word and excel to prepare their work. As opposed to creating new documents everyday they simply type over or modify the saved existing documents in order to create documents with current information. The pedagogic rationale by Hawkrige (1990) suggests that computers are able to teach. Computers provide a new framework that can foster a revision and an improvement of teaching and learning practices such as collaborative, project-based and self-paced learning. Computer aided learning and computer aided instruction offer certain advantages over traditional methods. As a tool for research, ICTs come in handy for teachers by providing up to date information to students rather than sticking to outdated information from old textbooks. Computers also act as the teacher's aids in producing students with the much needed knowledge and skills. The learning environment also becomes interesting for the teacher because the pupils become participative rather than passive in class.



#### **1.4.4 Pupils**

The use and teaching of computers in schools also benefits the pupils to a larger extent. With the benefits offered by the internet, pupils are able to search for information online to assist them with their homework and to prepare for their lessons. Learning ICT skills at an earlier stage also makes pupils' lives easier when they enter institutes of higher learning and ultimately the business world.

#### **1.4.5 Industry**

The direct benefit of ICTs in education by industry is the employment of an ICT skilled worker who fits well in the modern world of electronic business.

#### **1.4.6 The Researcher**

The study was of greater significance to me as a student pursuing a Bachelor's Degree in Adult Education at MSU, for without successfully completing it I would not pass my studies.

### **1.5 DELIMITATION OF THE STUDY**

This study focused on six schools in Chihota District only. The period under review is from (2012 to 2017). Other schools in Zimbabwe were not covered. A total of six schools were adequate to provide data for this research.

### **1.6 LIMITATIONS OF THE STUDY**

The researcher encountered challenges during the field work. Some of the challenges were that some school authorities could not give out information on their computer departments due to the Official Secrets Act. The researcher followed all protocols observed to access information for this study. The other limitation was that some research subjects could not understand the computer terminology and it was difficult for them to give appropriate responses. This

called for the researcher to initially define the terminology for the respondents to understand them. The researcher also faced the challenge on retention of some questionnaires; some respondents misplaced and others were spoiled. The researcher had to redistribute the questionnaires making it a lengthy process to obtain responses. Accessibility to the schools was another limiting factor as the study was conducted during the rainy season and some roads had been adversely affected by the rains leading to the researcher having to leave his vehicle several kilometres away from the school. Time was another limiting factor since the researcher is fully employed. The research was also limited by finances since I had to finance it from my own financial resources.

## **1.7 SUMMARY OF THE CHAPTER**

Chapter one looked at the background to the study, the statement of the problem and the research questions. The significance of the study was also provided as well as the delimitations and limitations. The next chapter focuses on the review of related literature.

## **CHAPTER 2**

### **REVIEW OF RELATED LITERATURE**

#### **2.0 INTRODUCTION**

My purpose for reviewing related literature was to identify gaps in existing knowledge that were filled in part or whole by this study. Franker (2013) describes literature review as “a way of finding out what books, articles, government reports/publications, journals and other documents revealed about the subject. In the case of this study, literature reviewed focused on the challenges faced in the use and teaching of computers in schools: A case of six secondary schools in Chihota Rural Area in Mashonaland East province, Zimbabwe.

The literature reviewed provided the study’s Conceptual Framework and Theoretical Framework on the area of study. It helped me to plan for the study in the context of a broad view of knowledge. The reviewed related literature enabled me to know previous studies carried out on related subjects by other authorities to avoid replication of their fervent efforts. It also offered me new ideas and approaches that could not have occurred to me.

There is a myriad of challenges that schools in developing countries face in order to fully implement computer education. In this chapter, I reviewed the literature on some of the challenges of embracing computer education in schools, both urban and rural. I also reviewed literature on benefits of computer education and remedial action required to ensure schools embrace computer education.

## **2.1 Consensus**

It is still cloudy on the actual impact of ICT in pre- university education. It would appear a lot of scholars agree to disagree on the actual benefits of introducing computers to scholars at an early age. Newton and Rogers (2001) are of the view that despite years of ICT use and teaching, its advantages and disadvantages are still not clear. The fact that pupils are exposed to a lot of information from the internet may lead to pupils becoming confused and end up wasting their efforts on the wrong information (Mikre, 2011). There is also a danger of pupils visiting unwarranted websites such as pornography, violence and games which could end up negatively affecting pupils during the early stages of their development (Devadason, 2010). There is also a possibility that by using the internet to surf websites containing undesirable content, pupils may develop anti-social behaviour such as deviance, violence and promiscuous behaviour. These challenges have led to varied views on the benefits of ICT in education in most rural settings of the world.

## **2.2 Availability of Computer Equipment**

According to Ginsberg and McCormack (1998), lack of adequate and serviceable computers impacts negatively in the use and teaching of computers. They conducted a study which revealed that the absence of computers, printers and the relevant software was the major reason why most schools were failing to implement computer education. Middleton, Flores and Knaupp (1997) also conducted another study which also buttressed the importance of computer hardware in computer education implementation.

## **2.3 Resistance to change**

Most teachers are used to traditional method of teaching where the teacher is the sole provider of information in a classroom. According to Mikre (2011) and Oladosu (2012), resistance by teachers to accept ICT in instruction is said to be

based on the risk that teachers may lose influence over their pupils and the learning environment as a whole. Their view is also supported by Chan (2003) who asserts that teachers fear losing influence and directions of classroom activity.

#### **2.4 Teacher's Attitudes**

According to Hew and Brush (2007), the teacher is at the epicenter of implementing educational technology in schools. Negative attitudes on the part of the teacher have been proven to be the major causes of most schools failing to implement educational technologies. Positive attitudes on the part of teachers towards introduction of educational technologies results in successful implementation of government programmes in as far as ICT in education is concerned. According to a study conducted by Demici (2009) on teachers' perceptions and attitudes on the use of Geographic Information systems (GIS) in Turkey, besides the traditional challenges such as lack of computer hardware and software, teachers' attitudes towards GIS was a major factor leading to the success of the programme.

A related study conducted by Teo (2008) on the attitudes of pre-service teachers' towards computer use in Singapore revealed that teachers' positive attitudes towards computer use in education was the major determining factor of its success.

#### **2.5 Lack of Trained ICT Teachers**

The findings from a study conducted by Seidmen (1996) on teacher training in ICT revealed that most teachers in schools did not have adequate training in computers to be able to teach the subject. The majority of the teachers had received basic computer courses as part of their university or college programmes and were not qualified to teach computers as a subject. The requirement for teachers to be specifically trained to train pupils in the use of

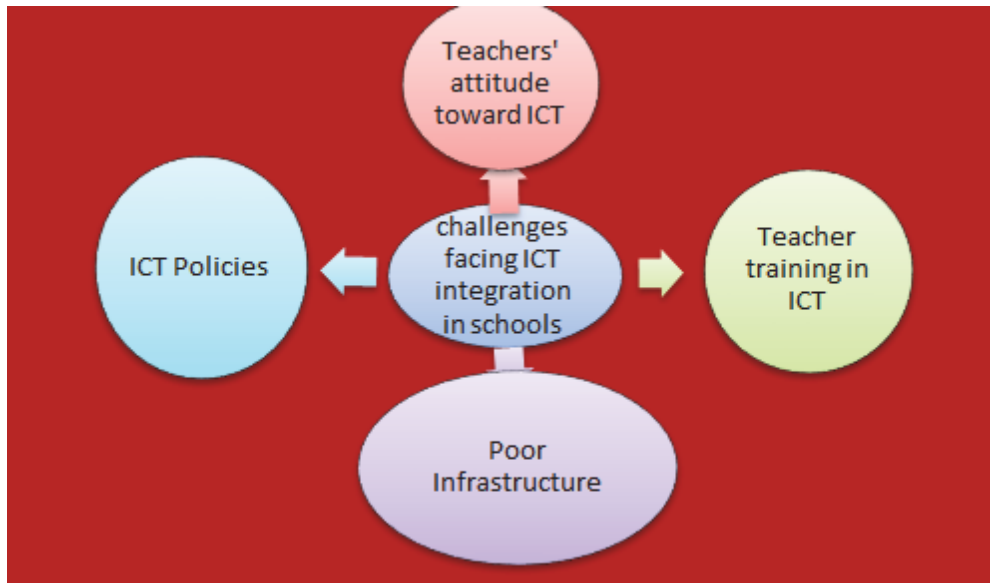
computers is also supported by Bukaliya and Mubika (2011). In their study on the qualifications of teachers to teach computers, they concluded that the majority of teachers have poor practical skills in ICT to be able to teach the subject in schools. The poor practical skills emanate from the fact that they lack adequate exposure to the use and teaching of computers besides the brief periods they interact with ICT at colleges and universities.

## **2.6 Lack of a Dedicated ICT Policy on Education**

The Zimbabwe National ICT policy finalised in 2005 and re-drafted in 2015 aims at introduction of ICT in all sectors of the economy. Although, ICT in education has been mentioned, it has failed to have the required emphasis on the use and teaching of ICT in Zimbabwean schools. The provisions of statutory instrument 379 of 1998 emphasises that the School Development Committee (SDC) should promote and encourage development and maintenance of the school by ensure that fees are paid on or before the opening of each school term. In short, the statute stipulates that the parents of the students at a particular school have the responsibility of ensuring that there are enough resources at the school. It therefore means that the parents have the responsibility of ensuring that they purchase computers for ICT departments and they should also maintain them. The above clauses entail that the government has left the responsibility of making sure that ICT departments in schools are running smoothly with the parents (Statutory Instrument 379 of 1998). The above statutes lack the forcefulness they deserve due to the failure by most parents to pay full fees owing to the economic challenges faced by the country. Providing a dedicated ICT policy could mean the government providing the necessary requirements for computers to be taught at schools. Requirements such as the necessary infrastructure, computer equipment and qualified teachers could all be the responsibility of the government if a dedicated policy was available. The

new educational curriculum is still in its infancy as to realise its success in the teaching of computers in schools.

### Challenges of ICT Integration in Schools



Source: Adapted from Korte and Husing, 2007

### 2.7 Benefits of computer education

According to Newman (2002) and Wheeler (2000), benefits of computer education are autonomous learning such as distance learning, shared learning resources, shared learning spaces and the promotion of collaborative learning. Teachers are the biggest beneficiaries of the use of ICTs in education. Instead of handwritten lesson plans and schemes they simply use computer packages such as word and excel to prepare their work. As opposed to creating new documents everyday they simply type over or modify the saved existing documents in order to create documents with current information. Computer aided learning and computer aided instruction offer certain advantages over traditional methods. As a tool for research, ICTs come in handy for teachers by providing up to date

information to students rather than sticking to outdated information from old textbooks. Computers also act as the teacher's aids in producing students with the much needed knowledge and skills. The learning environment also becomes interesting for the teacher because the pupils become participative rather than passive in class. The use and teaching of computers in schools also benefits the pupils to a larger extent. With the benefits offered by the internet, pupils are able to search for information online to assist them with their homework and to prepare for their lessons. Learning ICT skills at an earlier stage also makes pupils' lives easier when they enter institutes of higher learning and ultimately the business world. The direct benefit of ICTs in education by industry is the employment of an ICT skilled worker who fits well in the modern world of electronic business. Among the major benefits of using ICTs are also that they motivate pupils, provide variety, compensate for language deficiency, encourage active participation, reinforce learning, increase application possibilities, enhance the applicability of the learning content provided for the learning needs of individuals pupils, and supplement the spoken word (Kruger, 2010).

## **2.8 Remedies to make sure computer education is fully implemented in schools**

Due to the existing constraints in computer education implementation, remedial action needs to be taken. Lau and Sim (2008) proposed the need to put in place measures to ensure that adequate access to technical support is provided. They further suggest that a teacher with computer literacy and competence be appointed as ICT coordinator in each school to coordinate computer education and provide computer pedagogical support to the teachers. Lau and Sim (2008) established that teachers needed training which should be offered on a continuous, rather than a one off basis so that their computer knowledge is upgraded over time. According to Mintz (1997) a crucial step in successful



computer education implementation is the professional development for the teacher that will provide them with materials, strategies and new understanding to meet the learning goals. Some of the South African Government initiatives to deal with ICT training for teachers include the nine centres established in each of the provinces as part of the Vodacom Mobile Education Programme. This type of ICT education centre for teachers is the realisation of a partnership formed between Vodacom and the Department of Education in order to help boost teacher training across all nine provinces of South Africa (Ayemoba, 2013). It is the intention of the programme to train about 1400 teachers annually in the use of ICT to support teaching and learning, focusing in mathematics and science subjects. Additionally, a number of teachers from rural areas of South Africa are continuing to benefit from the “Train the Trainer” Project which was initiated by the Internet Service Providers Association of SA (ISPA) since 2001. The initiative is said to have already provided ICT skills training to more than 2000 teachers across South Africa since its inception in 2001. A large part of the initiative targets schools in under-resourced and rural areas and is set to deliver beginner and intermediate level courses (ISPA, 2011:1).

It is hoped that the use of computers in education can be fully realised and optimised in the teaching and learning processes. Mechanisms need to be put in place to ensure that teachers utilise computers for further development and communication and training programmes need to be designed to increase teachers` familiarity with a wider range of ICT applications. Bukaliya and Mubika (2011) advocated for a clear and compulsory national ICT education policy to be drafted to drive ICT development among teachers so that they are able to be conversant with the necessary skills and knowledge of computers in basic software usage. The responsibility for ICT programme development for teachers should extend to all stakeholders and should not be limited to the Ministry of Primary and Secondary Education (Bukaliya and Mubika, 2011).

### **2.8.1 Technical Support**

Technical support is another important enabling factor identified by Krysa (1998). He stated that computer hardware and software problems occur frequently and that solving these problems is time consuming. Solving many of the problems is beyond his current level of the teacher's computer knowledge (Krysa, 1998). It is therefore incumbent upon the head of school and other responsible authorities to appoint a technical person to look at issues of hardware and software while the teacher focuses on the instructional process (Madden, 1989; Lau and Sim, 2008). Lack of technical support has led to a number of computers being dysfunctional in most rural schools.

### **2.8.2 Teacher In-Service Training**

In-service training is a very important remedy in the integration of computer education in the school curriculum. According to Krysa (1998) in-service sessions for teachers have paved way for the incorporation of computer education and technology in the school set up. Furthermore, according to STEPS (2007), the education policy should be tailor-made to increase, improve and diversify teacher education and support and attempts should also be made to build computer education into general educational policies. Stakeholders should ensure access to quality equipment and learning resources in schools to develop an open knowledge-sharing school culture.

### **2.8.3 Administrative Support**

Another remedy identified by Krysa (1998) as enabling successful implementation of computers in the school system is administrative support. Krysa (1998) believes that the implementation of computers in the school is one of the top priorities that should be supported by the head of the school. Some headsof have supported the school network lab by ensuring that money is made available for hardware and software (Madden, 1989; Krysa, 1998). Middleton,

Flores and Knaupp (1997) argue that computer labs are an effective strategy for reducing the student-to-computer ratio in schools. The school administration is therefore encouraged to set up these labs so that students are given the opportunities to visit the labs at different times. However, the competition between teachers for blocks of time in the computer lab may result in some teachers giving up on scheduling time in the computer lab and thereby ceasing to implement computers in instruction (Middleton, Flores and Knaupp, 1997; Madden, 1989). Administrative support could also take the form of policy enactments where ICT competence is made mandatory for school teachers. This can be an effective measure to improving teachers' ICT knowledge and skills (Bukaliya and Mubika, 2011).

## **2.9 CASE STUDIES ON CHALLENGES OF THE USE AND TEACHING COMPUTERS**

### **2.9.1 CASE 1: TURKEY, ANKARA**

A study by Akbaba- Altun in 2006 sought to identify the issues related to integrating computer technologies into a centralized education system in a developed country. Data were collected from seventeen school principals, fifteen computer coordinators, and one hundred and fifty one elementary education supervisors. The study utilised a qualitative framework in collecting and analysing the data to gather more feedback on the actual success of the programmes through the participants' voices. The participants included 17 school principals, 15 computer coordinators, and 151 primary education supervisors. One central office computer coordinator and one regional representative were asked to participate as key informants since they worked very closely with the computer coordinators and school principals. The selection of key informants was based on purposive sampling with no gender-

specific selection. The logic and power of purposeful sampling lied in selecting information-rich cases for in depth studies. People can learn a great deal about the issues of central importance to the purpose of the research with purposeful sampling (Patton, 1990). By choosing the key informants purposefully, the researcher had the opportunity to gather information-rich data.

The majority of school principals in Turkey were predominantly male; therefore, it happened to be an all-male participants in that research. They came from different educational backgrounds. Fourteen of them were classroom teachers, one Religion and Ethics teacher, one Social Studies teacher, and one English teacher. Their job experiences ranged from 13 years to 35 years. The average job experience for school principals was 25 years. Their administrative experiences ranged from 2 to 25 years, with 2 to 9 years of computer experience.

The computer coordinators included 13 classroom teachers, one part-time computer programmer, and one graduate of computer education. Their job experiences ranged from 1 to 25 years. They reported to have been using a computer between 3 to 9 years. Most of them also mentioned that their first experience with using a computer started with the Basic Education Programme (BEP) through in-service training sessions.

The supervisors were selected from eight different cities. The majority of them were males (90.1%) with work experience between 11 to 25 years. However, a remarkable percentage of them (42.4%) had only 1 to 5 years of experience in supervision, while two of the supervisors had a doctoral degree in education. The sources of data included semi-structured interviews and a survey. By using content analysis, the following ICT implementation issues were identified:

infrastructure, personnel, curriculum, administration, and supervision. By improving these areas, IT classrooms would be more effective.

## **Findings**

School principals, computer coordinators and supervisors identified infrastructure, personnel, curriculum, administration, and supervision as main areas of difficulty in IT classrooms. Infrastructure was the common issue voiced by school principals, computer coordinators and supervisors as problematic. The problems identified with infrastructure included the physical setting, equipment, breakdowns, security and maintenance. In as far as personnel was concerned 90% of the participants cited a shortage of qualified IT teachers, technical staff and computer coordinators. Administration was to do with the attitude of the school principals to implement ICT in classes.

### **2.9.2 CASE 2: CAMEROON, YAOUNDÉ**

A study by Mbangwana and Tshombe in Yaoundé in 2008 sought to investigate the role of computers in schools in Cameroon and their pertinence for teaching and learning at pre-university levels. A case study approach, using primary and secondary schools as “cases,” was used with the following qualitative and quantitative data collection approaches; semi directed interviews with school directors, administrators, pedagogical advisors, and parents; focus group discussions with pupils and teachers; video-taped classroom observations and photographs of school environments; review of school documents on ICT and teacher and student productions; questionnaires for quantitative data from pupils and teachers on access, usage and training.

Eight schools were selected for the study in Cameroon. Selection was not based on a statistical model but on the significance of the case for the objectives of the study. Diversity factors taken into consideration for the selection of schools

included gender, level of education, enrolment (600 pupils for primary to 5200 students for secondary), and geographic location.

## **Findings**

The Cameroonian study revealed that all the government schools were funded and connected to internet by the Government of the Republic of Cameroon except one school which was funded and connected by the Parents Teachers' Association (PTA). All the private schools were connected to the internet with school funds. Computers were kept in a computer laboratory commonly called the multimedia center, with up to 75 computers connected to the internet. These computers were often networked to printers and scanners.

Teachers as well as students had daily access to the centers. A multimedia center was managed by a head of center who drew up a timetable for teachers and students to take turns using its resources. The multimedia center heads were selected amongst teachers of science subjects and given special training. They in turn were responsible for training other teachers besides the students.

Student access to ICT varied from school to school. Except for two schools in Yaoundé where students accessed ICT following a specific schedule (once every two weeks), in the other pioneer schools, ICT access was on a daily basis. Access by students to email depended on their socio-cultural context and parental beliefs about the impact of access on moral development. Such beliefs seemed to be influenced by the availability of a computer and internet in the home.

Teacher access to ICT also varied widely. For example, all teachers of one school in Yaoundé had access to ICT regardless of whether they teach computers or not. On the contrary, only 10% of teachers who were trained had access to ICT in another school in Yaoundé. In this school, heads of

departments went to the computer center every week to obtain information to be shared with colleagues.

The ICT user to computer ratio ranged from 33 to 77 users per computer. In schools where ICT equipment was provided by government, attention was still focused on the state to increase the ratio. However, in private schools, individuals were seeking new ways of expanding their stock of computers. For instance, the principal of one private school explained that he was awaiting a consignment of 60 computers to add to the existing stock of 70, courtesy of contacts maintained with someone abroad who had formerly volunteered to donate computers to the school.

### **Discussion of Findings and Recommendations**

The issue of time and scheduling presented a challenge for access. Another problem was not being able to locate software needed for particular disciplines. There was no firm strategy for replacement of computers and continuous maintenance was also a problem. The regular functioning of the internet was compromised by irregular supply of electricity. It was clear from discussions with teachers, students and even parents that children engaged in watching pornographic films, playing games and chatting at the expense of school work. The literature review and research findings had recommendations for education actors in Cameroon. For government, the study recommended that local expertise be built to support the integration of ICT in teaching and learning. For schools, leadership and teacher training were viewed as paramount as infrastructure and equipment issues. For teachers, they were to take the initiative to learn about ICT and its potential for enhancing their teaching.

### **2.9.3 CASE 3: KENYA, MERU COUNTY**

A study on Challenges in the Implementation of ICT in Public Secondary Schools in Meru County, Kenya was carried out By Laaria Mingaine in 2013. A descriptive survey research design was adopted. Out of 350 public secondary schools in Meru County, 105 (30%) were sampled for the study. A total of 315 respondents were sampled through stratified and simple random sampling. Questionnaires were used as main instruments for data collection. Validity of the questionnaires was ensured through judgment of experts, while reliability was established through test and re-tests method during a pilot study. Out of 315 questionnaires distributed, 220 (69.8%) were properly filled and returned. Data analysis employed both inferential and descriptive statistical techniques after which the results were presented in tables supported by some discussions.

#### **Results and Recommendations**

The results of study indicated that limited supply of qualified teachers and high cost of infrastructure were impediments to implementation of ICT. Power supply was not an impediment. School leadership supported ICTs in education. The study recommended that the cost of infrastructure be reduced by adopting measures such as locally assembling computers as well as exploiting alternative technologies to avoid reliance on imported computer equipment. Qualified teachers with ICT skills were to be employed and in-service courses designed to train the ones already in the profession.

### **2.9.4 CASE 4: MOZAMBIQUE, MAPUTO**

A study by Cossa and Cronje in 1998 sought to evaluate the process of introducing computers into schools in Mozambique was undertaken in Maputo. 13 secondary schools from 4 different cities were included in the study. Partners in the study included the Centre of Informatics at the University of Eduardo Mondlane (CIUEM), the Ministry of Education, the Embassy of the



Netherlands, World Links or the World Links for Development Programme (WorLD), the Acacia programme of the Canadian-funded International Development Resource Centre (IDRC), and School Net Mozambique. The researchers used Miller's five-phase model of technology integration in schools and found that over three years some schools had moved to the penultimate phase in which there were "changes in instructional strategies" (Cossa & Cronjé, 2004) such as "gradual change of the role of teachers from facilitator to collaborator of learning".

## **Findings**

The study found out that there were several obstacles to the integration of computers and internet in Mozambique. On the technical front equipment shipments were delayed, the quality of second-hand equipment could not run word processing applications, the fragile telecommunications infrastructure made the internet connection unreliable, and technical support via email stopped when schools had their telephone lines cut for non-payment of bills (Cossa & Cronjé, 2004). In relation to human resources, there was some demoralising corruption, there was insufficient expertise in ICT-based education for hiring pedagogical support for school-based project managers, and the 486 computers could not be repaired locally, leading the researchers to conclude that training of staff was more important than the selection of technology.

### **2.9.5 CASE 5: SWAZILAND, MBABANE**

A study to find the problems militating against the introduction of ICT in education in Swaziland was done by Mndzebele in 2012 with a sample of 42 schools that had ICT both in urban and rural areas. The study was descriptive in nature and consisted of phase 1 and phase 2. Phase 1 involved the administering of close ended questionnaires and phase 2 was concerned with interviews with all the education institutions in the country. The schools that were used in phase

1 were drawn from the database of the Ministry of Education (MOE). The target population were schools that had computers. The schools were selected in terms of region, location (urban or rural) and type of school (government owned, mission owned or community school). Systematic sampling was used on the schools in each of the four regions so as to have schools represented in all the regions. A close ended questionnaire was administered to 42 high schools that taught ICT. In phase 2 of the study, interviews were done with the institutions that offer education in general. Phase two of the study was done to find out the challenges faced by the institutions in teaching ICT whilst phase 1 of the study was done to get the challenges faced in the ICT classrooms. That was done because the purpose of the study was to find out the challenges faced by the schools when introducing ICT in the classroom. The study revealed that 34 % of the teachers teaching ICT were bachelor holders who were employed for other subjects such as mathematics, science, business, accounting, geography and agriculture etc. 32% of the teachers who were employed on permanent basis to teach ICT were on transit looking for jobs in the ICT industry.

### **Findings and Recommendations**

The government of Swaziland was committed to implementing ICT in schools. The process was however hindered by a number of barriers. The barriers were categorised into two sections ie external and internal. External barriers included factors such as lack of equipment, lack of technical support and other resource related issues. Internal barriers included school level factors such as organisational culture and teacher level factors. Teacher's lack of knowledge and skills was one of the main hindrances in the use of ICT in education.

The study showed that 66% of the teachers who taught ICT in Swaziland had not been taught how to teach the subject. Teachers were hired to teach subjects in their areas of expertise and were also expected to teach ICT as well. Of the

38 schools that wrote IGCSE (UK grade 12 exam which was set and marked in UK) in 2012, only 12 teachers were degreed teachers in ICT. Therefore, lack of knowledge regarding the use of ICT and a lack of skills on ICT tools and software also limited the use of ICT tools in teaching and learning. Teachers were found to have limited time to teach ICT. They taught more than one subject and were also expected to teach ICT which meant they had a heavy load on them. These teachers did not have time to design, develop and incorporate technology into teaching and learning. There were not enough computers, printers, multimedia projectors and scanners in the schools. The study recommended that using up-to-date hardware and software resources was key to successfully implement the policy of ICTs in education. Budgetary constraints also militated against the successful introduction of computers in Swaziland. The study recommended Public Private Partnerships (PPPs) to ensure the success of ICTs in education in Swaziland. The study also showed that the internet was a privy of schools in the urban areas and a few private schools in the rural areas. The study recommended internet connectivity in both the urban and rural areas to complement libraries which had outdated information from old books.

#### **2.9.6 CASE 6: ZIMBABWE, HARARE**

A study by Ncube and Tshabalala to expose the barriers that inhibit the integration of the internet into teaching and learning in Zimbabwean secondary schools was undertaken in Harare in 2014. The study also sought to come up with suggestions that could promote the use of Internet by Zimbabwean secondary schools. The study used the quantitative methodology and made use of a survey research design. According to Creswell (2009) the descriptive survey design looks with intense accuracy at the phenomenon of the moment and then describes precisely what the researcher sees. The questionnaire was the major instrument for collecting data. The sample consisted of 450 teachers

comprising of 230 females and 220 males. Random sampling was chosen because as Bell (2011) posits, since it is done at random, the whole process is unbiased especially where the population is relatively small. However, the weakness of using a random sample is that there is no guarantee that what these people say represents what another group of people believe (Bell 2011).

### **Findings and Recommendations**

The findings from the study revealed that only 2% of the teachers were specialised to teach ICT. These findings tally with observations by Sandholtz and Reilly (2004) who argue that teachers' technology skills are strong determinants of ICT integration. The findings also showed that the majority of teachers indicated that their schools did not have adequate computers. Effective adoption and integration of ICT into teaching in schools depends mainly on the availability and accessibility of ICT resources such as hardware and software. This implies that access to computers; updated software and hardware are key elements of successful adoption and integration of technology into the curriculum (Buabeng-Andoh 2012). The study also showed that only a few teachers were using internet during lesson delivery in various subjects. This meant that a significant number of students were losing out on the benefits of using the internet. Findings from the study also revealed that some of the teachers were strongly willing to use internet in their lessons and yet another set of teachers strongly resisted the use of the internet. This finding was in tandem with findings from Shelly, Cashman and Waggoner (2010) who postulate that while many teachers and students are engaging in innovative forms of research and novel projects, there are still many traditional teachers who resist learning new computer skills and do not want to bring computer-based technologies into their classrooms. Findings also revealed that most teachers felt that their heads would not approve of the use of internet during the learning teaching process.

Heads of schools as curriculum leaders in the school are strong predictors of teachers' use of computers in the classroom.

The researchers recommended that:

- ✚ Teachers were to be assisted to acquire skills and competencies to integrate Internet into the school curriculum for the benefit of the learners.
- ✚ Schools were to prioritise the acquisition of modern computers to cater for individual learning needs of pupils so that the task of guiding the learners by teachers became easier.
- ✚ The Ministry of Primary and Secondary Education had to embark on in-service training of those teachers who were stuck with the traditional models of lesson delivery so that they could change their negative attitudes towards Internet usage in the classroom.
- ✚ Heads of schools were to demonstrate a willingness to provide technological leadership to their teachers so that they could also adopt the use of technology for teaching purposes.
- ✚ Those teachers already integrating internet into their teaching were to make sure that they properly guided pupils so that they did not abuse some of the facilities provided by Internet.

## **2.9 SUMMARY OF THE CHAPTER**

Chapter 2 looked at literature relating to factors leading to the challenges faced by schools in the use and teaching of computers in some parts of the world, benefits of teaching ICT in schools and some possible remedies to enhance the use and teaching of computers in schools. Some of the reviewed related literature focused on lack of consensus on the benefit of teaching ICTs in schools, insufficient equipment, resistance to change, negative attitudes on the part of the teachers, lack of technical support and lack of teacher-in- service

training. Literature relating to the benefits of teaching ICTs and remedial action required to embrace computer education was also reviewed. Lastly, case studies from international, continental, regional and national studies on the challenges of computer use and teaching in schools were reviewed. The following chapter discusses the research methodology.

## **CHAPTER 3**

### **RESEARCH METHODOLOGY**

#### **3.0 INTRODUCTION**

This study was designed to investigate the challenges that are faced in the use and teaching of computers in schools with particular reference to six (6) schools in the Chihota Rural Area, Mashonaland East province. In this chapter, I defined and described the research design, population, sample, instrumentation, ethical considerations, data collection procedures and finally data presentation and analysis procedures.

#### **3.1 RESEARCH DESIGN**

According to Leedy (2009: p, 124), “a research design is a total plan showing how research data is gathered.” It guides the study in the process of collecting, analysing and interpreting observations. Sanders et al, (2007: p, 71) view a research design as “a programme that guides the research in the process of collecting and analysing data.” A research design therefore, was seen as an operating model or blueprint for the research project, which accounted for internal reasoning (causality) and external reasoning (generalisability). The research design provided directions to determine the answers to the research questions raised in the introductory part of this study. In this research both quantitative and qualitative methods of data collection were used during the process.

An exploratory case study design was adopted for this study. A case study design focuses on a phenomenon to be studied, the case, unit of analysis and focus of the study (Gall et al, 2007). The phenomenon is the use and teaching of computers and the case is six schools in Chihota area in Zimbabwe. School heads, teachers and School Development Committee (SDC) members made up

the unit of analysis. A case study is a qualitative research design best suited for gaining an in-depth understanding of a social phenomenon within its cultural, social and situational context without imposing pre-existing expectations (Denzin and Lincoln, 2000). In line with this view, school heads, teachers and SDC members were studied in their natural settings rather than in artificial ones as with most quantitative designs. Although the study predominantly used the qualitative model, quantitative data were also collected in the process. This is in line with Babbie (1986) who asserts that a number of social researchers have since realised the need to use both types of data (mixed methods approach) if a true picture about a phenomenon is to be revealed. In this research, quantitative data that was gathered included statistics relating to classes taking computers, number of computers in the respective schools, number of qualified teachers teaching computers and the ratio of students to computers. This was meant to generate a hypothesis on the extent to which computers were used for teaching and learning in the schools. As part of the phenomenological paradigm, the case study design stresses that reality is rooted in the perceptions of the participants (Yin, 2003). Therefore, the case study design enabled me to gain an in depth understanding of the factors militating against the use and teaching of computers in rural schools in Zimbabwe.

The main disadvantage of case studies is that findings are based on a limited number of cases and can therefore not be generalised (Gall et al, 2007).

### **3.2 POPULATION AND SAMPLE**

In order to be able to interpret results from the study and assess their generalisability, it was necessary for me to provide information on the population, sample size and the sampling technique that I used during the study.



### **3.2.1 Population**

Polit and Hungler (1999) define a population as the totality of all subjects that conform to a set of specifications, comprising the entire group of persons that is of interest to the researcher and to whom the research results can be generalised. According to Best and Khan (2007:13), a population is “a group of individuals that have one or more characteristics in common that are of interest to the researcher.” It is for the benefit of the population that researches are done. However, due to the large size of populations researchers often cannot test the entire population because it is too expensive and time consuming hence the reason for researchers to rely on samples. Population refers to the working population from which sampling frame or list of possible respondents was made. The study population was 204 teachers, 6 school heads and 90 SDC members from which a sample of 50 respondents comprising 30 teachers, 6 school heads and 12 SDC members was purposively chosen.

### **3.2.2 Sample**

Wood and Haber (1998) describe a sample as a portion or a subset of the research population selected to participate in a study, representing the research population. The concept of a sample arises from the inability by researchers to test all the participants in a given population. The sample must be representative of the population from which it was drawn and it must have a good size to warrant analysis (Wood and Haber, 1998). Webster (1985) defines a sample as a finite part of a statistical population whose properties are studied to gain information about the whole. When dealing with people as is the case with my study, it can be defined as a set of respondents or people. A sample enabled me to get information quickly and cheaply as compared to if I had decided to take a census. The six schools were purposively chosen on the basis of their different responsible authorities and the fact that the schools were located in reasonably

different geographical areas. Four government day schools, one rural council day school and one rural mission boarding school, formed the sample. This was meant to provide diverse views regarding the level of computer use in the schools because as conditions differ geographically or otherwise, experiences were also bound to differ. In view of this research my target population was all school 6 school heads, 30 computer teachers and 14 SDC members of the six secondary schools in Chihota District.

### **3.2.3 Sampling Technique**

Participants for this study were selected using purposive sampling. It is a non-probability sampling procedure in which the researcher purposely chooses participants who are relevant to the research topic (Schutt, 2009). From a population of 204 teachers, 6 school heads and 90 SDC members, I purposively sampled 30 computer teachers, 6 school heads and 14 SDC members. 7 SDC members were chosen on the basis that they were portfolio holders in the SDC committees and 7 were randomly selected from the SDC non-portfolio members of the 6 schools. Purposive sampling enabled me to select research participants who supplied rich and detailed information about the challenges being faced in the use and teaching of computers in most rural schools, while random sampling gave the SDC non-portfolio holders an equal opportunity of participating.

### **3.3 INSTRUMENTATION**

The data used in this research were collected through the use of questionnaires and face to face interviews. Alasuntari (2008: p, 23) states that, “research instruments are used to obtain standardized information from all subjects of the sample.” The research instruments are tools used for collecting data to find solutions to challenges faced by schools in teaching computers in schools.

### **3.3.1 Questionnaires**

According to Andrew (2000), the appeal of the questionnaire partly stems from its cheapness and expeditiousness in terms of administration, the absence of the interviewer effect and its convenience for correspondence. I designed questionnaires for the particular respondents with similar characteristics and distributed them to the participants. Questionnaires for school heads, teachers and SDC members were designed differently to suit the intended respondents. In this research study I used questionnaires to gather data from 6 secondary schools in Chihota rural area. Sekeran, (2008) further stresses that, the term questionnaire is a collection of questions and statements. The questionnaires contained both open ended (structured) and closed ended (forced choice) questions. The rationale for using the questionnaire was its cost-effectiveness, flexibility, relevance and comparability. The questionnaire was relatively cheaper as compared to other instruments. It was flexible because it enabled me to clearly analyse responses at my own pace and also allowed respondents enough time to respond at their own chosen time. The questionnaire also provided documentary evidence for future use unlike other instruments such as interviews and observations. It also allowed me to compare data as the same questions were asked. In as far as relevance was concerned, only relevant information asked in the close-ended questions was provided by the respondents.

### **3.3.2 Interviews**

The other data collection instrument I used was through face to face interview. I made some pre- contacts with respondents in order to fix dates, place, and time for the interviews. During the interviews I was able to clarify some-misconceptions and in some cases reading body languages.

Borg and Gall, (2007:146) argue that, “interviews are a unique method for collecting data in that they involve direct verbal interaction between the researcher and the respondent.” Through interviews I managed to gather as much existing information as possible about the use and teaching of computers in the district under study. The rationale for using interviews as a way of data collection was, the ability to clarify grey areas, the ability for me to repeat or rephrase questions for the benefit of the respondents’ understanding, the flexibility for the respondents to use vernacular language if they so wished and the establishment of good rapport between myself and the respondents which enabled them to divulge as much information as possible without fear or favour. In the current study, I interviewed 7 SDC members who were part of the SDC committee members whose academic qualifications could not qualify to be given questionnaires written in English.

### **3.4 PILOT STUDY**

In order to increase the reliability and validity of findings, the instruments that were used in this study were pilot – tested. Although pilot- testing serves many goals, literature from (Babbie & Mouton, 2008; Buckingham & Saunders, 2009; Dooley, 2005; Oppenheim, 2007) considered the following to be the most important; to estimate the costs and duration of the main study; to test the effectiveness of the study organization; to test the suitability of the research methods and instruments; to ensure that the sampling frame was adequate; to estimate the level of response and type of challenges faced in use and teaching of computers in schools; to ascertain the degree of diversity of the survey population, to familiarize researchers with the research environment; to offer an opportunity to practice using the research instruments of the study; to test the response of participants to overall research design; and to discover possible weakness, inadequacies, ambiguities, and problems in all aspects of the

research, so that they can be corrected before actual data collection takes place (Saunders,2005).

### **3.5 ETHICAL CONSIDERATIONS**

In the course of conducting research, the human rights of the poor and marginalised people and those who do not understand the processes of research may frequently be violated. This may be of grave concern to all. Researchers must provide adequate protection for people who are especially vulnerable as a result of poverty or who might be underprivileged. Ethical considerations are therefore an important component of any research conducted on human beings the world over. According to Jones and Bartlett (2000), ethical considerations refer to doing what is morally and legally right in research. Ethics when applied to social research are concerned with the creation of a trusting relationship between those who are researched and the researcher (Schutt, 2009).

Research ethics are bound by various national and international codes and guidelines, supplemented by the Universal Declaration of Human Rights (1948). In terms of these documents, all research involving human participants should be conducted in accordance with five basic ethical principles, namely: informed consent, confidentiality/privacy, anonymity, avoidance of harm and honesty. These guidelines established mechanisms for the ethical review of studies conducted on human participants, and drew attention to the need to consider the ethical implications of professional action.

In developing a trusting relationship with respondents, I adhered to these ethical considerations. These required me to do what was morally and legally right in conducting my research. I had to assure the respondents that the research was conducted for academic purposes only. Names of people were coded together with the school names. The information that was gathered was also coded and was not to be used for other purposes that were not in line with the research.

### **3.5.1 Informed Consent**

Informed consent is a vital step to any research project. It is the process in which a respondent consents to participate in a research project after being informed of its procedures, risks, and benefits (Bulger, 2002:3). Faden and Beauchamp (1986) underscore the need for subjects to be informed of the precautions that will be taken by researchers during the process of informed consent to protect the confidentiality of the data and be informed of the parties who will or may have access to research data.

Informed consent of the respondents was first sought prior to the commencement of the research. I did not force respondents to respond to questionnaires or to be interviewed but I had to request them to participate voluntarily. I informed the respondents verbally and by letters before they participated in this research. I also informed them of their right to withdraw at any time when they felt like. This allowed subjects to decide about the adequacy of the protections and the acceptability of the possible release of private information to the interested parties. Ideally, after fully understanding the information about the project, the respondents gave full and conscious consent for me to continue with the research.

### **3.5.2 Confidentiality/Privacy**

According to Israel and Hay (2009) ‘confidentiality pertains to the treatment of information that an individual has disclosed in a relationship of trust and with the expectation that it will not be divulged to others without permission in ways that are inconsistent with the understanding of the original disclosure. Confidentiality means that the provider has an obligation not to reveal any information about a client without her/his consent. For example, any information held by a researcher that has to do with a respondent’s sexual or reproductive life is part of the respondent’s private life, and therefore, the

researcher is obligated to respect that privacy and at the same time not to divulge this information to anyone other than the respondent (IPPF 1995). Respondents have the right to the assurance that information given to a researcher will not be shared with others, even those involved in their care. This includes:

- Not gossiping about the subjects in public places.
- Keeping confidential documents about subjects in a secure place.
- Not asking the subjects personal questions in the presence of others
- Not insisting on spousal or parental consent.

Therefore, in order to uphold confidentiality I assured the respondents that the research information was to be shared only on a '**Need- to- Know**' basis. I assured respondents that the data collected was to be maintained confidentially by ensuring that data was separated from identifiable individuals and was coded. I was also to ensure that those members of the research team and those responsible for transcribing data maintained confidentiality by not discussing the issues arising from interviews and by not disclosing the outcomes of interviews. I also assured them that I would anonymise individuals and places to protect their identity.

### **3.5.3 Anonymity**

The most common approach adopted by most researchers is for data to be collected, analysed and reported anonymously. This is what some researchers refer to as the 'dominant approach'. According to Sieber (1992), under anonymity data is collected anonymously without any identifying information to protect the identities of respondents. Baez (2002) refers this approach as the 'convention of confidentiality'. The convention of confidentiality is primarily upheld as a means to protect research participants from harm. Respondents with stigmatising traits or behaviours such as drug users and prostitutes would be

harm if their identities were revealed. The convention of confidentiality is upheld by researchers as a means to protect the privacy of all persons, to build trust and rapport with study participants thus maintaining ethical standards and integrity of the research process (Baez, 2002). I assured the respondents that the names of respondents would be replaced with pseudonyms. The real names and addresses schools were also not to be revealed and were to be deleted from files once they were no longer needed.

#### **3.5.4 Protection from Harm**

I as a researcher had a fundamental responsibility to protect participants from physical and mental harm. I had to use my best endeavours to ensure that I was adequately aware of the participants' ability to understand the purpose of the research.

Participants should be made aware of how to contact the researcher within a reasonable time period following the procedure should stress, potential harm, or related questions of concern arise.

I took all necessary steps to ensure that I did nothing to introduce or reinforce any form of social prejudice to respondents.

Finally, I was mindful of cultural, religious, linguistic, gender, and other differences within participants in the current study.

#### **3.5.5 Honesty**

Objectivity is the recipe of a good research. Manipulating the results of an inquiry is unethical and it jeopardises the essence of research. As an honest researcher, accepted the findings and reported them as discovered. I assured the respondents that the findings from the study on the challenges of embracing ICTs in schools would be reported as per their views and opinions.



### **3.6 Data Collection Procedures**

These are steps that I took to assemble the data for the research study. I collected an introductory letter from the department of Adult Education at MSU which I took to the Ministry of Primary and Secondary education's department of Research. I waited for a week before I was summoned to collect the approved confirmation letter. I later took the approval by the Ministry to the provincial offices in Marondera after which I was directed to the district offices. Finally, I was given the go-ahead to visit the schools under study. I visited the schools one by one and informed the staff about my project and its significance to student development. I clarified all ethical considerations and was allowed to proceed with my study. I made appointments for face-to-face interviews with schools that were easily accessible and sent questionnaires to those that were a bit far and posed problems in terms of accessibility.

### **3.7 DATA ANALYSIS PLAN**

In this research I used the following techniques to analyse research data.

1. **Bar – Graphs.** A bar graph, also called a column chart, bar chart or multiple column chart, is a chart in which data is visually represented by vertical or horizontal bars. In this research bar graphs were used to show comparisons between values, with a bar representing each separate value.
2. **Tables.** Frequency tables were useful in this research for describing the number of occurrences of a particular type of datum within a dataset. Frequency tables, also called frequency distributions, are one of the most basic tools for displaying descriptive statistics. Frequency tables are widely utilised as an at-a-glance reference into the distribution of data. They are easy to interpret and they can display large data sets in a fairly concise manner. Frequency tables can quickly reveal outliers and even significant trends within a data set with not much more than a cursory

inspection. For example, a teacher might display students' grades for a midterm on a frequency table in order to get a quick look at how her class is doing overall.

3. **Pie- Charts.** A pie chart present data as simple and easy as possible. A circle is divided into segments for easy understanding of displayed data.

### **3.8 SUMMARY OF THE CHAPTER**

In this chapter the researcher gave a presentation on research design / plan, target population research participants and methods as well as research instruments used in collecting data. In the next chapter the researcher focused on data presentation and analysis. Chapter 3 has focused on research methodology. The researcher has used various methods of collecting data. The interviews, questionnaires, and observation were employed. However, each method had its strengths and weaknesses which have already been discussed.

## CHAPTER 4

### DATA ANALYSIS, PRESENTATION AND DISCUSSION

#### 4.0 INTRODUCTION

The aim of this chapter was to present and discuss the data that was obtained from the questionnaires and interviews that were delivered and administered to the respondents. The research was carried out with reference to research questions that were provided in the first chapter. This chapter presented the facts gathered during the research. I took note of the words by Rashly (2009: 52) who posits that: *“the problem with the qualitative method is that one can easily become mesmerized by statistical output without being able to explain the output or apply any of its results in practical day to day context”*.

In view of the above quotation, I used both qualitative and quantitative data as both types of data were viewed as pertinent to the study. As highlighted in the quote above, it could be confusing to the respondents to solely use quantitative data, I used explanations as much as possible to make it clear on what the respondents were expected to do.

#### 4.1 DATA PRESENTATION PROCESS

Demographics described the broad characteristics of participants of this study that was made up by a geographic unit of analysis (Pitts and Lei; 2003). The importance of highlighting demographics in this research laid in their influence on the validity and reliability of the schools heads, teachers, and the parents represented by the SDC. Responses to pertinent research questions on challenges that were being faced in the use and teaching of computers in schools: the case of six schools secondary schools in Chihota rural area, Mashonaland East Province, Zimbabwe. The research started to present the composition of respondents by gender as shown below in Table 1.1 below. The

composition according to gender was also presented in a pie- chart in Figure 1 after the table.

#### 4.1.1: DEMOGRAPHIC DATA

**Table 1: Distribution of study participants**

**N=50**

<b>Category</b>	<b>Male</b>	<b>Female</b>	<b>Total</b>
Headmasters	3	3	6
Teachers	17	13	30
SDC	10	4	14
<b>Total</b>	<b>30</b>	<b>20</b>	<b>50</b>

Table 1.1 above shows the category of respondents according to gender. The number of male headmasters was three (3) and female headmasters three (3) bringing the total to six (6) headmasters. Male teachers were twenty (20) and female teachers ten (10) bringing the total to thirty (30). Male SDC members were ten (10) whilst female SDC members were four (4) with a sum total of fourteen (14). The total number of participants was fifty (50) inclusive of School heads, teachers and SDC members. The distribution of the participants was not gender biased as they were selected according to gender equality.

**Table 2: Frequency Distribution Table for Respondents**

**(N =50)**

<b>Attributes</b>	<b>Number</b>	<b>Frequency</b>	<b>(%)</b>
Male	30	30	60%
Female	20	20	40%
<b>Total</b>	<b>50</b>	<b>50</b>	<b>100%</b>

Table 1.2 above shows the respondents attributes, frequency, and percentages. The male frequency was thirty (30) whereas that of females was twenty (20) respectively. The total frequency for both male and females was fifty (50). Male percentage was 60% against a female percentage of 40% with the total percentage being 100%.

**Findings.** Although the percentage of female respondents was less than that of their male counterparts, the disparity appeared to be gradually improving as more women are now venturing into the teaching profession. It was also evident that where there was a male head, the deputy was a female. In the SDCs females were also found to be holding positions of authority such as the chairpersons.

**Figure 1: Gender Distribution of Respondents**

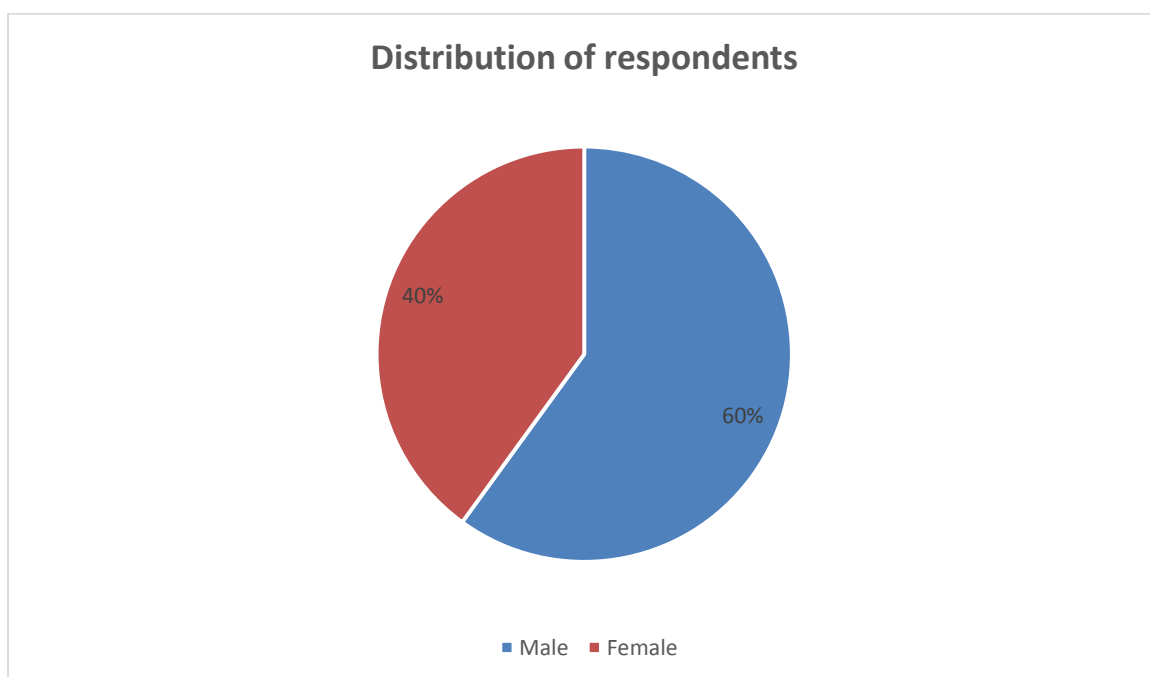


Figure 1 above amplifies the gender distribution in terms of percentages. 60% of the respondents were male whilst 40% were females.

**Findings.** The gap between male and female teachers was gradually reducing owing to the fact that more qualified female teachers were now entering the

previously male dominated teaching field. Also to note was the increase of female teachers in the rural areas. Sooner than later the situation would have reached a 50-50 scenario.

**Figure 2: Age Ranges of Respondents**

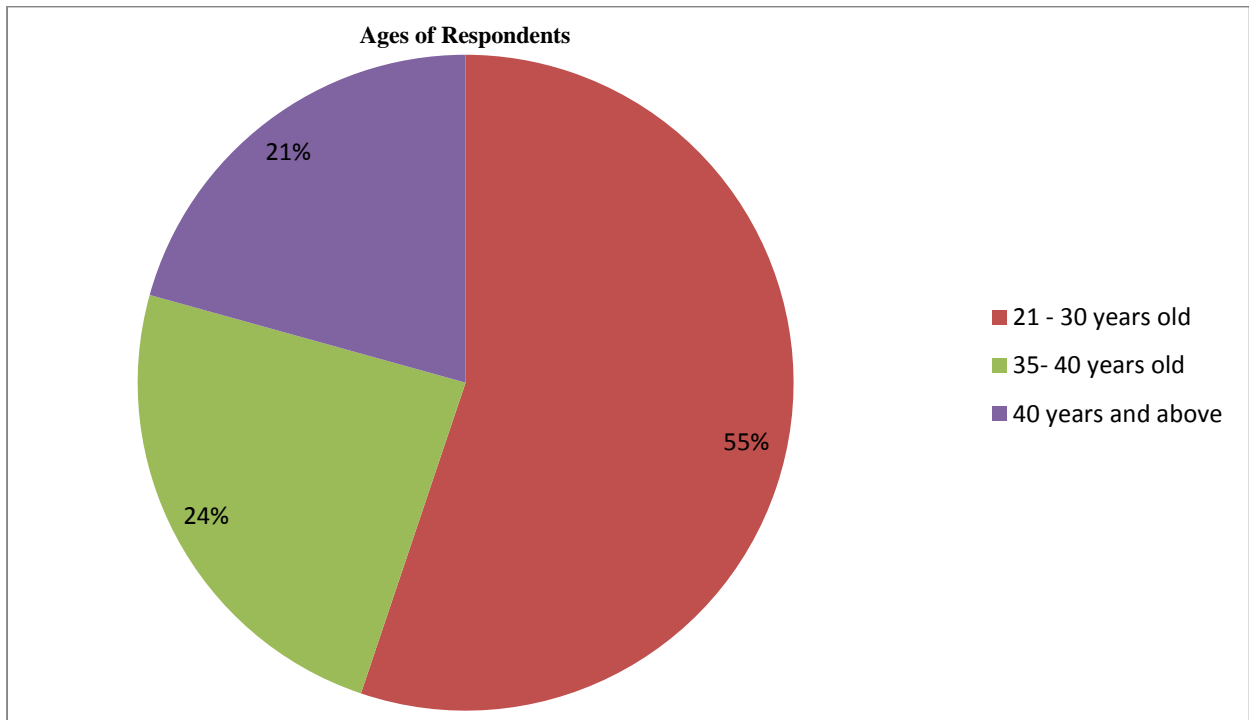


Figure 2 above shows age ranges of respondents. The ages of the respondents who participated in this study varied from 21 years to 50 years. The larger number of teachers ranged from 21 to 35 years. School heads' ages ranged from 40 and above, the same with the majority of SDC members questioned and interviewed.

**Findings.** I noticed that the variation of participants' ages was attributed to the high levels of unemployment. Most teachers were in the 21-35years age group which represented 55% of the respondents. These were the ages of most university graduates. Due to unemployment, most university graduates had been

forced to take up teaching as a profession despite their qualifications which were not related to the teaching field. They had managed to fill the gap that has been left by most qualified teachers who migrated to other countries for better remunerations and better working conditions during the economic melt- down in Zimbabwe in the year 2008.

**Table 3: Academic qualifications of respondents**

**N=50**

<b>Academic Qualification</b>	<b>Respondents</b>	<b>Percentages (%)</b>
HND	10	20%
NC	10	20%
Dip Ed	18	36%
Degreed	12	24%
<b>Total</b>	<b>50</b>	<b>100%</b>

**Figure 3: Respondents Qualifications**

**N=50**

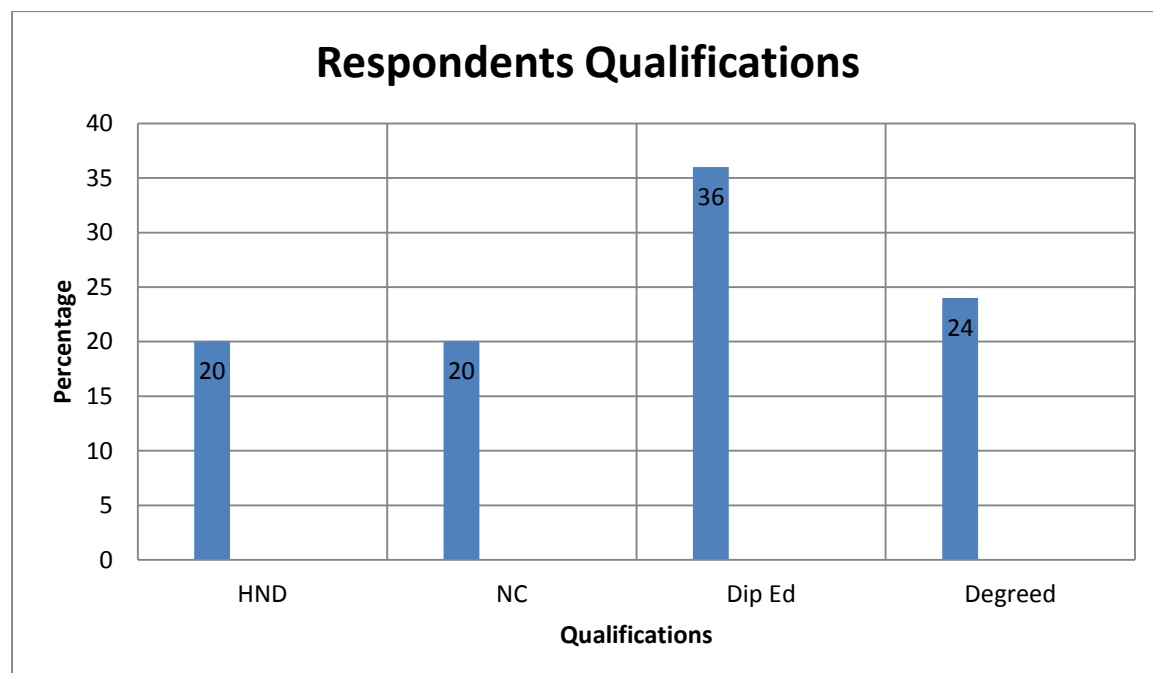


Table 1.3 and Fig 3 above shows respondents’ academic qualifications. The respondents, according to the survey carried out had some form of qualifications

ranging from certificates, diplomas, higher national diplomas and degrees. 18 respondents representing 36% of the respondents had diplomas in education whilst 12 representing 24% were degreed in various teaching and non-teaching fields. Among the 12 were three respondents who had degrees in IT. 10 respondents representing 20% of the respondents had national certificates while another 20% had higher national diplomas.

**Findings.** Information from the data collected revealed that the current legislation did not give room for the employment of temporary teachers or semi-skilled teachers. All the respondents studied had some qualifications from some institutes of higher learning. In some schools those teachers in charge of computer departments were highly qualified with degrees from universities around the country.

#### 4.1.2: DISTRIBUTION OF RESEARCH INSTRUMENTS

**Table 4: Total Distribution of Research Instruments to Respondents**

**N=50**

<b>Respondents</b>	<b>Questionnaire</b>	<b>Returned</b>	<b>Interview</b>	<b>Total</b>
School Heads	6	6	0	6
Teachers	30	30	0	30
SDC	7	7	7	14
Total	43	43	7	50

Table 1:5 above shows that 6 questionnaires were distributed to the six school heads from the schools under study and were successfully returned. Also 30 questionnaires were distributed to teachers from the six schools under study and were successfully returned. Only seven questionnaires were distributed to members of the SDC and were also returned in their entirety. Seven interviews



were conducted on 7 members of the SDC. Their verbal responses indicated that they were sincere and wanted to see changes in the plight of pupils in as far as learning computers was concerned.

#### **4.1.3 RESPONSES ON THE GOVERNMENT POLICY ON ICT BY SCHOOL HEADS**

All the school heads representing 100% percent of the respondents indicated that the government had no specific policy on ICTs in education but had a draft ICT policy document which advocated for the use of ICTs in all sectors of the economy drafted by the Minister of Information Communication Technology, Postal and Courier Services Hon S. C. Mandiwanzira in 2015. They also mentioned that the use and teaching of ICTs in education was emphasised in the New Education Curriculum which was effected at the beginning of the year 2017. The respondents however said they had already been implementing the teaching of ICTs in response to the President's efforts to embrace ICTs in education by donating computers to most schools in the country. In addition to the President's efforts a number of people in the corporate world have been and are still complementing the President's efforts by donating computers in schools for educational purposes, a move that the respondents said had inspired the schools to embrace computer education.

**Findings.** The absence of a dedicated ICT policy for education by the government impacted negatively on the implementation of the President's desire to fully embrace computer education in schools. However, due to the advantages offered by ICTs in education especially where the internet was connected, many schools had strived to use the schools' meagre resources to introduce ICTs for the good of the students, the teachers and the country at large.

#### 4.1.4 RESPONSES ON WHETHER ALL PUPILS DID COMPUTERS?

**Figure 4: Responses on whether all students did computers.**

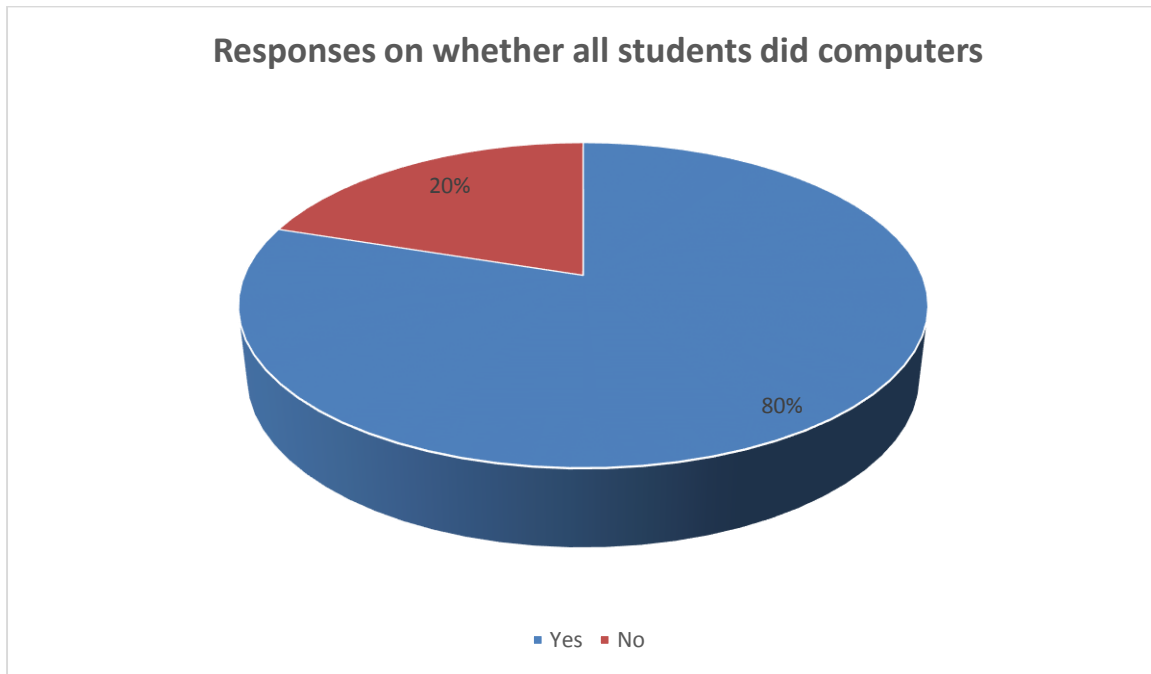


Figure 4 above shows responses on whether all students did computers or not. 80% of the respondents interviewed alluded to the fact that all students from Forms 1 to 6 were being taught computers with the exception of 20% of the respondents from two schools Matendere and Mubikwa Secondary schools where electricity was said to be non-existent and had a major fault which was yet to be rectified. However, due to limited resources some schools were offering computer education to Form 3s and above in order to prepare them for examinations. Most school heads tended to highlight shortages of equipment (hardware and software) leading to a high pupil-computer ratio.

**Findings.** Although 80% of the respondents said students were being taught computers some schools did not give accurate responses as was the case with Mandadzaka Secondary School whose staff revealed that all the computers donated by the President in 2012 were in a state of disrepair. They also alluded

to the fact that their contract with a computer renting company had expired leaving them with only one computer which they were using for administrative purposes. They were however planning to purchase 10 refurbished computers which they would then use to teach their pupils whose enrolment stood at 850. Some of the responses from the school authorities were mere wishes or meant to make me believe the schools were teaching computers for example Mandadzaka and Mubikwa where there was one computer and electricity had been cut respectively.

#### **4.1.5 RESPONSES BY THE SDC ON THE AVAILABILITY OF A BUDGET FOR THE ICT DEPARTMENT.**

**Figure 5 Responses on the availability of a budget for computers.**

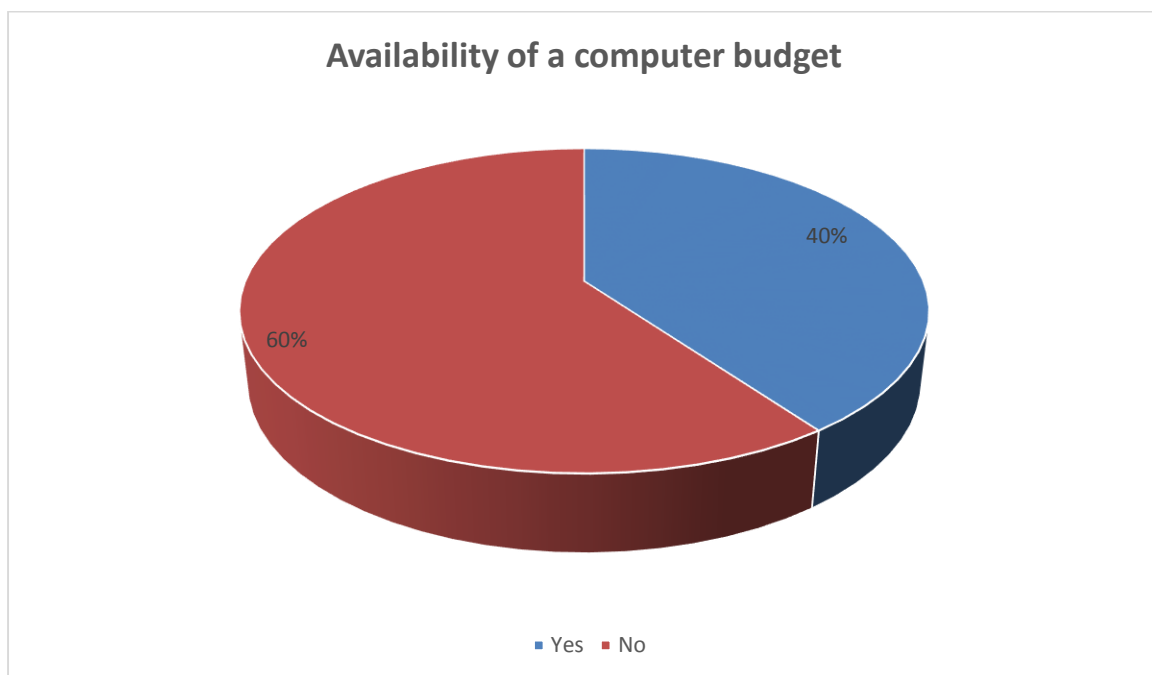


Figure 5 above shows that 60% of the SDC respondents revealed that there was a budget for computers at their schools whilst 40% said there was no budget for computers at their schools.

**Findings.** The budget for computers referred to by most respondents was a bunched practical subject levy of at least \$5 per child per term which did not

only cater for computers but also catered for all practical subjects offered at the schools such as building, woodwork, metal work and fashion and fabrics for girls. Considering the requirements for all practical subjects, computers included the budgets became overwhelmed for the requirements of all practical subjects. Computers require a budget dedicated to computers and their accessories as is the case in some urban schools where computer levies are separated from other practical subjects. Those schools that indicated the non-existence of a computer budget included the two schools where there was no electricity hence their inability to offer computer education.

#### **4.1.5: RESPONSES ON WHETHER THE COMPUTER BUDGET HAD BEEN USED TO BUY OR REPAIR COMPUTERS**

**Figure 6: Responses on whether the computer budget was adequate to buy or repair computers?**

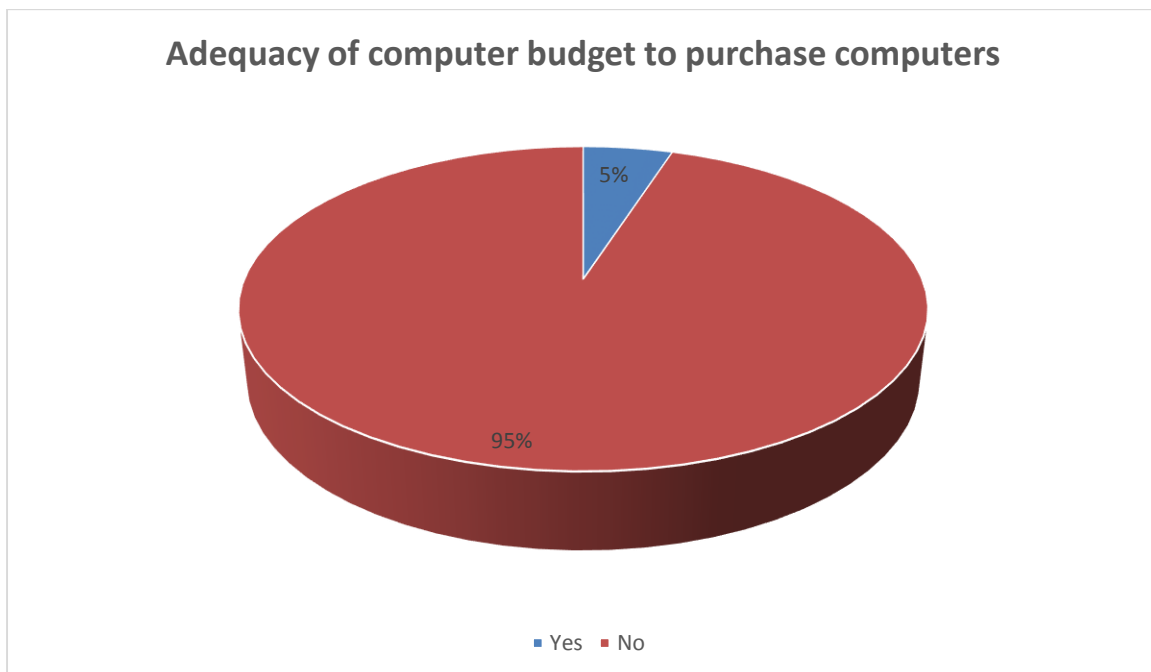


Figure 6 above shows responses on whether the computer budget was adequate to buy and repair computers. When asked whether the schools' computer budgets had been used to purchase or repair computers, 95% of the respondents

revealed that the budget had insufficient funds hence no computers had been purchased using the funds from the budget. Only 5% said they had placed an order which was awaiting the provincial authorities' approval to purchase 10 refurbished computers.

**Findings.** It appeared the bunched budgets for computers at the schools studied were not sufficient to make meaningful computer purchases or repairs. Even the 5% of the respondents that said they had placed an order to purchase 10 refurbished computers was a clear testimony of their inability to buy state of the art new computers because of budgetary constraints. These computers if purchased would not give Mandadzaka School value for money because they would not last due to their old age.

#### 4.1.6: RESPONSES FROM TEACHERS

The following were the responses from teachers on questions asked in the questionnaires. Graphical presentations were made to explain responses on each question.

**Table 5: Responses from teachers on the 'yes' or 'no' questions**

**N=30**

Question	Yes	No
Are computers taught at your school?	22	8
Are you happy with the student computer ratio?	5	25
Does your school have technical staff for computers?	0	30
Is your computer laboratory up to standard?	0	30
Do you have any computer qualifications?	3	27
Did you receive any donations of computers?	15	15
Are donated computers still in good condition?	5	25
Are pupils keen on learning computers?	30	0
Is your school connected to the internet?	10	20
Is your school connected to electricity?	25	5

**Figure 7: Responses on Teaching of Computers**

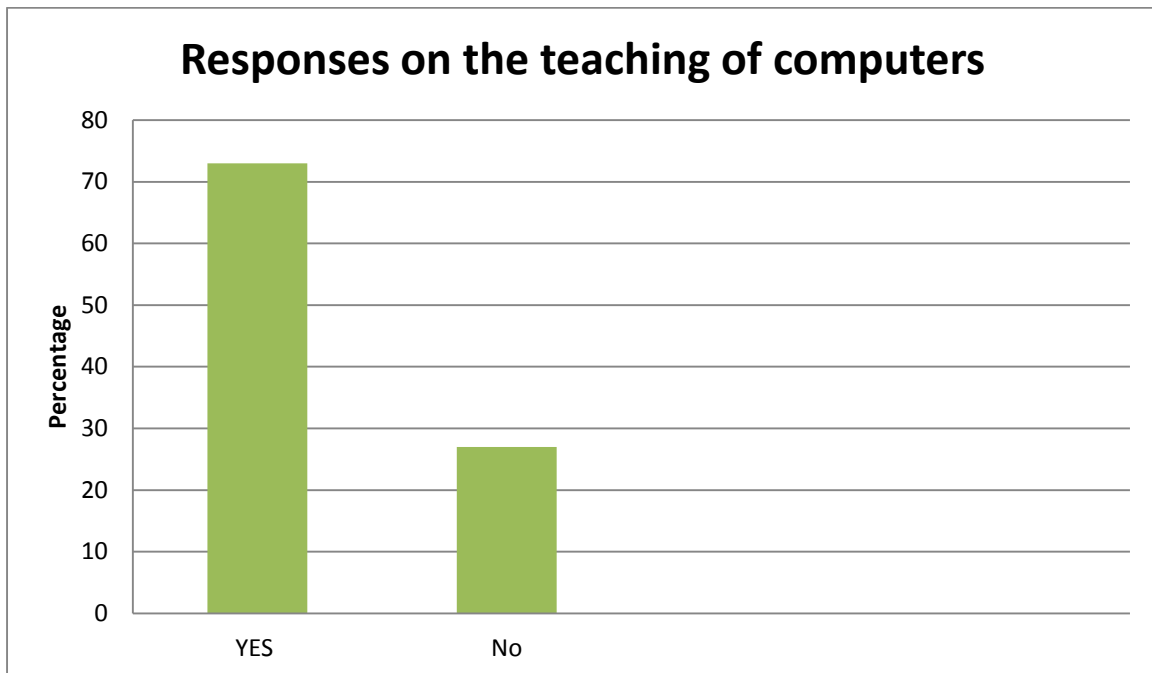


Figure 7 above shows responses on whether schools offered computer education. 22 teachers representing 73% of the respondents indicated that their schools were offering computer education to their pupils from Form 1 up to Form 4 and up to form 6 where ‘A’ Level was offered. 8 teachers representing 27% of the respondents said their schools were not offering computer education as a result of lack of electricity and computer equipment.

**Findings.** The majority of schools studied as represented by 73% of the respondents were offering computer studies to their students. I interpreted this as a step in the right direction to fulfil the drive by the President to enable all pupils to be computer literate.

**Figure 8: Responses on Student-Computer Ratio**

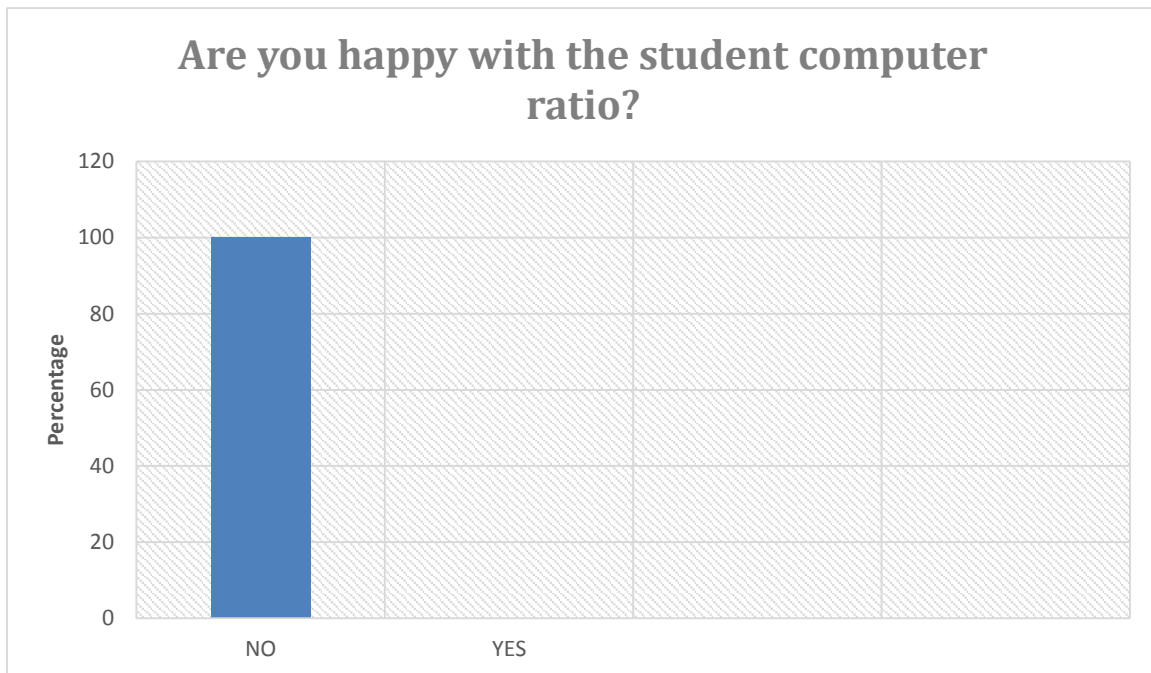


Figure 8 above shows responses from teachers on whether they were happy with the student-computer ratio at their schools. All the 30 teachers studied representing 100% of the respondents said they were not happy with the student-computer ratio as it exerted a lot of pressure on the teacher for him or her to fully make every student understand the full concepts of computers. At one school where the enrolment was 850 and there were only 10 computers, the student-computer ratio was 1 computer per 85 students, a situation that was not conducive to learning. They expressed a desire to have a situation where the ratio would be 1 student to one computer.

**Findings.** The student-computer ratio in most schools studied was not conducive to the effective learning of computers except at Makarutse School where the enrolment was 280 students and had 30 computers in its inventory. This translated to a ratio of 1 computer to 9 students.

**Figure 9 Responses on Whether Schools Employed Technical Staff for Computer repairs.**

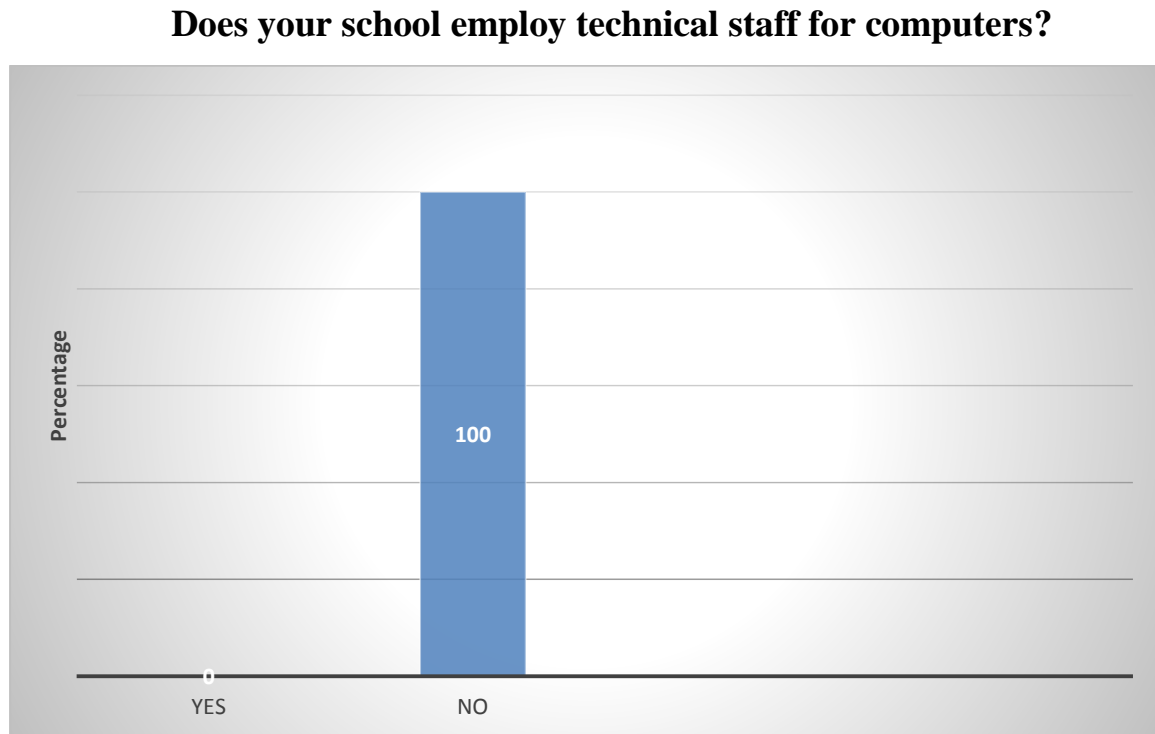


Figure 9 shows responses on whether schools employed technical staff for the repair of computers. All the 30 teachers representing 100% of the respondents said their schools did not employ technical personnel to cater for computer breakdowns. According to the respondents, the schools relied on some Information Technology (IT) teachers who were capable of solving minor computer breakdowns. On major computer breakdowns the schools out-sourced the services of external computer experts who had proved to be too expensive resulting in most computers remaining unrepaired until they became obsolete. A case in point was Mandadzaka Secondary school which received 12 state of the art computers from His Excellency, the President of the Republic of Zimbabwe in 2012. Currently none of these computers were functional and the school had resorted to renting computers from some company for the sake of teaching its students.



**Findings.** The lack of computer technicians had impacted negatively on the six schools studied to an extent that one school has totally lost its entire computers. For the success of the programme, dedicated computer technicians must be provided by either the government or the SDC.

**Figure 10: Responses on the existence of a standard computer Laboratory.**

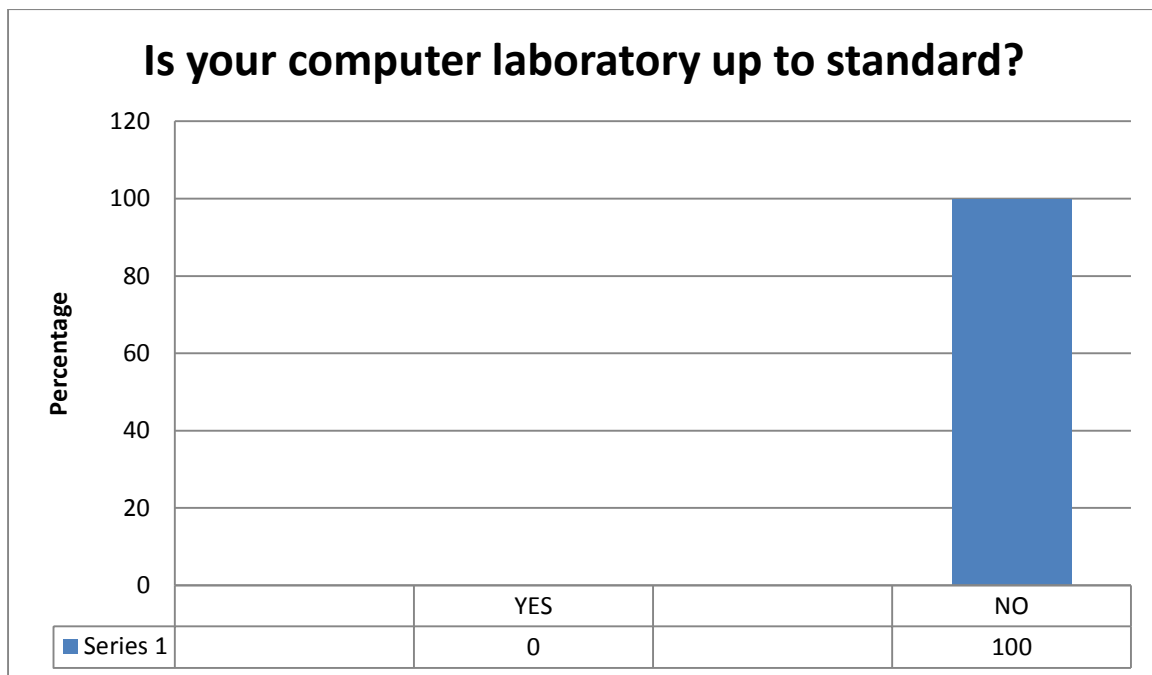


Figure 10 above shows responses from teachers on whether computer laboratories at their schools were up to standard. All the teachers representing 100% of the respondents said the computer laboratories were not up to standard. This was a major concern to the study because without standard equipment it was not possible to keep in touch with modern trends in technology in this ever changing world. Computer equipment had to be replaced after about every five years, both hardware and software because these became obsolete quickly. The respondents also believed the lack of standard computer laboratories was the reason their computers were constantly breaking down and it left them vulnerable to thefts.

**Figure 11: Responses on Possession of Computer Qualifications by Teachers.**

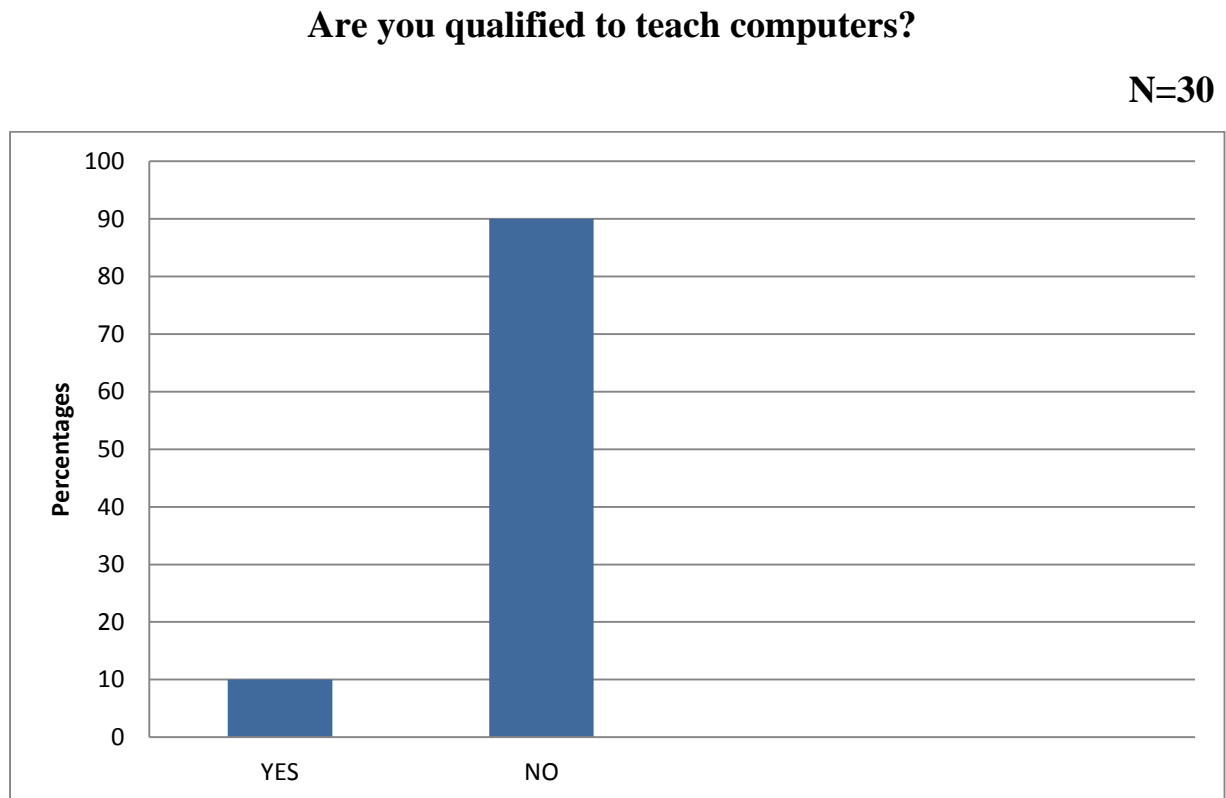


Figure 1.11 above shows responses on whether teachers had the requisite qualifications to teach computers. 3 teachers representing 10% of the respondents said they had degrees in IT. 27 teachers representing 90% of the respondents said they possessed other degrees, certificates and diplomas which were not related to IT. It followed that they were using their individual computer skills to teach students.

**Findings.** The respondents' qualifications showed that some schools were using teachers who were not qualified to teach computers since there was a critical shortage of teachers who possessed the requisite IT qualifications.

**Fig 12: Responses on whether schools received computer donations?**

**Is your school a recipient of computer donations form HE or any donors?**

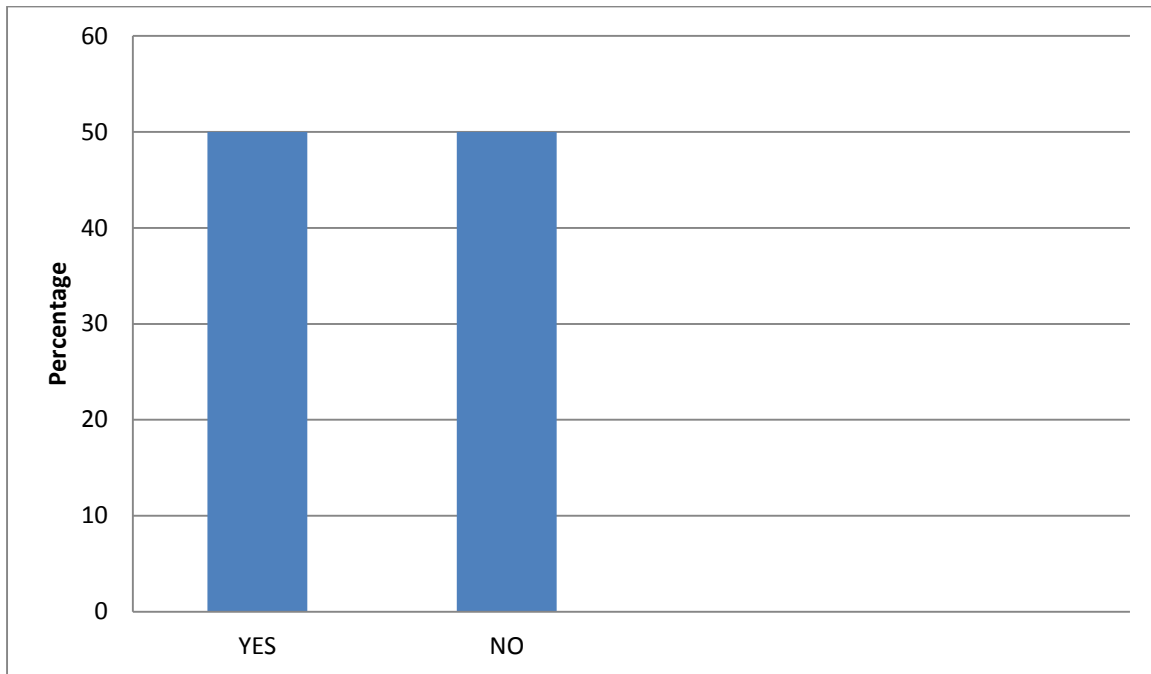


Figure 12 shows responses to questions on whether their schools had received computer donations from the President or the corporate world. 50% of the respondents said their schools had received computer donations from the President and the local Member of Parliament. Some of these computers were still in good order and were being used to educate students. Some had seen their days and had since broken down leaving the schools with no option but to shelve the teaching of computers or resort to renting computers for teaching purposes for example, Mandadzaka Secondary School. The other 50% of the respondents studied said they had never received computer donations. Some had used their funds to buy the few computers they had, but some had not managed to buy any computers because of lack of electricity at their schools.

**Findings.** It is important to note that despite the challenges faced by the country in terms of lack of funds, the government through the efforts of the President

had managed to at least donate computers to three schools out of the six schools under study. The other schools had benefitted from the efforts of individuals from the corporate world. Only one school which had no electricity had not received donations of whatever kind.

**Figure 13: Responses Whether Donated Computers were Serving Their Purpose?**

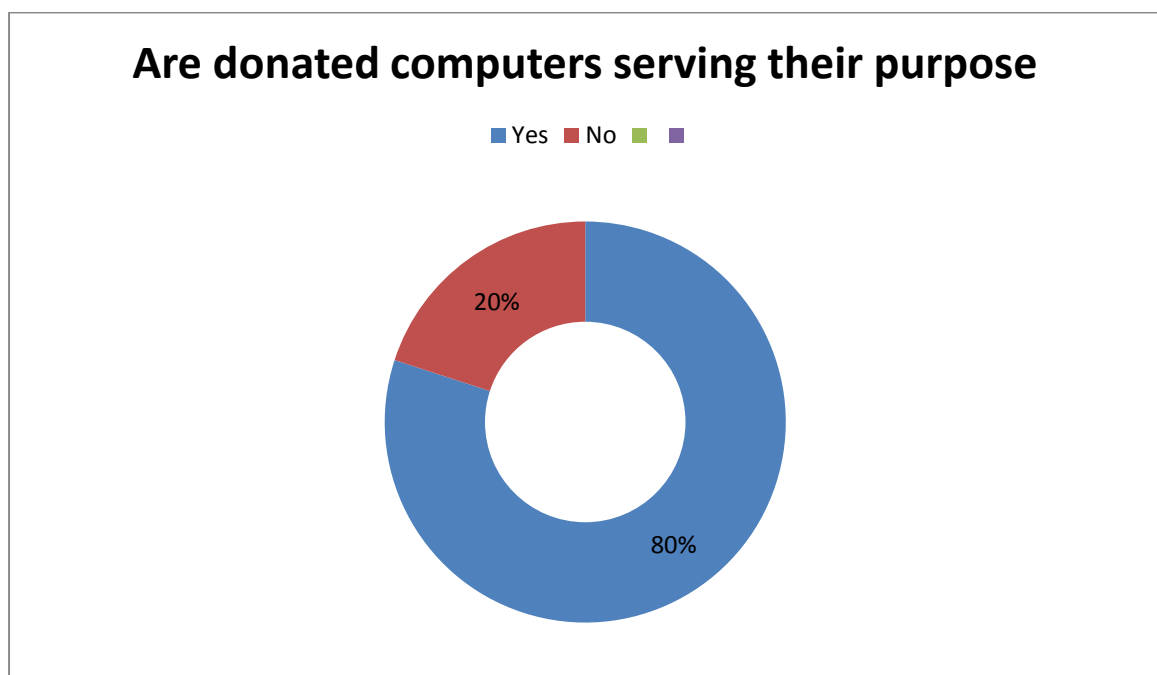


Figure 13 above shows responses on whether donated computers were serving their intended purpose. 80% of the respondents studied said the donated computers were serving their intended purpose as computer classes had been formed for the purpose of teaching computers. The 20% that said donated computers were not serving their purpose was due to the non-availability of computer teachers.

**Findings.** This situation meant that instead of computers being utilised for teaching students they ended up being used for administrative purposes or

having to remain boxed until a computer teacher was availed by the school. The latter case if not urgently addressed could result in computers becoming obsolete whilst still boxed. In other cases computers would be left to be used by the teachers for typing their lesson plans or playing computer games in the staff rooms.

**Figure 14 Responses on Whether Pupils Wanted To Be Taught Computers**

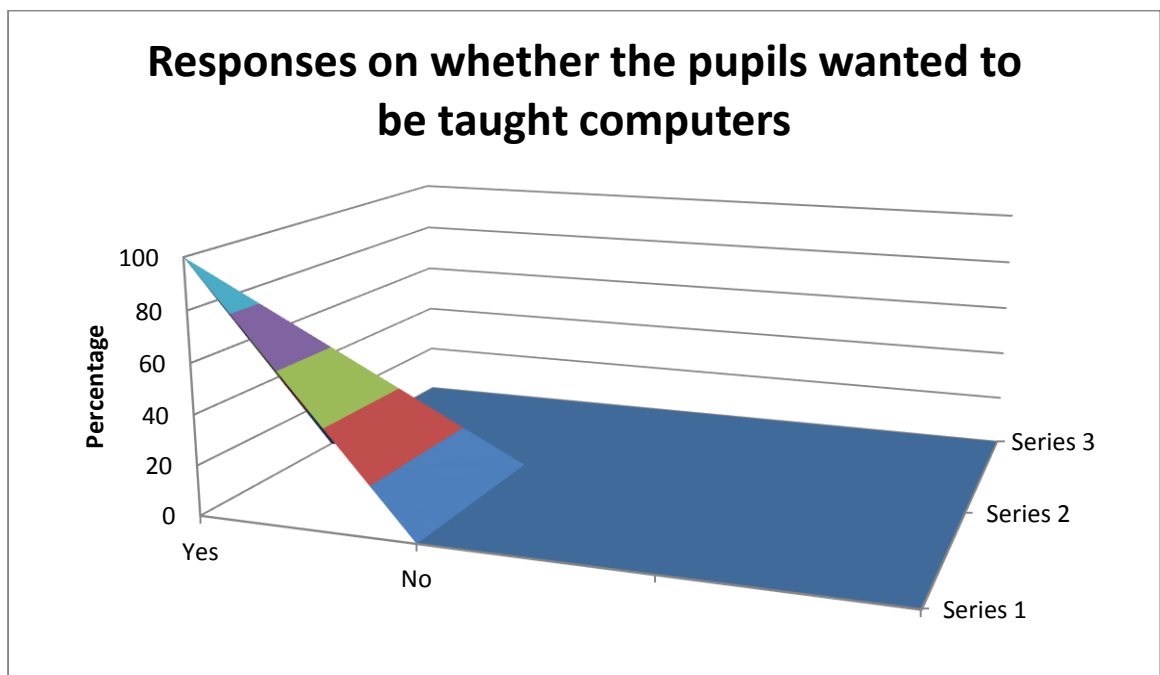


Figure 14 above shows the responses on whether students at the schools under study were willing to learn computers. All the 30 teachers representing 100% of the respondents indicated that the students were overwhelmingly willing to learn computers. A computer teacher at Guro Secondary School even mentioned how excited the students became when it was time for computer lessons. He also indicated that the students viewed computers as they viewed the smart phones that were on the market these days hence their interest to learn them.

**Findings:** The eagerness on the part of the students to learn computers showed that the students were more than willing to learn computers. The only impediment was the inability by some schools to offer the subject owing to challenges that the schools were facing. These challenges included lack of computers, lack of qualified teachers to teach the subject, lack of funds to purchase and repair broken down computers and lack of electricity among others.

**Fig 15: Responses on whether the schools were connected to the internet?**

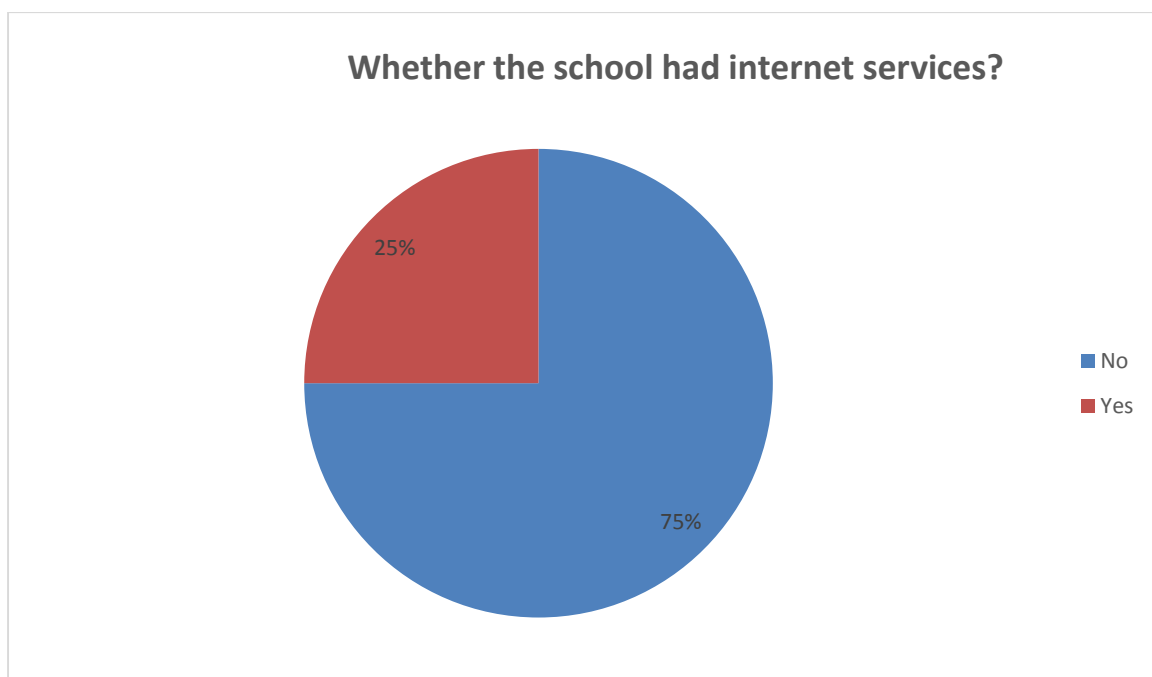


Figure 15 above shows responses on whether the schools were connected to the internet or not. 75% of the respondents indicated that their schools were not connected to the internet and they had to use personal modems and Wi Fi for research purposes. 25% of the respondents indicated that their schools were connected to the internet and they could research information as well as allow students to research from the net. Those with internet connection highlighted the advantages of the internet such as preparing students for the next lesson as they would have searched for information from the internet in advance. They also

mentioned the dangers of the internet if students were not monitored. These related to abuse of the internet whereby students tended to visit undesired sites such as pornography, violence and playing games at the expense of learning.

**Findings.** The existence of the internet at 25% of the schools studied showed how dedicated some schools were towards the implementation of ICT in schools. However, the 75% that did not have the internet showed how the majority of the rural schools in Chihota lagged behind most urban schools in the uptake of computer education. The benefits of the internet as mentioned by 25% of respondents whose schools had the internet were a stepping stone in the right direction as teachers' jobs would be made easier by teaching students who would have prepared for the lesson. The learning environment would be interesting as it would foster maximum participation from the students rather than having students who would anticipate to be spoon-fed by the teacher. The internet would also make it easier for teachers in other subjects, be it Maths, Geography, Science et cetera. The pass rate would also improve as a result of the availability of the internet. The merits of the internet outweighed its demerits as those bent on abusing it would dismally fail examinations while those who would have used it productively would pass and move the nation forward.

**Figure 16: Responses on Availability of Electricity at Schools**

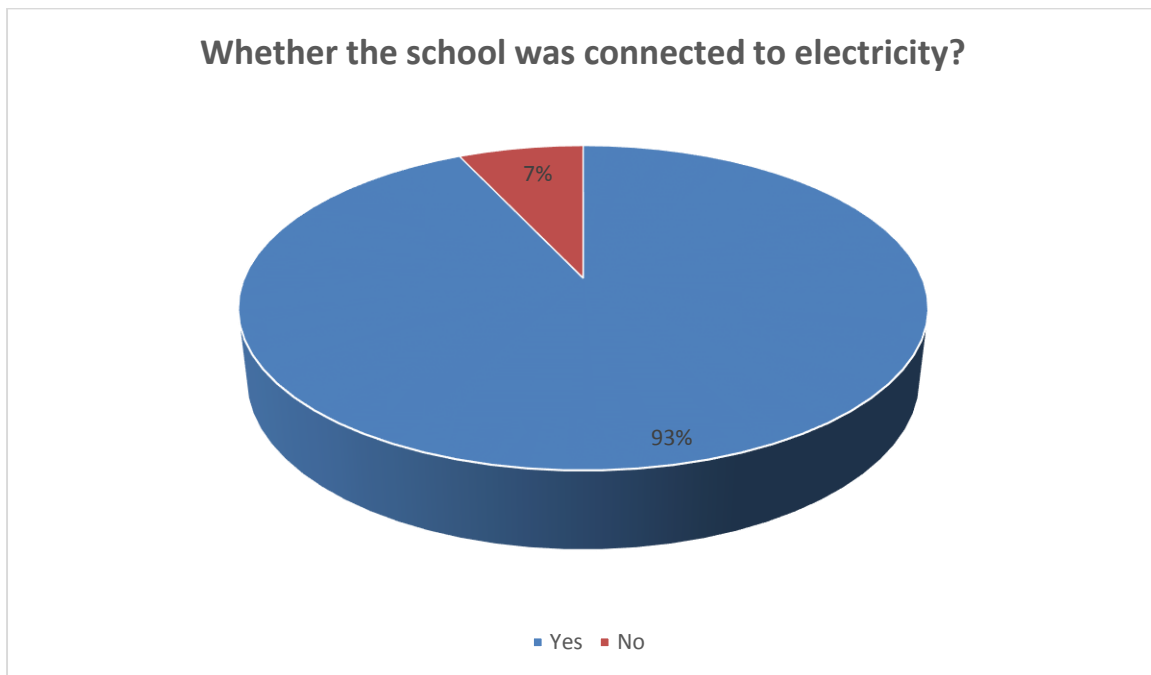


Figure 16 above shows responses on the availability of electricity at the schools studied. 25 teachers representing 93% of the respondents said their schools were connected to electricity although there was rampant load-shedding which often disrupted ICT lessons. These disruptions called for school authorities to put in place stand by measures like powerful generators or Uninterrupted Power Supply (UPS) systems which would automatically takeover when electricity was cut. Most generators that I came across in the schools studied were reported to be dysfunctional and were too small and of poor quality. 5 teachers representing 7% of the respondents said their school was not connected to electricity. If they wanted to use electrical gadgets they had to go to a nearby primary school which was connected to electricity. The same school did not have a single computer either for administration or teaching purposes.

**Findings:** The majority of schools studied were connected to electricity with the exception of one school which I found to have been recently built and had not yet been electrified. The major challenge faced by the schools that had electricity was their inability to procure sound stand by facilities like powerful



generators or installation of UPS systems. This challenge militated against the successful implementation of the government's drive towards an ICT driven education system.

## INTERVIEW RESPONSES TO SCHOOL DEVELOPMENT COMMITTEE MEMBERS

**Figure 17: Responses on Whether Parents Supported the Teaching of Computers**

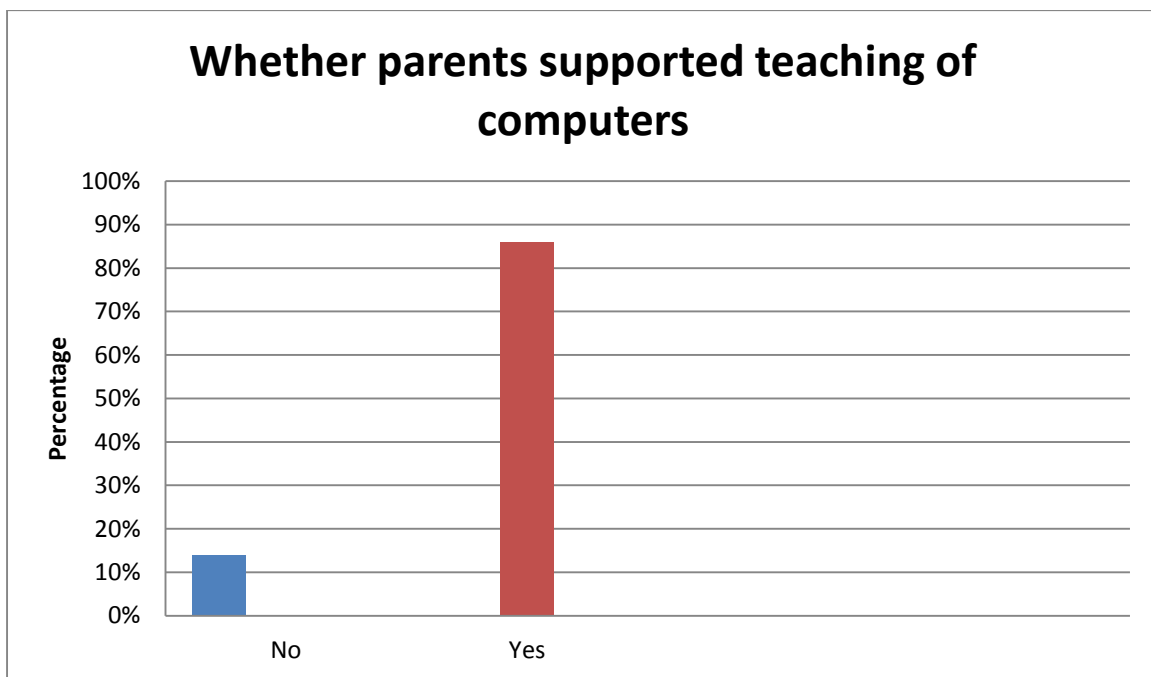


Figure 17 above shows responses from SDC members on whether parents supported the teaching of computers. 6 SDC members representing 86% of the respondents said parents were supportive of the idea to have their children taught computers. Some parents had even donated computer equipment to some schools. The equipment ranged from computers, printers and computer consumables such as cartridges, toners and bond paper including anti-virus software. However, the challenge was with the majority of parents from poor

backgrounds who were struggling to pay fees for their children. The non-payment of fees adversely affected computer budgets which continued to be under funded although the willingness on the part of the parents to have their children taught computers was there. 14% of the respondents did not support the idea of their children being taught computers. Their argument was computers would turn their children into wild and uncontrollable individuals because of the existence of a wide range of undesired sites on the internet. In as far as research for academic information was concerned, they argued that it was the responsibility of the teacher to provide information to students. They further argued that if students equipped themselves with too much information they would end up challenging teachers in class.

**Findings.** The fact that 86% of the respondents supported the idea to have their children taught computers was a clear testimony that the teaching of computers in education had received the support it deserved from the parents. These parents had indeed shown the need to develop education by embracing modern technologies. There are some parents as represented by the 14% who did not support the teaching of computers in schools. These parents suffered from a syndrome known as '*Resistance to change*'. They wanted to see their children go through the same education system that they and their forefathers went through yet the world was changing to make life easier for everyone than before.

## **4.2 DISCUSSION**

The findings of this study consist of questionnaire responses from 6 school heads, 30 teachers and 7 SDC members as well as interview responses from 7 SDC members.

### **4.2.1 SCHOOL HEADS**

School heads are the locomotives of all schools, be it Primary or Secondary. They play a pivotal role in implementing any government Directive or Policy. The drive towards implementing ICTs in education lies entirely upon school heads who can then direct their teachers either to implement or not to implement the Policy or Directive. During my study my first port of call was the school heads. After paying a courtesy call on the school heads and telling them the purpose of my visit to their schools they then handed me over to their deputies or senior teachers who then coordinated my meeting with the teachers and members of the SDCs. All the school heads I visited were very cooperative because they viewed my study as the solution to their problems on implementing ICTs in education. When I visited Mandadzaka Secondary School the school head had to adjourn a meeting with the SDC members and teachers to attend to me. At another school by the name Guro Secondary School instead of me returning to collect the completed questionnaires the school head offered to deliver the completed questionnaires to me, a promise he later fulfilled. From data collected it showed that all the six headmasters managed to give at most the desired responses which have made it easy for me to complete my study.

#### **4.2.1.1 Interpretation**

Data collected from school heads, teachers and SDC members showed that school heads were making efforts to make sure computers were taught at most secondary schools. Their efforts in sourcing computers and qualified teachers to teach computers was a clear testimony of their desire to develop education by introducing ICTs to pupils. The security features on the computer laboratories I visited testified the school heads' unwavering efforts to have computers at their schools well secured from thefts and burglary. The way the school heads were working with the SDCs at their schools to add their computer hardware by renting computers from some computer renting companies and also finding

cheaper ways to add to their computer inventories by buying cheaper refurbished computers showed me how committed school heads were to support the President's initiatives to have students benefit from computer education. Efforts by some schools heads to have internet connections at their schools to enhance research for both teachers and students were a clear indication that they wanted to move forward with technology. They wanted to complement the teaching of computers by making sure students were exposed to searching for educational information at an early stage in preparation for university education as well as industry. Overall, the school heads' prioritisation of research aligned to computer education as shown by how they received me and treated my research was commendable.

#### **4.2.2: TEACHERS**

Teachers were important stakeholders in the use and teaching of computers in the six (6) schools I studied. They were the ones tasked with the implementation of government policies or directives. Without their zeal and willingness, such programmes, as the teaching of computers in education would not succeed. From the data gathered it showed that teachers were more than willing to implement the President's programme of introducing ICTs in all schools in Zimbabwe. Some teachers I discussed with sacrificed their own resources to enhance the teaching of computers and research by bringing their personal laptops and Wi Fi modems to school for teaching purposes. The urgency with which they treated my research was also a clear testimony of their desire to have the challenges they had in implementing the policy on the use and teaching of ICTs in education solved. It was interesting to note that some teachers such as Mr Garikayi, Mr Tsikayi and Mr Bwerinofa managed to return the questionnaires on the same day they were delivered to them. They had to sacrifice their lunch period to complete the questionnaires and requested me to collect them soon after lunch. The majority of teachers promised to have the

questionnaires completed over night and they did so. Those who stayed in Marondera had to deliver the questionnaires to my house in person. Where there were no qualified teachers to teach computers some teachers had to volunteer their personal computer skills from college to educate students. An example was Miss Tenhedzi from Guro Secondary School who herself has a degree in Mathematics but is currently one of the teachers teaching computers at the school. In a nutshell, all the teachers I visited treated me in a friendly rather than a hostile manner.

#### **4.2.2.1: Interpretation**

From the data gathered from teachers in this study, it was clear that teachers were putting all their efforts to ensure that ICTs were taught in schools despite challenges faced by some schools. The honest responses that they gave to the questionnaires, the sacrifices they made to deliver responses timeously, their sacrifice of personal skills and equipment and the urgency with which they treated my study was a clear testimony of their dedication to duty in as far as the whole programme of teaching computers was concerned.

#### **4.2.3 SCHOOL DEVELOPMENT COMMITTEE MEMBERS**

The provisions of statutory instrument 379 of 1998 emphasises that the SDC should promote and encourage the development and maintenance of schools. It should ensure that fees were paid on or before the opening of each school term and the nature of goods required by the school should be determined by the school head and approved by the finance committee (Statutory Instrument, 379 of 1998).

In other words, this meant that the parents of students at a particular school had the responsibility of ensuring that there were enough resources at the school. It therefore meant that the parents had the responsibility of ensuring that they

purchased computers for ICT departments and made sure that they maintained these computers. The above clauses meant that the government had left the responsibility of making sure that ICT departments in schools were running under the SDCs.

From the data gathered from SDC members in this study parents supported the implementation of the government policy on ICTs in education. Efforts by some SDC members to find cheaper alternatives of providing computer education to schools by purchasing and renting computers were a clear testimony of the dedication of the SDCs to implement government policy on ICTs in education. The other notable contribution by the SDCs in conjunction with school heads to have IT departments functional was the creation of computer budgets which were used to procure and maintain computers at some of the 6 schools in Chihota Rural Area.

#### **4.2.3.1: Interpretation**

The fact that 86% of the SDC members supported the idea to have their children taught computers was a clear testimony that the teaching of computers in education had received the support it deserved from the parents. These parents had indeed shown the need to develop education by embracing modern technologies. The SDC's efforts to hire and purchase computers using computer budgets at the schools studied revealed how committed they were to see that the programme succeeded. Despite other commitments, SDC members availed themselves for my study without hesitation.

### **4.3 SUMMARY**

This chapter presented data accumulated through questionnaires and interviews. Demographic Data were first presented and analysed. After that data from questionnaires and interviews were presented, analysed and findings obtained.

The data were presented in many different ways and formats which included tables, bar graphs, pie charts, and narrative texts to outline the data accumulated. In addition to this, the chapter had data discussions and interpretation to make sense of meaning of the collected data. The next chapter focused on summary, conclusions and recommendations

## **CHAPTER 5**

### **SUMMARY, CONCLUSIONS AND RECOMMENDATIONS**

#### **5.0 INTRODUCTION**

This chapter focused on summarising the whole research study. Summaries of all chapters were made starting from the background of the study, the problem, research questions, significance of the study, delimitations and limitations of the study. Related literature and case studies from chapter 2 were also summarised including the research methodology used in the study. A brief summary of the findings was also done in this last chapter of the project. Finally the conclusions and recommendations of the study were also discussed.

#### **5.1 SUMMARY**

The study was set out to investigate challenges faced in the use and teaching of computers in Secondary Schools in the Chihota rural setting. The study was triggered by the need to follow up on the efforts by the President of the Republic of Zimbabwe to donate computers in most schools in both urban and rural areas. I looked at six (6) Secondary Schools in Chihota rural area of Mashonaland East, Zimbabwe.

Chapter 1 started by giving a brief background of the study. The statement of the problem was given and it showed that despite concerted efforts by H.E, the President of Zimbabwe to donate computers to most schools in both urban and rural areas, a number of schools were finding it difficult to use and teach computers due to a myriad of reasons. The chapter also came up with the research questions to give the direction the project was going to take. Among the research questions were whether there was a policy for the teaching of computers in schools, whether there was a budget for the procurement and



repair of computers, whether there was adequate computer hardware and software in schools and whether there were qualified teachers to teach computers. The significance of the study to the government, the schools, teachers, pupils, industry and the researcher was also discussed before the delimitations and limitations of the study were given.

The second chapter looked at what other authors said on the topic. A lot of literature was consulted to get an insight of the topic at large. Most of the authors highlighted the problems that had also been experienced in the first world during their initial introduction of ICT policies in schools. Challenges to do with lack of consensus on the benefits of embracing ICTs, inadequacy of computer equipment, negative attitudes on the part of the teachers, resistance to change on the part of school authorities and lack of computer technicians were reviewed from international, continental, regional and local sources. Case studies from Turkey, Cameroon, Kenya, Mozambique, Swaziland and Zimbabwe were also reviewed to find ascertain challenges in those countries and their recommendations.

The third chapter discussed the methodology of the study. Since the study sought to investigate the challenges faced by schools in embracing ICTs in education, the case of 6 schools in the Chihota rural area, a case study research design was adopted. A case study focussed on the phenomenon to be studied. The phenomenon in the current study was the use and teaching of and the case was the 6 secondary schools in the Chihota rural area in Mashonaland East Province of Zimbabwe. School heads, teachers and SDC members made up the unit of analysis. Although the study predominantly used the qualitative model, quantitative data were also collected in the process. This was in line with Babbie (1986) who asserts that a number of social researchers have since realised the need to use both types of data (mixed methods approach) if a true picture about a phenomenon is to be revealed. I employed both questionnaires

and face to face interviews as instruments for collecting the research data. The questionnaires were distributed to heads, teachers and school development committee members. Interviews were done to some SDC members whom I felt would not be able to complete the questionnaires adequately. A pilot study to ascertain the validity and reliability of the research instruments was done before ethical considerations were discussed to create a trusting relationship between the respondents and myself as a researcher.

Findings from the research were presented and analysed in Chapter 4. Data was presented in the form of tables, pie charts, bar graphs, and text. From the data collected and presented, it showed that there were challenges hindering the implementation of computer education in rural schools in Zimbabwe. The challenges from the 6 secondary schools ranged from, lack of a dedicated ICT policy for education, shortage of computers, shortage of IT teachers, inadequate funds to run the computer departments, lack of electricity and lack of standby power facilities. A discussion of the findings was also carried out in this chapter.

### **5.1.1 Summary of Findings**

#### **a. Lack of a dedicated ICT Policy for education**

Whilst school heads, teachers and parents were keen to implement ICTs in schools, the absence of an ICT policy dedicated to education was viewed to be a challenge militating against the success of the use and teaching of ICTs in schools. The draft ICT policy by the ministry of ICT and Courier Services is an all- encompassing policy framework covering all sectors of the economy. The recently introduced curriculum where the teaching of ICTs was emphasised was still in its infancy to yield positive results on the implementation of the ICTs in

schools. A dedicated ICT policy for education would bring about the necessary support to enhance the teaching of computers in schools.

### **b. Shortage of computers**

The majority of the schools in the current study had inadequate computers translating to a high pupil-computer ratio. The challenge of inadequate computers militated against teaching computers in most schools under the current study. One school with an enrolment of 850 had only one computer resulting in the available computer being used for administrative purposes only.

### **c. Shortage of Computer Teachers**

The shortage of computer teachers was found to be a contributory factor in implementing computer education in the schools under the current study. Very few teachers were qualified to teach computers while those who were qualified to teach other subjects were requested to assist in teaching computers.

### **d. Inadequate funds to Purchase and repair Computers**

The absence of dedicated budgets for computers was found to be the reason why schools were not able to purchase or repair computers. Most donated computers were not functioning as there were no funds to maintain them. All the schools visited in the current study were relying on the budgets for all practical subjects which had proved to be inadequate to cater for all practical subjects including computers.

### **e. Lack of electricity and standby facilities**

Lack of electricity and standby facilities such as generators and UPS systems were found to some of the challenges militating against the use and teaching of computers in the Chihota Rural area. Computers require power for them to function. In the case of power outages there is a need to have reliable standby

systems such as powerful generators and UPS systems. All the 6 schools that I visited had no reliable standby systems and 2 had no electricity at all

## **5.2 CONCLUSIONS**

The conclusions that can be drawn from the study revealed that most schools were operating ICT departments. Teachers were willing to teach computers and the pupils were also keen to be taught computers. There were however a number of challenges militating against the use and teaching of computers in schools as follows:

- There was lack of finance to support computer departments.
- The computers in the departments were out-dated and were inadequate to teach pupils.
- There was no dedicated ICT policy for the education sector to make it compulsory for schools to embrace computer education.
- There were not enough trained teachers to teach computers.
- There were no powerful standby power facilities to cater for power outages at all schools.
- Computer laboratories at the schools were not up to standard.
- A number of computers donated by the President were not serviceable due to lack of computer technicians.
- There was lack of teacher development in terms of teacher in-service training in order the teachers in touch with the new developments in technology.

A dedicated policy on the use and teaching of computers in schools would enable the government to give the necessary support to schools in terms of ideal infrastructure, equipment as well as human resources to make it mandatory for schools, both rural and urban to teach computers.

### **5.3 RECOMMENDATIONS**

The following were the recommendations from the study:

1. The government should come up with a policy dedicated to the teaching of computers in schools which would make it compulsory for schools to teach the subject.
2. The government should deploy qualified computer teachers and computer technical staff to schools for the programme to succeed.
3. Schools should create standalone computer budgets by charging a computer levy every term to replenish computers and cater for computer repairs.
4. The government should provide funding for computer purchases and building of proper computer laboratories at schools for the programme to succeed.
5. School authorities should engage the corporate world and build PPPs aimed at supporting computer departments at schools.
6. Schools should invest in reliable standby facilities such as powerful generators and UPS systems so that computer lessons are not affected by power outages.
7. Schools should send their computer teachers for staff development courses in IT in order for them to be current on technological changes in the IT industry.

## REFERENCES

Allan, H.K. Yuen, N.L. & Wong, K.C. (2003). ICT implementation and school leadership: Case studies of ICT integration in teaching and learning. *Journal of Educational Administration*, vol.41, No. 2, pp. 158-170.

Anderson, R.E. (2008) Implications of the information and knowledge society for education. *International handbook of information in primary and secondary education*, 20, 1. 5-22.

Ayemoba, A. (2013). New Limpopo ICT resource centre to boost teacher training in Maths and Science. Available from: [Southafricabcusinesscommunities.com/profiles/blog/new-limpopo-ict-resource-centre-to-boost-teacher-training-in](http://Southafricabcusinesscommunities.com/profiles/blog/new-limpopo-ict-resource-centre-to-boost-teacher-training-in) (Accessed: 19 August 2013).

Baez B. (2002) Confidentiality in qualitative research: Reflections on secrets, power and agency. *Qualitative Research*. ; 2:35–58.

Brady, H. E, Grand, S.A, Powell, M.A and Schink, W. (2001) *Access and Confidentiality Issues with Administrative Data*, National Academy of Services, Washington DC.

Bok, S. (1983) *Secrets: The Ethics of Concealment and Revelation*, Random House, New York.

Boris, S (2014) A holistic view of public sector information and communication technology. [Http://www.sandford.borins@mbs.gov.on.ca](http://www.sandford.borins@mbs.gov.on.ca)

Bingimlas, K.A. (2009). Barriers to the Successful Integration of ICT in Teaching and Learning Environments: A Review of the Literature, *Eurasia Journal of Mathematics, Science & Technology Education*, 2009,vol. 5(3):235-245.

Buabeng-Andoh, C. 2012. Factors influencing teachers' adoption and integration of information and communication technology into teaching: A review of the literature, *International Journal of Education and Development using Information and Communication Technology (IJEDICT)*, 2012, Vol. 8, Issue 1, pp. 136-155.

Bukaliya, R. and Mubika, A.K. (2011). Teacher Competence in ICT: Implications for Computer Education in Zimbabwean Secondary Schools, *International Journal of Social Sciences and Education* ISSN: 2223-4934 Volume: 1 Issue: 4 October 2011

Bull, R.J (2010), *Accounting in Business*. 5<sup>th</sup> Edition, Butterworth and Company Limited. Cohen L. and Manion L, (1980). *Research Methods in Education* Second Edition, Groom Helm Publishers, New York.

Brady, H. E, Grand, S.A, Powell, M.A and Schink, W. (2001) *Access and Confidentiality Issues with Administrative Data*, National Academy of Services, Washington DC.

Chalmers, R and Israel, M. (2005) *Caring for Data: Law, Professional Codes and the Negotiation of Confidentiality in Australia*, Granada Press, Perth

Clark, J. F., Allen, W.W. and Klooster, D. H. (2009) *Computers and Information processing- concepts and applications* 2<sup>nd</sup> Edition, South- Western Publishing Company, Ohio.

Cossa, G.G., & Cronje, J.C. (2004). Computers for Africa: Lessons learnt from introducing computers into schools in Mozambique. *International Journal of Learning Technology*, 1(1), 84-99. Consulted 20 May 2008:  
[www.schoolnet africa.net/fileadmin/resources/Computers\\_for\\_Africa.pdf](http://www.schoolnet africa.net/fileadmin/resources/Computers_for_Africa.pdf)

Crede, A., & Mansell, R. (1998). Knowledge societies... in a nutshell: Information technologies for sustainable development. Ottawa, Canada: IDRC.

Doyle, S. (2011), Information Systems for You. Nelson Thomas Limited, Cheltenham.

Gall, D.M., Borg, W.R and Gall, J.P. (2007). Educational Research: An introduction. London: Longman.

Gay, L. (1996) Education Research – competencies for analysis and application 5<sup>th</sup> Edition Macmillan Publishing Company, USA.

Cohen, L., Manion, L. & Morison, K. (2000). Research Methods in Education (5th ed.) (Routledge Falmer).

Department of Communications. (2013). Proposed ICT Policy Review Framing Paper. Government Gazette No. 36408. Pretoria

Devadason, R.P. (2010). The State of use of ICT in the Teaching and Learning of Science and Mathematics among schools in SEAMEO Member Countries. Seameo Recsam.

Faden, R.R. and Beauchamp, T.L. (1986) A History and Theory of Informed Consent, Oxford University Press, New York.

Frank et al, (2003), Research Instruments, Validity and Reliability: Open University Press Books.

Government of Zimbabwe (1998) Education (School Development Association)

Government schools Regulations Statutory Instrument 379 of 1998, Government Printers Harare.



Greer (1991), *Research Methodology and Design*, Hong Kong: Sage Books.

Grinnell (193:154).

Grunewald J.P, (1989) *Social Research: Design and Analysis*, Gutenberg Book Printers, Pretoria West.

Gunwales K. L., Kulhaway F.H. A Comparative Evaluation of Rock Strength Measures. *Int. J. Rock Mech. Min. Sci.*, Vol. 13. pp. 53-59.

Haralombos and Holborn, 2000: 965, in *Sociology Themes and Perspectives* 5<sup>th</sup> Edition. Harcourt Publishers, London.

Hawkridge, D. (1990). *New information technologies in education*. London: Broom Relm, P. 161.

Israel, M and Hay, I (2009) *Research Ethics for Social Scientists*, Sage Publications Ltd, London, ECIY ISP.

Korte, W.B. & Hüsing, T. (2007). Benchmarking access and use of ICT in European schools 2006: Results from Head Teacher and A Classroom Teacher Surveys in 27 European countries, *eLearning Papers* 2, 1: 1-6 [www.elearningeuropa.info/files/media /media11563.pdf](http://www.elearningeuropa.info/files/media/media11563.pdf) (accessed: 18 March 2014).

Kozma, R.B. (2003). *Technology and Classroom Practices: An International Study*. *Journal of Research on Technology in Education*, Fall 2003, vol. 36, No. 1.

Krysa, R. (1998). *Factors Affecting the Adoption and Use of Computer Technology in Schools* University of Saskatchewan Retrieved from: <http://www.usask.ca/education/coursework/802papers/krysa/krysa.PDF> on 23/03/12

Leedy, P.D. (1999). *Practical Research Planning Design*, (5th ed) New York: McMillan Publishing.

Middleton, A. J., Flores, A., & Knaupp J. (1997). Shopping for technology. *Educational Leadership*, 53(3).

Mintz, D. (1997). Technology's promise: Responding to the la times. From Now on the *Educational Technology Journal*, 7(1) Retrieved from <http://fromnowon.org/sept97/latimes.html> on 23/01/12.

Kruger, J. (2010), "Latest ICT Trends in Enhancing Education", Department of Informatics, University of Pretoria, Pretoria, South Africa, available at: <http://web.up.ac.za/ecis/sacla2010pr/sacla2010/papers/sacla029.pdf> (accessed 8 March 2012).

Leaderbetter, C, and Wainwright, S. (2005) *Computer Studies and Information and Communication Technology*. Cambridge University Press, Cambridge.

Manson, E, and Bramble, W. J. (1997) *Research in Education and the Behavioural Sciences. Concepts and Methods*. Brown and Benchmark Publishers, USA.

Martin, J.W. (1995). *The global information society*. England: Aslib, P.3.

Mikis, K. M. (2007) *Challenges in the usage and teaching of ICT in schools* <http://www.oki.hu/article.php?kod=linkchallenges.html>.

Mikre, F. (2011). The Roles of ICT in Education. Review Article with Emphasis to the computer and Internet. *Ethiopian Journal of Education and Science*, vol. 6, No. 2.

Mujs, D, and Reynolds, D. (2005) *Effective Teaching (evidence and practice)*. 2<sup>nd</sup> Edition, Sage Publication, London.

Newton, L. & Rogers, L. (2001). *Teaching Science with ICT*. New York: Continuum.

*Oxford Paperback Dictionary thesaurus and Word power Guide*, (2005), New Delhi, India.

Rushly, N. (1987), *Technology Based Learning*, Kogan Page Ltd, London.

Sadker, M.P. and Sadker, D. M. (2003) *Teachers, schools and society*. McGraw Hill, New York, United States of America.

Saalmela, H. and Turkmen, P. (2003) *Competitive Implications of Information and Communication Technology in the Public Sector*, *International Journal of Public Sector Management*, Volume 16. Finland.

Schware, R. (2009) *Information and Communication Technology and Public Sector Management Systems*, 3<sup>rd</sup> Edition, Irwin, United States of American.

Sieber, J.E (1992) *The Ethics of Social Research: Surveys and Experiments*, Springer Verlag, New York.

Sekeran, (2003) *Research Methods and Techniques*, 0700011.

So, T. and Swatman, P. M.C. (2006). *E-Learning Readiness of Hong Kong Teachers*. University of South Australia.

Southern, A.(2010) *How, where, why, and when technologies are seen as regeneration tool*, *Internal journal of Public Sector Management*, Volume 14, Durham, United Kingdom.

Stephenson, C (2007) Computer Science in the Classroom: Challenges and Opportunities. <http://www.cs.cornell.edu/cis-dean/bgu.pdf>.

STEPS (2007) Study of the impact of technology in primary schools Retrieved from:[http://eacea.ec.europa.eu/llp/studies/documents/study\\_impact\\_technology\\_primary\\_school/brochure291009\\_en.pdf](http://eacea.ec.europa.eu/llp/studies/documents/study_impact_technology_primary_school/brochure291009_en.pdf) on 05/02/12

Tucker, A. B. (1996) Strategic Directions in Computer Science Education <http://www.bowdoin.edu-allen>.

Thioune, R.M.C. (2003). Information and communication technologies for development in Africa: Opportunities and challenges for community development. Volume 1. Ottawa: IDRC. Available: <http://www.idrc.ca>

Tyska & Findlay, (1999), Themes and Research Perspectives, London Longman Books.

Wells, A (2009) Educational Research in Africa, Sage Publications Ltd, New York.

Wilcox, L. (2008) Information Management – the evaluation of Information Systems Investment, Chapman and Hall, London, United Kingdom.

World Summit on Information Society, Geneva (2003) [www.itu.int/wsis/documents/background.asp?lang=en...im](http://www.itu.int/wsis/documents/background.asp?lang=en...im). Retrieved on 18 July 2012.

Uys, H.M. and Basson. A, (2003). Research Methodology in Nursing, Kagiso Tertiary, South Africa.

Van Dalen D B, (1978), Understanding Education Research: An Introduction, McGraw-Hill, New York.

Ya'acob, A., Nor, N., and Azman, H. (2005). Implementation of the Malaysian Smart School: An Investigation of Teaching-Learning Practices and Teacher-Student Readiness. *Internet Journal of e-Language Learning & Teaching*, 2(2).  
<http://www.det.nsw.edu.au/proflearn/der/docs/wherenow/teachict.pdf>

Yin, R.K. (2003). *Case Study Research: Design and Methods*. Thousand Oaks, C.A: SAGE.

## 1. RESEARCH TIME TABLE

<b>DATE</b>	<b>ACTIVITY</b>	<b>EVALUATION</b>
01/08/16	Allocated the research topic.	Confirmed
26/09/16	Discussed the research proposal with the Supervisor.	Confirmed and start writing.
30/10/16	Email	Chapter one introduction.
02/11/16	Telephone	Way forward and contact.
23/11/16	Chapter 1-3,	Polishing the chapter 3.
30/11/ 16	Discussion	Polishing chapter 1-3.
01/12/16	Discussion	Submitted chapter 1-3.
20/12/16	Chapter 2 discussion	Correct chapter 2, submit chapter 3.
25/12/16	Collected chapter 2,3	Submit chapter 1, 2 and 3 to the college.
03/01 /17	Submit chapter 4-5 for corrections.	Collected chapter 4-5.
23/02/17	Discussed chapter 4 and 5	Collected chapter 4- 5 for proof read.
30/03/17	Combined the chapters 1,2,3,4 and 5.	Submit to the Supervisor for proof read chapters 1,2,3,4 and 5. Then final submission to the college.

## 2. RESEARHC BUDGET

<b>ACTIVITY</b>	<b>COST (USD)</b>
Stationery	\$ 50- 00
Miscellaneous and Internet	\$100-00
Travel Expenses	\$150 -00
Call- Cell Phone	\$30-00
Fuel	\$100-00
Food and Allowances	\$50-00
Printing and Binding	\$50-00
<b>Total Expenditure</b>	<b>\$530-00</b>

## **APPENDIX 'A'**

### **QUESTIONNAIRES FOR SCHOOL HEADS**

#### **Covering Letter**

Dear Sir/ Madam

I am Philip Kungeni final year Student Registration Number: (R144902X) of Bachelors of Adult Education Degree (BAED) with Midlands State University (MSU). It is a requirement that I conduct a research in partial fulfilment of the Degree programme. I am therefore humbly seeking your assistance in respect with the attached questionnaire and interviews questions which focuses on the research topic: The challenges that are being faced in the use and teaching of computers in schools: The case of six schools in Chihota Rural Area for the period (2012 to 2017). The information you will give is useful in helping to design strategies to improve social mobility and promotion of both female and male employees. You are kindly requested to answer all questions as objectively as possible by ticking or writing in the spaces provided.

I have made the necessary arrangements with your head office who have in turn given me the green light to visit the schools under study. I assure you that the information you provide will be treated with maximum confidentiality and your identity will remain anonymous. Please make sure you do not write your name on any page of this questionnaire. I also endeavour to honestly base my findings on the information that I would have gathered and nothing less or more.

The undersigned appreciates your invaluable contribution in this study without which this study would not be possible.

Thank you for your precious time.

Yours Sincerely

**Mr Philip Kungeni**

**BAED**

**MSU**



1. What is your sex?

**Please Tick**

<b>M</b>	<b>F</b>

2. How old are you?

**Please Tick**

<b>AGE</b>	<b>Tick</b>
25-35 Yrs.	
45 and above	

Please assist by responding to the following questions as objectively as possible.

**Please Tick**

3. What is the Policy on the teaching of computers in Zimbabwe?

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.....

4. Do all pupils do computers? (if not explain)

<b>Yes</b>	<b>No</b>

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5. What classes do computers?

<b>Tick</b>	<b>Yes</b>	<b>No</b>
Form 1		
Form 2		
Form 3		
Form 4		
Lower 6		
Upper 6		

**If the above is not applicable write your answer here**

6. What criteria do you use for selecting pupils who do computers?

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7. Does your school have any computers for teaching pupils? If so how were they acquired and what is their quantity?

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8. What is ratio of pupils per computer?

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Do you think this is optimum?

**Please Tick**

YES	NO

9. Did you receive any donations from the President or any well-wishers? If so are the computers serving their intended purpose?

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10. Is your syllabus the same with that of surrounding schools?

**Please Tick**

YES	NO

11. Is the syllabus in line with the trends in industry? Explain

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12. What are the problems being encountered in the use and teaching of computers in your schools?

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13.How can these problems be solved?

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14.What qualifications do majority of your teachers have?

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15. Does the school send its teachers for staff development courses in computers?

**Please      Tick**

<b>YES</b>	<b>NO</b>

16. How many of your teachers are computer literate? Explain your answer.

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17. Do you keep in touch with trends in industry?

**Please              Tick**

<b>YES</b>	<b>NO</b>

18. Is there parental/ school support for the computer department? Please comment on your answer.

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19. Are the costs of maintaining computers successfully met? If not please give reasons.

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20. Is there a budget for the IT department?

**Please**                      **Tick**

<b>YES</b>	<b>NO</b>

21. Do you have other sources of funds besides those allocated for the department in the budget?

**Please**                      **Tick**

<b>YES</b>	<b>NO</b>

22. What is the attitude of your teachers in teaching computers?

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23. Are you connected to the internet? If the answer is **YES** or **NO** what do you think are the merits and demerits of the internet on education?

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24. Do you have a computer laboratory?

**Please**                      **Tick**

<b>YES</b>	<b>NO</b>

25. What do you think an ideal computer laboratory should have?

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26. Does your school have the capacity to teach computers in terms of infrastructure and both human and material resources.

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**End of the questions**

## **APPENDIX “B”**

### **QUESTIONNAIRE FOR TEACHERS**

#### **Covering Letter**

Dear Sir/ Madam

I am Philip Kungeni final year Student Registration Number: (R144902X) of Bachelors of Adult Education Degree (BAED) with Midlands State University (MSU). It is a requirement that I conduct a research in partial fulfilment of the Degree programme. I am therefore humbly seeking your assistance in respect with the attached questionnaire and interviews questions which focuses on the research topic: The challenges that are being faced in the use and teaching of computers in schools: The case of six schools in Chihota Rural Area for the period (2012 to 2017). The information you will give is useful in helping to design strategies to improve social mobility and promotion of both female and male employees. You are kindly requested to answer all questions as objectively as possible by ticking or writing in the spaces provided.

I have made the necessary arrangements with your head office who have in turn given me the green light to visit the schools under study. I assure you that the information you provide will be treated with maximum confidentiality and your identity will remain anonymous. Please make sure you do not write your name on any page of this questionnaire. I also endeavour to honestly base my findings on the information that I would have gathered and nothing less or more.

The undersigned appreciates your invaluable contribution in this study without which this study would not be possible.

Thank you for your precious time.

Yours Sincerely

**Mr Philip Kungeni**

**BAED**

**MSU**

**Answer ALL questions where possible.**

**Indicate N/A where the questions demands information that does not exist at your school.**

1. What is your gender?

**Please                  Tick**

<b>M</b>	<b>F</b>

2. How old are you?

**Please                  Tick**

<b>AGE</b>	<b>Tick</b>
25-35 Yrs.	
45 and above	

3. Do you teach computers?

**Please                  Tick**

<b>YES</b>	<b>NO</b>

If 'No' explain your answer

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4. Which classes do you teach?

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5. What problems are you facing in teaching computers?

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6. How can these problems be solved?

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7. How many computers are available at your school?

**Please      Tick**

<b>YES</b>	<b>NO</b>

8. Are you happy with the student- computer ratio?

**Please      Tick**

<b>YES</b>	<b>NO</b>

9. Is your computer laboratory up to standard?

**Please      Tick**

<b>YES</b>	<b>NO</b>

10. In your own opinion what should a standard computer laboratory have?

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11.How many teachers are computer literate at your school?

12.What is the Government policy on computer education in schools?

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13.Did you receive any computer donations from His Excellency or any organisation?

**Please      Tick**

YES	NO

13. If yes are they serving their intended purpose?

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14. Does your school have a budget for the purchase and maintenance of computers?

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15. If so are there any computers that were purchased or repaired using that budget?

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16. Does the school have technical personnel for computer repairs?

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17. Are the students willing to be taught computers? Explain your answer.

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18. What do you think is the importance of embracing computer education in schools?

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19. What problems do you think are associated with computers in education especially where the internet is connected?

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20. What qualifications do you hold?

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**End of question**



## **APPENDIX “C”**

### **QUESTIONNAIRE FOR SDC MEMBERS**

I am Philip Kungeni final year Student Registration Number: (R144902X) of Bachelors of Adult Education Degree (BAED) with Midlands State University (MSU). It is a requirement that I conduct a research in partial fulfilment of the Degree programme. I am therefore humbly seeking your assistance in respect with the attached questionnaire and interviews questions which focuses on the research topic: The challenges that are being faced in the use and teaching of computers in schools: The case of six schools in Chihota Rural Area for the period (2012 to 2017). The information you will give is useful in helping to design strategies to improve social mobility and promotion of both female and male employees. You are kindly requested to answer all questions as objectively as possible by ticking or writing in the spaces provided.

I have made the necessary arrangements with your head office who have in turn given me the green light to visit the schools under study. I assure you that the information you provide will be treated with maximum confidentiality and your identity will remain anonymous. Please make sure you do not write your name on any page of this questionnaire. I also endeavour to honestly base my findings on the information that I would have gathered and nothing less or more.

The undersigned appreciates your invaluable contribution in this study without which this study would not be possible.

Thank you for your precious time.

Yours Sincerely

**Mr Philip Kungeni**

**BAED**

**MSU**

**Answer ALL questions where possible.**

**Indicate N/A where the questions demands information that does not exist at your school.**

1. What is your gender?

**Please            Tick**

<b>M</b>	<b>F</b>

2. How old are you?

**Please            Tick**

<b>AGE</b>	<b>Tick</b>
25-35 Yrs.	
45 and above	

3. What portfolio do you have in the SDC Committee?

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4. When were you elected as a committee member?

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5. Are students at this school being taught computers?

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6. If not what are the reasons?

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7. Is your school a beneficiary of the President's computer programme in schools?

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8. If so, are the computers serving their intended purpose?

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9. If no, are there plans by the SDC to procure computers for education?

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10. What benefits do you think are associated with embracing computer education in schools in Zimbabwe?

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11. What challenges do you think are associated with computers, especially where the internet is connected?

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12.Does the school have a budget for computers? If so, how many computers have you purchased to date?

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13.Are the parents supportive of the idea to teach computers in schools? Explain your answer.

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14.Does the school have the capacity to teach computers in terms of infrastructure as well as human and material resources?

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**End of Questions**

## APPENDIX D

### INTERVIEW GUIDE FOR SDC MEMBERS

I am Philip Kungeni final year Student Registration Number: (R144902X) of Bachelors of Adult Education Degree (BAED) with Midlands State University (MSU). It is a requirement that I conduct a research in partial fulfilment of the Degree programme. I am therefore humbly seeking your assistance in respect with the attached questionnaire and interviews questions which focuses on the research topic: The challenges that are being faced in the use and teaching of computers in schools: The case of six schools in Chihota Rural Area for the period (2012 to 2017). The information you will give is useful in helping to design strategies to improve social mobility and promotion of both female and male employees. You are kindly requested to answer all questions as objectively as possible by ticking or writing in the spaces provided.

I have made the necessary arrangements with your head office who have in turn given me the green light to visit the schools under study. I assure you that the information you provide will be treated with maximum confidentiality and your identity will remain anonymous. Please make sure you do not write your name on any page of this questionnaire. I also endeavour to honestly base my findings on the information that I would have gathered and nothing less or more.

The undersigned appreciates your invaluable contribution in this study without which this study would not be possible.

1. What portfolio do you have in the SDC Committee?

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2. When were you elected as a committee member?

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3. Are students at this school being taught computers?

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4. If not what are the reasons?

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5. Is your school a beneficiary of the President's computer programme in schools?

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6. If so, are the computers serving their intended purpose?

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7. If no, are there plans by the SDC to procure computers for education?

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8. What benefits do you think are associated with embracing computer education in schools in Zimbabwe?

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9. What challenges do you think are associated with computers, especially where the internet is connected?

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10. Does the school have a budget for computers? If so, how many computers have you purchased to date?

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11. Are the parents supportive of the idea to teach computers in schools? Explain your answer.

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12. Does the school have the capacity to teach computers in terms of infrastructure and equipment?

**Thank you for your cooperation**

**APPENDIX 'E'**

**LETTERS OF CONSENT BY MINISTRY OF PRIMARY AND  
SECONDARY EDUCATION**