SECONDARY SCHOOL TEACHER’S PERCEPTIONS ON THE USE OF ICT IN TEACHING AND LEARNING OF SCIENCE: A CASE STUDY OF SIX SECONDARY SCHOOLS IN CHIKOMBA DISTRICT, MASHONALAND EAST PROVINCE.

SUBMITTED BY:

BONDE JOSEPHINE M

REG NUMBER: B129506

A DISSERTATION SUBMITTED TO BINDURA UNIVERSITY OF SCIENCE EDUCATION IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR POST GRADUATE DIPLOMA IN EDUCATION.

BINDURA UNIVERSITY OF SCIENCE EDUCATION

BINDURA, ZIMBABWE

YEAR: 2017
APPROVAL

The dissertation by Bonde Josephine Miranda is approved as a partial fulfillment of the requirements for the award of the Post Graduate Diploma in Education at Bindura University of Science Education.

Name_______________________Signature ______________________ Date

Name_______________________Signature ______________________ Date

Name_______________________Signature ______________________ Date
ABSTRACT

The global swing towards a knowledge based society has seen the role of ICT in education increasingly becoming important. According to Education Ministerial Report (2013), Zimbabwean education is among the best in the continent and this achievement ought to be strengthened by the use of ICT in education. The study focuses on the perception of secondary school teachers on the use of ICT in Chikomba District in Mashonaland East Province. The study was qualitative in nature and relied on interviews with schools administrators, questionnaires to teachers and focus groups discussions by students. The study reviewed that use of ICT for educational purposes is very low due to some barriers through the teachers’ view that the use of ICT in education has greater benefits to them and the students. Basing on this the research recommends all the stakeholders to ensure that the education sector benefits from the new technology.
Acknowledgements

It would not have been possible to complete this study without the help and support of a number of people. Firstly, I would like to thank my supervisor, Professor Denhere for his continued support and guidance. His suggestions clarified many points and guided me towards the standard and requirements for the diploma. I would like to extend my gratitude to my husband, son and daughter for their support and patience during the development of this research project, without them I would never have been able to complete it. Lastly I want to thank the Almighty God.
Dedication

I dedicate this piece of work to my 2 children Akeelah and Kutenda. Thank you for all the lost time with me while I had to complete this project.
# Table of Contents

## Chapter 1: Introduction

1.1 Introduction  
1.2 Background of the study  
1.3 Statement of the problem  
1.4 Purpose of study  
1.5 Research Questions  
1.6 Assumptions  
1.7 Significance of the study  
1.8 Delimitations  
1.9 Definition of terms  
1.10 Summary  

## Chapter 2: Review of Related Literature

2.1 Introduction  
2.2 Importance of ICT on teachers and teaching  
2.3 Importance of ICT on learners and learning  
2.4 Impact of ICT on students’ achievements  
2.5 Barriers to effective use of ICT in teaching and learning  
2.6 Possible solutions  
2.7 Summary  

## Chapter 3: Research Methodology
3.1 Introductions 19
3.2 Research Methodology 19
3.3 Population and Sampling 20
3.4 Research Instruments 21
3.5 Data Collection Procedures 22
3.6 Data Presentation and Analysis 23
3.7 Ethical Considerations 24
3.8 Summary 24

Chapter 4: Data Presentation, Interpretation and Analysis

4.1 Introduction 25
4.2 Data from Questioners 25
4.3 Data from Focus Groups 37
4.4 Data from Interviews 43
Chapter 5: Summary, Conclusions and Recommendations

5.1 Introduction 47

5.2 Summary 48

5.3 Conclusions 48

5.4 Recommendations 49

References

Appendices

Appendix: The Teacher Questionnaire

Appendix 2: Focus Group Discussion schedule

Appendix 3: Interview guide for Administrators
CHAPTER 1

INTRODUCTION

1.1 Introduction

This study sought to investigate secondary school teachers’ perception on the use of Information and Communication Technology in teaching and learning of science subjects in secondary schools. This chapter presents the background of the study and statement of the problem in which the problem is clearly stated. Assumptions of the study, limitations and delimitations as well as research questions are also illuminated.

1.2 Background of the study

Information and communication technology (ICT) when integrated into the classroom adds immense value and quality of teaching, making it a holistic learning experience for students.

In Scotland the government has embarked on a program known as Learning and Teaching Scotland that aims to provide resources for teachers and students to engage with technology in order to enhance learning especially in science subjects since it is widely recognised that learners are motivated and purposely engaged in the learning process when concepts and skills are underpinned with technology and sound pedagogy, Louw (2010).

Louw, Muller and Tredooux (2011) claimed that in United Kingdom, ICT holds much promise for use in curriculum delivery thus technology can be effective to improve teaching and learning abilities hence increase learner’s performance. Infodev (2015) reported that in most economically developed countries the use of ICT to promote computer literacy is seen as less important than using ICT as a teaching and learning tool. For this reason most
countries officially view ICT as potentially transformative to teaching and learning and has placed it at the centre of the agenda of school reforms hence they made integration of ICT a priority. Because of this UK has invested heavily in ICT for use by teachers and students in schools, Balankstat (2006). The use of ICT in STEM (Science, Technology, Engineering and Mathematics) subjects was emphasised on.

The United States of America has also used legislation to establish a culture and practice of ICTs in education. Among these are the Goals 2000 and Educate America Act which provides financial support for use of ICT to promote school reforms, USA Congress Office of Technology and Assessment (1995).

UNESCO (2013) maintains that the use of ICT in education is rapidly expanding in many countries and an opportunity to change the academic performance of learners. UNESCO ICT in Education Policy aims to promote appropriate policy models and strategies for the integration of ICT into education with special emphasis on developing policies which utilizes ICT to remove barriers to participation in education and enhance the quality of education.

In an attempt to meet the Millennium Development goals as adopted at Dakar most countries have attempted to implement reforms aimed at imbedding ICT in teaching and learning. The millennium development goals set by UN in 2000 highlighted the importance of ICT in the global development agenda, World Summit on Information Society (2003).

In Africa, governments have embarked on the integration of ICT in educational Practices. E-learning Africa report (2012) reported that most African countries have many benefits with regard to use or impact of the use of ICT in teaching and learning which include memory
retention. Lack of resources for science practical sessions also led to the adoption of ICT as simulations can be done to curb the problem.

The ICT in Education policy have been formulated and highlights key thrusts of the policies as they relate to ICT use for teaching and learning in schools for each of the countries.

Many developing countries like Zimbabwe, Tanzania and Namibia are following industrialized countries in an effort to restructure their educational practices through utilising the potential of ICT. Most governments are investing resources to equip schools with computers, to build information networks and other infrastructure needed. It is expected that ICT will improve quality of learning and allow students to exercise complex skills needed in future, E- learning Africa Report (2013).

In Zimbabwe the government highlighted the need to incorporate ICT in educational practices; the National ICT policy that was adopted in (2005) makes significant reference to the promotion of ICT in education. The ministry of education draft policy on ICT in education acknowledged that the integration of ICT has the potential to change learners’ performance in schools. The government also adopted the Nziramasanga education commission report of 1999 which recommended the promotion of the educational institutions. In an effort to bring the potentially empowering benefits of ICT to learners, the government of Zimbabwe embarked on a massive drive to turn around the education sector by donating state of the art computers to many schools around the country, Mandonga (2013).
However from my observations and involvement teachers, in Chikomba District are not incorporating ICT in their educational practice thereby resulting ineffective teaching and learning which promotes poor academic performances hence results in low pass rate especially in science subjects. From evidence gathered from the District Education Office, 2014 the pass rate in Integrated Science was 19%, in 2015 it was 17% and in 2016 the recorded pass rate was 21%.

1.3 Statement of the problem

There has been limited uptake and utilisation of ICT in schools even though the schools in Chikomba District have invested much in terms of resources and time for teacher training courses in use of ICT. Some schools for example have set computer labs for E-learning yet they are being left unused. Teachers have received laptops and projectors which are not being used during lessons but instead projectors are kept in offices and laptops used for personal use.

In some schools schools heads have complained that if they monitor the servers its evident that teachers are spending most of the time on social media than on educational sites. To address the challenge mentioned the study seeks to illuminate the views of secondary school teachers on the use of ICT in teaching and learning of science subjects.
1.4 Purpose of the study

This study sought to explore the views of secondary school teachers on the use of ICT in teaching and learning of science. The study also analysed the barriers to effective integration of ICT in secondary schools. Last but not least the study analysed the measures that enhance the use of ICT in teaching and learning in Secondary Schools.

1.5 Research questions

1.5.1 Major questions

What are the perception of teachers on the use of ICT in teaching and learning of sciences subjects to improve academic performance in secondary schools?

1.5.2 Sub questions

- What are the effects of ICT in teaching and learning of science subjects in secondary schools?
- What are the barriers to effective utilisation of ICT in secondary schools?
- How can teachers be motivated to use ICT in teaching and learning in secondary school?
- What ICT resources are available in secondary schools?

1.6 Assumptions

This study was based on the following assumptions

1.6.1 The use of ICT is beneficial for learning of students
1.6.2 ICT prepares fertile ground for individual participation of students

1.6.3 Teachers are aware of the importance of ICT in teaching and learning

1.7 Significance of the study

It is considered that the research is potentially of considerable importance for a number of reasons. The study will help to support policy makers in the Ministry of Primary and Secondary Education in Chikomba District and also will teachers in developing ICT use within schools. It will help to bring about changes in policy making and attract teachers to be trained to acquire the technical knowhow in ICT in teacher training institutions and being provided with in-service training. The study will also help to support educational administrators and policy makers in choosing the appropriate method of managing changes associated with ICT in the educational system and this study will lead to changes in the classroom dynamics and pedagogical practices by teachers. This study will lead people to appreciate the role played by ICT in education

1.8 Delimitations

The study was carried out in six selected secondary schools from three clusters in Chikomba District in Mashonaland East Province. These include three rural schools and three boarding schools.

1.9 Limitations of the study

The major limitation was that some respondents were reluctant to provide information however the researcher had to explain the importance of the research to the respondents and how it would help them. There was also time constraint as the study was also going to
be carried out during school term where the researcher was supposed to be at work attending lessons. The researcher used sports time to conduct her research since most teachers from different schools would be available.

Bureaucracy was a challenge which the researcher again faced, where she needed to get different approvals before beginning the data collection process. As some interviewees are heads and administrators in the school, the researcher faced difficulties in arranging the date and time of the interviews, there was need to resort to sports days where heads of schools would be available freely.

1.10 Definition of terms

**Information and Communication Technology (ICT)** - It is diverse set of technological tools and resources used to communicate, create, disseminate, store and manage information, Catalun (2005). For this study ICT is used as umbrella term that include any communication device or application encompassing radio, television, computer and network hardware and software.

Secondary school- is an institution where teaching and learning takes place. It provides education to pupils between forms one to six.

**Teaching**- Curzon (1985) is of the view that teaching is a system activities intended to induce learning comprising the deliberate and systematic creation and control of those conditions in which learning does occur. Teaching therefore is a process of guiding and directing learners towards intended goals.

**Learning** – Mercer (2011) define learning as the lifelong process of transformation and experience into knowledge, skills, behaviour, values and attitudes. Learning is any relatively
permanent change in behaviour that occurs as a result of experience in various spheres of life.

**School teacher** - is a person who teaches as a profession. It is a person who is involved in the constant stream of professional decisions that are made and implemented during and after interaction with students.

**Cluster** - a group of secondary schools in the same area or geographical space.

### 1.11 Summary

This chapter provide comprehensive background of the study, research questions which were used by the researcher to guide her in scrutinising this research, statement of the problem which led to the research topic, significance of the study, limitations of the study as well as definitions of key terms.
CHAPTER 2

This chapter presented the literature review. This chapter reviewed literature related to the study under the following themes: Importance of ICT on teachers and teaching, importance of ICT on learners and learning, Impact of ICT on students’ Achievement, Challenges in the use of ICT in rural schools possible solutions.

2.2 Importance of ICT on teachers and teaching

ICT can improve prior knowledge and introducing new ways of teaching. Becker (2000) stated that according to nationwide survey of teachers in UK there was revelation that ICT enable Teachers to put pedagogy into practice.

A survey of 170 schools in New Zealand found that 82% of teachers regard ICT to be effective tools in classroom teaching, Lai and Pratt (2004). These teachers believed that ICT improves efficiency in the administration and management of teaching including lesson preparation and presentation. Similar findings were also reported by teachers in their review of ICT, which was done in Europe. The findings were that ICT enable teachers to save time and increase productivity in activities like detailed lesson plans and maintaining records. Moreover they also found out that ICT fosters greater collaboration between teachers and increased sharing of information and ideas hence moving from tradition to modern approaches of teaching.

In Africa many researchers in ICT believe that ICT tools for instance computer and word processor assist in preparing lesson plan and schemes of work. Underwood (2009) postulated that ICT promotes the sequencing of classroom activities and also promotes team work. He propounded that teamwork facilitates effective communication and the
exchange of information among teachers. Underwood (2006) also provide evidence that many teachers use ICT to support pedagogy that define a new way in which knowledge is assimilated and produced.

Underwood (2006), conducted a study carried out in national, international and European schools with and he concluded that schools with sufficient ICT resources achieved better results than those that are not well equipped. He also stated that most European teachers agreed that pupils are more motivated when computers and internet are being used in class.

According to constructivist’s theory, learning without instructional media is handicapped hence in Zimbabwe ICT tools plays an important role in the teaching and learning process in that ICT can save as instructional media in schools. However, it is the intention of this research to find out if ICT is of importance to teachers in Chikomba District.

2.3 Importance of ICT on learning and learners

After more than a decade of research, research demonstrated that the use of ICT in classroom teaching can significantly increase the potential for learning especially when it is used to support collaboration information access and the expression and representation of students, thoughts and ideas, Hennessy (2010).

A number of students in the 1990’s in US confirm that ICT can improve learning, Becker(2000). Some of the findings were that student improve problem solving skills, outscore classmates and learn more rapidly in variety of subject areas and situations, when using ICT as compared to conventional methods of study. Also self-esteem is increased when the use ICT. Using technology encourage cooperative learning, turn taking, peer
tutoring and other social skills. The findings noted that ICT can help students to master the skills needed to participate and succeed in the workforce, US Department of Education (2009). Muller (2009) supported this; he stated that ICT can be used to improve collaborative learning through including role playing, group solving activities and articulated projects.

Forsyt (1996) propounded that ICT promote autonomy in learning. The use of ICT in classroom changes the role of learners, enabling them to exert more choice over how they approach study, requiring less direction from teachers. Students are able to direct their own studies to a greater extend, with teacher acting as a guide or moderator rather than as a director.

In the UK the education sector consider ICT tools very helpful in that learners do their assignments and reduce social disparities as learners work in teams in order to achieve different tasks. According to Underwood (2009) students assume responsibility when they use ICT in their work. Therefore ICT is of crucial importance to learners. Stevenson (2008) acknowledges that ICT seems to harbour intrinsic power to motivate students which is the best case scenario which pushes students to be creative and curious in their learning.

E Learning Africa report (2012) in its survey across forty one African countries bringing together views of e-learning professionals found the following with regard to benefits or impact of the use of ICT in learning: ICT motivates learners to learn, it made learning more fun, learners showed better understanding of topics under study and learners pointed out that more content was available through internet. Mandonga (2010) states that it is widely recognised that learners are more motivated and purposely engaged in the learning process when concepts and skills are underpinned with technology and sound pedagogy.
In a study conducted in Swaziland the researchers found out ICT encourages interactions and developments of collaborative culture, utilisation of active learning and introduction of feedback in proper context? In addition ICT can bring abstract concept to life by bringing into teaching and learning real world experiences through simulations, modelling capturing and analysing real environment.

In a study conducted in South Africa by Mdlomwa(2012), it has shown that the integration of ICT into curriculum of learners is to benefit them. He states that exposure to ICT allows learners to develop skills that will give them an edge in ever increasing technology saturated work environment. Secondly, the introduction of ICT in school curriculum allows learners to become creators of ICT, knowledge in their right for instance through conducting research for school projects on the internet. Furthermore learners who continue to use ICT in doing their assignments and projects begin to cultivate a culture of personal information management, independent learning and working without supervision, communication skills, team work and research skills which are highly valued in today's global workforce.

In Zimbabwe the stakeholders in education having seen the potential benefits of ICT to learners want to embrace this technology in teaching and learning. According to Maswetu (2010) as technology becomes embedded in our culture, we must provide our learners with relevant and contemporary experience that allow them to successfully engage with technology and prepare them for life after school.

2.4 Impact of ICT on students’ achievement
According to Dede (1998) the use of ICT in education has shown that it helps to improve memory retention and generally depends understanding. In this regard LOUW (2010) states that technology can effectively improve teaching and learning abilities hence increase learner’s performance. Galea (2002) propounded that technology tools can enhance quality of teaching and learning to achieve better outcomes.

Balanskat, Blamire and Kelafa (2006) conducted a study at national, international and European schools with the aim of gathering evidence regarding the advantages and benefits of ICT in school achievement. The study sort to measure the impact of ICT on students’ performance by trying to establish link between the use of ICT and Student’s results in exams. The findings have shown that ICT has a positive impact on student performance. In addition schools with better ICT resources achieve better results than those schools that are not so well equipped. Therefore there appears to be a direct correlation between ICT and student’s performance.

One of the most comprehensive investigations into the impact of ICT on attainment was conducted by Harrison (2001). The study extended over 3 years (1999-2001) and its purpose was to make an independent evaluation on the impact of ICT on pupil’s achievement. Evidence from the study showed that ICT on pupil have a positive relationship to pupil’s learning and results varied according to the amount and type of ICT in the subject curriculum higher users of ICT outperformed.
Similar studies were conducted in America. The results have shown that regular computer users perform better in key school subjects compared to those with limited experience with computers, PISA (2003).

According to Dede (1998), use of ICT in education has shown that it helps to improve memory retention and generally deepens understanding, PISA (2003). The European Nordic states are also in position to verify the benefits that the deployment of ICT has brought to pupil performance. ICT is seen positively by teachers as a valuable tool for tailoring learning with beneficial effects on both academically strong and weak students.

In Nigeria, ICT is part and parcel to the entire students and schools and academics, Ebijuwa (2005). Tenopir (2010) propounded that learners have improved their academic performance.

In Zimbabwe according to the Ministry of Primary and Secondary Education National Report (2010), ICT is one of the reforms pointed out. In this report the officials mainly focuses on the use of ICT in all subjects and considered to be the heart cause of change to be implemented since it has a positive contribution to the academic performance of learners. This view therefore complements the researcher’s aim of exploring the views of secondary school teachers on the use of ICT in Chikomba District.

### 2.5 Barriers to effective use of ICT in teaching and learning

**Technological Incompetence**

Newhouse (2000) found that many teachers lacked knowledge and skills to use ICT tools. This is supported by Balanskat (2006) who state that many teachers do not use ICT and media in teaching situations because of pedagogical reasons. Balanskat (2006) states that
lack of ICT knowledge make teachers fell anxious about using ICT in the classroom and thus is not used effectively

**Lack of time**

Rosell (1995) and Mabika (2012) stated that time factor influences the implementation process of ICT and is viewed by teachers as the major barrier in their teaching and learning with the use of ICT. Silica (2005) states that teachers have no time to plan technology lessons explore different internet sites or look at various aspects of educational software. Becta’s study (2004) found that the problem of lack of time exists for teachers in many aspects of their work, this include the time needed to locate internet advice, prepare lessons, explore and practice using technology and adequate training.

**Lack of computers and other resources**

Computers are still expensive despite spirited efforts by the government, NGOs and individuals to donate to as many schools as possible; there are still a big percentage of schools unable to purchase computers for use by the students. While a good number have benefited from donated computers they have not been adequately maintained and repaired hence most schools’ labs are full of broken down computers, Mungai (2010). The Newhouse study identified lack of availability and access to software that is subject content appropriate as a serious barrier to the integration of ICT in classroom.

This research also wanted to find out if such barriers to effective use of ICT would be experienced in Chikomba District.
2.6 Possible solutions

Various ICT solutions are available that they could prove useful in overcoming the peculiar challenges of integration ICT in Chikomba District.

Teachers need to be supported to get the most benefits of ICT in classroom. It is essential that uses have a sound understanding of how to use ICT beneficially and a cultural view of the relationship between learning and technology, Leach (2005). Providing pedagogical training for teachers rather than simply training them to use ICT is an important issue Becta (2004). It is necessary that teachers need to feel confident in their skills to assist student learning with technology to incorporate technology into their classroom. Therefore this need to be a more qualified development to increase teachers skill ward, Parr (2010).

Several studies have revealed that whether beginner or experienced, ICT-related training programs develop teachers’ competences in computer use and influence teacher’s attitudes towards computer as well as assisting teachers reorganise the task of technology and how new technology tools are significant in student learning, Hennessey (2010). Becta (2010) states that related technology training is needed to successfully integrate technology in the classroom. In a study of 400 pre-tertiary teachers, they showed that professional development and the continuing support of good practice are among the greatest determinants of successful ICT integration. He also claims that teachers’ technology skills are strong determinant of ICT integration, but they are not conditions for effective use of technology in the classroom. They argue that training programmes that concentrate on ICT pedagogical training instead of technical issues and effective technical support, help teachers apply technologies in teaching and learning.
Access to ICT infrastructure and resources in schools is a necessary condition to the integration of ICT in education, Hennessey (2010). Effective adoption and integration of ICT into teaching in schools depends mainly on the availability and accessibility of ICT resources, and then they will not use them. Therefore, access to computers, updated software and hardware are key elements to successful adoption and integration of technology. A study by Becta (2010) found out that access to technological resources is one of the effective ways to teachers’ pedagogical use of ICT in teaching.

Most rural schools in Zimbabwe have limited or no access to the internet with emergence of wireless systems, many rural schools are now able to access internet services, Mandonga (2010). Fortunately the mobile phones service providers (Econet, Telecel and Netone) are big companies which can be approached to provide services to rural schools at affordable fees.

According to Hersrlman (2003) government can provide rural schools with the first rate ICT capabilities even without electricity. According to him a complete unit consists of a computer system, a television, set powered by a battery that is capable of generating energy that can last one full school day. Also biogas was able to generate enough power to run forty seven computers and a photocopier in Kwazulu Natal (South Africa) schools for the whole day.

It is to be proved if such solutions are also applicable to Chikomba District Secondary schools.
2.7 Summary

This chapter caters for the review of related literature on importance of ICT on learners and learning and impact on students’ achievements. Possible barriers to effective ICT use in secondary schools and possible solutions were also reviewed.
CHAPTER 3

RESEARCH METHODOLOGY

3.1 Introduction

This chapter sought to focus on the research methodology. According to Malhotra and Birks (1999) in research methodology we attempt to define what the activity of research is, how to proceed, how to measure progress and what constitutes success. This chapter focuses on research design, descriptive research design, sampling procedures, research instruments, ethical considerations and data presentations and analysis.

3.2 Research design

Malhotra and Birks (1999) state that a research design is a framework or blue print for conducting a research project. It specifies the details of the procedures necessary for obtaining the information needed to structure or solve a research problem. According to Trochim (2005), research design provides the glue that holds the research project together. In this research study, the descriptive survey method was used.

Descriptive survey

Galloway, (2003) states that descriptive research refers to the type of research questions, design and data analysis that will be applied to a given topic. According to Ethridge (2004), descriptive research is a preplanned and structured in design in which the information
collected can be statistically inferred on a population. The main idea behind descriptive survey is to better define an opinion, attitude or behaviour held by a group of people on a given subject.

The descriptive survey research method was chosen because of its number of advantages. It is relatively cheap and convenient. The results which were obtained were reliable and representation of a much larger population than the one directly investigated.

**Limitations of Descriptive Survey Method**

The researcher also realized some limitations of using descriptive survey method as postulated by Robson (2009). Data was affected by characteristics of respondents that are their knowledge, experience, motivation and personality. However, the descriptive research design was still found to be the best for this study irrespective of the limitations.

**3.3 Population and sampling**

Crowl (2006) defines population as the entire group of people or elements unto whom researchers wish to generalize findings of a study including persons or elements who did not participate in the study. In this study the target population are secondary teachers and students in Chikomba District.

**Sample**

Sinch (2004) defines a sample as asset of data selected from a population, whilst Curie (2005) asserts that a sample is part of the population and it is supposed to be a representative of the whole population. This entails that a sample must be carefully chosen
and must be a representative of the population. In this study there is a sample of sixty teachers, ninety students and six administrators.

**Sampling technique**

According to Punch (2004) simple random sample is a subset of statistical population in which every member of the subset has an equal opportunity of being chosen. A simple random sample is meant to be an unbiased representation of a group. In this study simple random sampling was used to select six schools in Chikomba District. The technique was also used to select ten teachers from each school and fifteen students were also selected from each school.

**3.4 Research instruments**

Data gathering instruments form part of any research. McMillan (1996) stresses that these instruments do not only give description of what data is to be collected and how it would be collected but constitutes the basic information from which conclusions can be made. McMillan (2000) further argues that data collection instruments needs to be combined in order to get better results. Therefore in this study questionnaires, interviews and focus group discussions were used in combination to obtain best results.

**Questionnaires**

Questionnaires are a practical way of collecting data in short space of time. These are generally popular with respondents usually because of their anonymity, (Punch, 2004). There were few noted advantages of using questionnaires during this research study. It was cheap and convenient as questioners reached a number of participants in a short period of time. Respondents were willing to complete questioners because they were assured of
confidentiality. Data from questioners is very easy to tabulate and interpret. Few challenges were also encountered in the administration of the questionnaires as some respondents left some questions unanswered and there was no allowance for probing further where the answer was ambiguous. However the benefits of using the questioners outweigh these limitations.

**Interviews**

An interview is a formal meeting in which one or more people ask questions to another for the purpose of elicit certain information, Foody (1994). It was possible to observe nonverbal cues of respondents during interviews as this was impossible with questioners. The researcher was able to seek clarification on ambiguous response from respondents. Some limitations of interviews were encountered in this study. The process is time consuming as administrators wanted to attend to other issues.

**Focus Group Discussion**

Focus group as defined by Krueger (2009) is a group of individuals selected and assembled by the researcher to discuss and comment on personal experience, the topic that is the subject of the research. Six focus group discussions were conducted on their view of the use of ICT in learning and teaching process.

**3.5 Data collection procedures**
In this study sixty questioners were administered to teachers in selected schools. The questionnaire comprised of open ended questions and closed question. To distribute the questionnaire the researcher used self-administering method. First of all the researcher visited the schools and talked to the teachers about the research study and told them that they have been selected to complete the questionnaires. The researcher collected the questionnaires after two weeks.

**Interviews**

In this study 6 interviews were conducted to 6 administrators of 6 selected schools the researcher visited the school and arranged an appointment. The questions were structured in a way which saves time as administrators are always busy. The answers were written on an interview guide and separate answer sheets brought by the researcher. The interview took an average time of 15 minutes.

**Focus group Discussions**

Fifteen students were selected from each school. The discussion was conducted during lunch hour. The researcher asked questions and the students aired their views and these views were recorded by the researcher.

**3.6 Data Presentation and analysis**
According to Holborn (2000), data analysis is the systematic organisation and synthesis of research data. In this study data presentation and analysis were done using tables, graphs, and narrations.

### 3.7 Ethical Considerations

Creswell (2003) defines ethics as observations of what is good and bad. In this research study, respondents were not forced to complete questionnaires or respond to interviews. Consent was sought first before respondents participated in this research study. Respondents were told that their responses were confidential and were not required to write their names. They were also told that results of the study were not to be communicated to anyone except to those in line of supervision from the institution; respondents were also treated with respect and dignity.

### 3.8 Summary

This chapter dwelt on the research method which is descriptive survey. This was concluded by data presentation and data analysis and ethical considerations. Chapter 4 will present on Data Presentation, Interpretation and Analysis.
Chapter 4

Data Presentation. Interpretation and Analysis

4.1 Introduction

This chapter presents the data obtained from six schools in Chikomba District as the sample of this study. Data is going to be presented in the forms of tables, graphs and pie charts.

Data is also going to be analyzed and interpreted.

4.2 Data from Questionnaires

Table 4.1 Response rate for teachers’ questionnaire (n=60)

<table>
<thead>
<tr>
<th>Respondents</th>
<th>Number</th>
<th>Percentage %</th>
</tr>
</thead>
<tbody>
<tr>
<td>Teachers</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

Data was obtained through administering some questionnaires to sixty teachers in six schools. The response rate was 100%. All questionnaires were collected.
Most of the teachers who participated in this study, (45%) of them were aged between 20 and 29 years. This shows that the teachers in schools are energetic and if trained are able to use ICT in their teaching practices.

### Table 4.2 Age of teachers by gender (n=60)

<table>
<thead>
<tr>
<th>Gender</th>
<th>20-29 yrs</th>
<th>30-39 yrs</th>
<th>40-49 yrs</th>
<th>50+ yrs</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>11</td>
<td>11.33%</td>
<td>9</td>
<td>15%</td>
</tr>
<tr>
<td>Male</td>
<td>10</td>
<td>16.66%</td>
<td>9</td>
<td>15%</td>
</tr>
<tr>
<td>total</td>
<td>21</td>
<td>45%</td>
<td>18</td>
<td>30%</td>
</tr>
</tbody>
</table>

### Table 4.3 Academic Qualifications of Teachers (n=60)

<table>
<thead>
<tr>
<th>Gender</th>
<th>O Level</th>
<th>A Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>Female</td>
<td>15</td>
<td>25</td>
</tr>
<tr>
<td>Male</td>
<td>17</td>
<td>28.3%</td>
</tr>
<tr>
<td>total</td>
<td>32</td>
<td>53.3%</td>
</tr>
</tbody>
</table>

### Table 4.4 Professional qualifications (Highest level)
### Qualification Frequency Percentage (%)

<table>
<thead>
<tr>
<th>Qualification</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Diploma in Education</td>
<td>38</td>
<td>63.3</td>
</tr>
<tr>
<td>Degree in education</td>
<td>6</td>
<td>10</td>
</tr>
<tr>
<td>Non teaching Degree</td>
<td>11</td>
<td>18.3</td>
</tr>
<tr>
<td>Masters</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Other ( Grad C/PDGE)</td>
<td>3</td>
<td>5</td>
</tr>
<tr>
<td><strong>Total</strong></td>
<td><strong>60</strong></td>
<td><strong>100</strong></td>
</tr>
</tbody>
</table>

In Table 4.4, 63% of the teachers have Diplomas in Education and 10% of the teachers have degrees in education. There are some teachers who have got non teaching degrees; it would be effective if these teacher training institutions train them on how to use ICT tools in teaching.

### Table 4.5 Teaching experience of teachers
In table 4.5, 38.3% of the teachers have 5-10 years of teaching experience, 8.3% of the teachers have more than 15 years of experience. The table shows that most teachers have teaching experience.

**Table 4.6 Importance of ICT knowledge in teaching (n=60)**

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Important</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>Unimportant</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

100% of the teachers acknowledge the importance of ICT in teaching. They highlighted that ICT tools manage their work more efficiently and they can search for varied information.
using ICT tools. Teachers are aware of the importance of ICT in teaching and learning process.

**Table 4.7 ICT resources Available in schools (n=60)**

<table>
<thead>
<tr>
<th>Resource</th>
<th>School A</th>
<th>School B</th>
<th>School C</th>
<th>School D</th>
<th>School E</th>
<th>School F</th>
</tr>
</thead>
<tbody>
<tr>
<td>Computers</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Mobile phones</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>√</td>
</tr>
<tr>
<td>Television</td>
<td>√</td>
<td>√</td>
<td>√</td>
<td>x</td>
<td>x</td>
<td>X</td>
</tr>
<tr>
<td>DVD/CD player</td>
<td>√</td>
<td>√</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>x</td>
</tr>
<tr>
<td>Internet</td>
<td>√</td>
<td>√</td>
<td>x</td>
<td>x</td>
<td>x</td>
<td>X</td>
</tr>
</tbody>
</table>

In Table 4.7, 67% of schools have computers and mobile phones whilst only one 50% of schools have access to televisions whilst 33% of the schools have access to DVD/CD players and internet. Even though these resources are available they are limited numbers. This suggests that in rural schools ICT resources are very limited.

**Table 4.8 Proportion of time in ICT usage**
<table>
<thead>
<tr>
<th>Proportion (%)</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;20</td>
<td>27</td>
<td>45</td>
</tr>
<tr>
<td>21-40</td>
<td>12</td>
<td>20</td>
</tr>
<tr>
<td>41-60</td>
<td>1</td>
<td>1.6</td>
</tr>
<tr>
<td>61+</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Never uses</td>
<td>20</td>
<td>33.3</td>
</tr>
</tbody>
</table>

In Table 4.8, 45% of the teachers use less than 20% of their lesson time in ICT use and 33.3% of the teachers never use it. Becker (2004) propounded that teachers do not spend most of their time in using ICT resources in the classroom. This may be due to various barriers to effective use of ICT resources.

**Table 4.9 View on the amount of time given to students in Using ICT (n=60)**

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Adequate</td>
<td>5</td>
<td>8.3</td>
</tr>
<tr>
<td>Inadequate</td>
<td>55</td>
<td>91.7</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

This table shows that 91.7% of the teachers give inadequate time to research using ICT tools their students whilst only 8.3% of the teachers give adequate time to research using ICT tools. This is due to certain barriers which include shortages of computers and other ICT
facilities like internet. In most schools students have to share computers and the ratio of students to computers is not favorable. Another barrier is inconsistent availability of electricity that also hinders students to research using ICT tools.

Table 4.10 Effectiveness of ICT in teaching and learning (n=60)

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Effective</td>
<td>58</td>
<td>96.7</td>
</tr>
<tr>
<td>Ineffective</td>
<td>2</td>
<td>3.3</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

In Table 4.10, 96.7 % of the teachers concede that ICT use in educational practices is effective. They highlighted that lessons become live an interesting when they use ICT tools and that students understand better hence can easily remember.

Extent to which ICT has changed teaching methods (n=60)

96.7% of the teachers concede that ICT use has improved their teaching methods. They highlighted that they changed from the lecture method which are more teacher centered to approaches where they used to lecture or provide information to students. Using ICT tools students can research and make their own notes. The teachers now act as moderators rather than director, Forsyt (1996)

4.1 Attitude of teachers towards ICT use (n=60)
95% of the teachers have positive attitude towards the use of ICT in education practices. This suggests that despite of all the barriers which affect the use of ICT in schools, most teachers have a positive attitude towards the use of these resources.

4.2 Confidence in ICT use (n=60)
60 % of the teachers are not confident to use ICT resources in classroom. Balanskat (2006) states that lack of ICT knowledge makes teachers feel anxious about using ICT in the classroom and thus not confident to use it.

Table 4.11 Use of ICT tools to update subject knowledge or undertake professional development.

<table>
<thead>
<tr>
<th>Response</th>
<th>frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>not confident</td>
<td></td>
<td></td>
</tr>
<tr>
<td>confident</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
66.7% of the teachers use ICT and its applications to update their subject knowledge or to undertake personal and professional development. Hennessey propounded that ICT enhances teachers knowledge and capabilities namely by extending subject knowledge and developing the range of existing pedagogic practices.

**Fig 4.3 Attendance of ICT training courses in pedagogical use**

None of the teachers in the district has attended any ICT training course in pedagogical use of ICT. This is supported by Becta (2004) who states that most teachers are trained in simply using ICT tools rather than in pedagogical use.

**Table 4.13 Vision of ICT use in teaching and learning**
This table shows that 100% of the teachers share the same vision with their colleagues in integrating ICT in educational practices in their schools. This implies that teachers recognized the importance of ICT in teaching and learning.

<table>
<thead>
<tr>
<th>Response</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Yes</td>
<td>60</td>
<td>100</td>
</tr>
<tr>
<td>No</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>Total</td>
<td>60</td>
<td>100</td>
</tr>
</tbody>
</table>

Table 4.14 Barriers to effective use of ICT

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Number of schools</th>
<th>Percentage (100%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited time</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Teacher incompetence</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>
According to the table all schools were affected by these barriers, limited time, teacher incompetence, shortages of hardware, electricity problems. Donelly (2000) propounded that in Netherlands limited time, lack of knowhow and teacher incompetence are the main barriers to effective use of ICT in education. He suggested that education becomes effective where there is decent hardware and software and teacher expertise. Key (2005) also noted that teacher incompetence acts as a barrier. Mandonga (2010) propounded that in Zimbabwe electricity challenges and shortages of ICT resources are major barriers to effective use of ICT.

Table 4.15 Measures that should be taken (n=60)

<table>
<thead>
<tr>
<th>Measure</th>
<th>Number of schools</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train teachers on how to use ICT resources</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>
Most teachers want to be trained. Responsible authorities should buy more ICT resources, provide alternative to electricity, train students and give teachers more time to familiarize with ICT resources. Donelly (2000) propose that teachers should be provided with pedagogical training rather than simply training them on how to use ICT. They should also train the students on how to use ICT resources. Mubika (2010) suggests that authorities should provide alternatives to electricity like solar systems.

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Buy more ICT resources</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Provide other alternative of</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>electricity</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Give more time to teachers</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>to familiarize with ICT</td>
<td></td>
<td></td>
</tr>
<tr>
<td>resources</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Comments, concerns and suggestions to policy makers in the Ministry of Primary and Secondary Education (n=60)

Teachers recommended the government to provide more computers to schools as they are expensive. They also suggested that training should be provided to teachers as in-service training. They also recommended that the government should provide solar systems so that they will be able to conduct lessons.
4.3 Data collected from Students’ Focus Group Discussions

Data was collected from 6 focus group discussions which comprised of 15 students per group to make a total of 90 students.

Table 4.16 Use of ICT in the classroom

<table>
<thead>
<tr>
<th>Use</th>
<th>Number of schools</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Presentations</td>
<td>3</td>
<td>50</td>
</tr>
<tr>
<td>Researches</td>
<td>4</td>
<td>66.6</td>
</tr>
<tr>
<td>Visual aids</td>
<td>1</td>
<td>16</td>
</tr>
</tbody>
</table>

Students are aware of ICT tools but they do not use much of the knowledge in classrooms. This is due to the lack of resources in schools.

Fig 4.4 Amount of time given by teachers to use ICT resources
98% of the students regard the time given to them to use ICT resources as inadequate. This suggests that very few schools give learners time to be familiar with the use of ICT in schools. Odera (2013) propounded that learners are not given enough time to their work using ICT resources. He suggested that students need adequate time to learn to adapt, integrate and reflect on what they do.

Table 4.16 Average marks on students in subjects with ICT use

<table>
<thead>
<tr>
<th>Average mark</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Below 50%</td>
<td>0</td>
<td>0</td>
</tr>
<tr>
<td>51-60%</td>
<td>1</td>
<td>14.2</td>
</tr>
<tr>
<td>60-65%</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>66-70%</td>
<td>2</td>
<td>28.6</td>
</tr>
<tr>
<td>71-80%</td>
<td>1</td>
<td>14.2</td>
</tr>
<tr>
<td>81+%</td>
<td>1</td>
<td>14.2</td>
</tr>
</tbody>
</table>
When using ICT tools (66.6%) students score marks above average ranging from 60-70%.

Louw (2010) suggest that technology can improve teaching and learning and abilities hence increase students’ performance. In Lesotho Tenopir (2010) propounded that learners have improved their academic performance through the use of ICT. From this table we can also conclude that students’ performance has improved and use of ICT has a positive impact to students’ learning experiences.

Performance rates in subjects where ICT tools are used

About (80%) of the students responded that they were doing well in all the subjects where ICT tools are used and were greatly improving than in the subjects where teachers were not using ICT tools. This is evidence that ICT tools and learning have strong relationship hence has a positive impact on students’ attainment.

Table 4.18 Benefits to students of using ICT in teaching and learning

<table>
<thead>
<tr>
<th>Benefit</th>
<th>Number of schools</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>We acquire more recent and varied information</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>
We Understand better when using ICT

ICT motivates us

100% students find using ICT in teaching and learning to have many benefits which include acquiring more recent and varied content, they understand better when using ICT tools and they are motivated to learn. Mandoga (2010) states that ICT makes learning fun and students understood concept better when using technology.

Table 4.19 Challenges of using ICT tools in schools

<table>
<thead>
<tr>
<th>Barrier</th>
<th>Number of schools</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Limited time</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Students do not know how to use ICT</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Electricity problems</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Shortage of computers and software and other ICT resources</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>
Students noted that there are several barriers to effective use of ICT resources in their schools. These include limited time to use ICT resources, students do not know how to use ICT tools, electricity problems and shortage of computers and software and other ICT resources.

<table>
<thead>
<tr>
<th>Measure</th>
<th>Number of schools</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Train students on how to use ICT resources</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Buy more ICT resources</td>
<td>6</td>
<td>00</td>
</tr>
<tr>
<td>Provide other alternative to electricity</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Give more time to students to familiarize with ICT tools</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>
Students suggested the following measures to be taken for them to be more familiar with use of ICT; train them on how to use ICT resources, buy more ICT resources, provide other alternatives of electricity and give more time to students to familiarize with ICT resources.

### 4.5 Data collected from Administrators’ interviews

#### Table 4.21 Objectives to be achieved through the use of ICT in teaching and learning

<table>
<thead>
<tr>
<th>Objectives</th>
<th>Frequency</th>
<th>Percentage (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Improve academic performance</td>
<td>6</td>
<td>100</td>
</tr>
<tr>
<td>Prepare them for life after school</td>
<td>6</td>
<td>100</td>
</tr>
</tbody>
</table>

Administrators believe ICT can improve academic performance of students and can prepare them for life after school. This is supported by the study held by Blalnskart (2006) in which HE concluded that ICT has a positive impact on student’s performance.
Vision of integrating ICT in teaching and learning

In all schools the administrators conceded that teachers view ICT as important to them and the students in that it helps them in a variety of ways in the process of teaching and learning. For this reason many teachers want ICT to be integrated into educational practices. Hence in all schools teachers and administrators share the same vision.

Resources in the school

Each and every administrator was worried about shortages of ICT resources in schools. They reported that they are few resources in the schools for instance the ratio of computers to students is very high. Also teachers themselves have to share resources like computers they end up not using the tools.

Barriers to effective use of ICT (n=60)

Barriers noted by administrators are that; students do not know how to use ICT tools, teacher’s incompetence, electricity problems, shortages of computers and software and other ICT resources. These barriers are the same barriers reported by teachers and students of all schools.

Comments, concerns and suggestions to policy makers in the Ministry of Primary and Secondary Education.

Most administrators suggested that their ministry should provide more computers and software to schools. To relieve the electricity problems, they suggested to be provided with other alternatives to electricity. All the administrators recommended the ministry to provide training in ICT use in pedagogical practices since most teachers can use ICT tools but are not
effective in pedagogical use. They also suggested the teachers should try to teach students how to use ICT resources even with those fewer available resources.

4.6 Data analysis

From the data collected from questionnaires, focus groups and interviews it shows that both teachers and students admit that ICT is of great importance to them and they view ICT as their way of alleviating from low pass rates. Teachers use ICT tools to manage their work and for communicating with other teachers, Underwood (2009). ICT enhances teacher’s professional knowledge and capabilities, Hennessey (2010). Learners aired that ICT motivates them to learn, this is supported by Mandonga (2010) who states that learners are motivated to learn and purposely engage in the learning process when using ICT tools. Both teachers and students believe that ICT brings abstract concepts to life bringing it into the classroom real world experience hence e lessons become interesting and students understand better, ICT tools for example internet also provide them with huge amounts of information.

However there are various challenges faced by both teachers and students in effectively using ICT in their schools. The greatest challenge noted by almost everyone is shortage of computers and other ICT resources; the computer to student ratio is extremely high in rural schools in Chikomba District. Though students can research information in books they need internet access to get better and current information and most schools are failing to provide internet services to students and teachers. Inconsistent availability of electricity is another major barrier to effective use of ICT in education practices there would be no electricity throughout the day and those few resources cannot be used. Teacher and student
incompetence was also highlighted as a challenge as students and teachers cannot confidently use ICT tools.

Teachers and students contemplate that if several procedures are engaged ICT can effectively be engaged in teaching and learning. The measures comprise of training teachers and students in ICT use. Teachers need to be trained on how to use ICT tools effectively in their teaching practices whilst students need to be taught basic computer skills. Teachers should continuously be trained to upgrade themselves and meet technological changes. Responsible authorities should also provide solar systems so and generators so that ICT tools can be used throughout the school day.

4.6 Summary

This chapter presented on presentation, interpretation and analysis of data. Chapter 5 presents summary, conclusions and recommendations.
Chapter 5

Summary, conclusions and recommendations

5.1 Introduction

This chapter summarized the study and generate conclusions and recommendations based on the analysis and interpretation of the data in the previous chapter.

5.2 Summary

The Study aimed at investigating the views of teachers on the use of ICT in the teaching and learning process in secondary schools. The researcher noted that education stakeholders, parents, teachers and students were not happy with O’level science results year after year. Literature suggests a close relationship between ICT and education practices. That is why the study sought to explore the views of teachers on the use of ICT in teaching and learning process.

In addition the purpose of the study was to instill a positive view among teachers on the use of ICT which will then assist in teaching and learning and also improve academic performance of learners.

The population of the study consisted of secondary school teachers and students in Chikomba District in Mashonaland East Province.
A descriptive survey design was used since it involves a wide distribution of questionnaires, interviews and focus group discussions to get data from the target population from the population six schools were selected. The samples were selected through simple random sampling.

Data was collected through questionnaires, interview questions and focus group discussions. Data from teachers were collected through focus group discussions and data from administrators were collected through interviews.

Findings from the gathered data showed that teachers and students have positive attitude on the use of ICT in teaching and learning and ICT use has greater impact to them though there are barriers to effective use of ICT in schools.

5.3 Conclusions

On the basis of the finding articulated in the preceding chapter the study came up with the following major conclusions.

Barriers to effective use of ICT

The main barriers to the full implementation of the use of ICT in teaching and learning process in Chikomba District include teachers’ and students’ incompetence, limited time, lack of hardware and software and also power cuts. Most teachers need to be trained on how to use ICT tools for teaching and learning purposes. Lack of computing skills among students is another obstacle to effective use of ICT in schools. Teachers have limited time to plan technology lessons that is to look for appropriate material on the internet. Lack of computer hardware was the major barrier that
was highlighted by respondents. Schools find it expensive to buy computers for use by their pupils and only two schools have access to internet.

**Measures that can be taken to enhance effective use of ICT in schools.**

Teachers need motivation; this can be achieved by offering training. Most teachers know how to use technology for their own use. However they need to be trained to use technology in teaching practices. School Development Associations should raise funds to buy more computers and train teachers. It should also provide alternatives to electricity like solar panels and generators so that even without electricity pupils and teachers can use ICT resources.

**Performance of learners**

The performance of learners improves when they use ICT in their learning as they will be able to research and understand better. ICT motivates learners thus making them curious to acquire knowledge in various subjects.

**5.4 Recommendations**

**To the School:**

- Introduce some in-service training for teachers who are not able to use ICT resources
- Provide funds to purchase more ICT resources

**To the Ministry of Primary and Secondary Education**

- Governments should ensure that ICT policies are translated into a reality. An ICT implementation commission should be created. This commission should be
funded and given power to provide ICT facilities in the schools and monitor their use.

- Since computer education has been made compulsory for all secondary schools, the government should provide resources.

**To learners**

- Learners are encouraged to use ICT for their academic research and not only for entertainment.
Questionnaire for Secondary School Teachers

I am a Bindura University Student pursuing a Post Graduate Diploma In Education (PGDE). For the partial fulfillment of this Diploma I am conducting a research and you are kindly asked to respond to these questions. This information will be kept in utmost confidence and will not be used for other purposes beyond this study.

SECTION A

1. Gender: Male □ Female □

2. Age group. 20-29 yrs □ 30-39 yrs □ 40-49 yrs □ 50+ yrs □

3. Academic Qualifications. O Level □ A Level □ BA/BSC □
   Other (specify) ........................................

4. Professional Qualifications: Diploma In Education □ Degree in Education □
   Masters in Education □ Other (specify) ........................................

5. Teaching experience in secondary school: 1-5 yrs □ 5-10 yrs □ 11-15 yrs □ 25+ yrs □

SECTION B

1. How important is it to have knowledge of ICT in teaching of your subject?
   ..............................................................................................................................................................
   ..............................................................................................................................................................
   ........................................

2. Tick ICT resources available at your school. Computers □ mobile phones □
   television □ DVD/VCD player □ internet □ other (specify) ........................................

3. What proportion on time do you use ICT in your lesson? 0-20% □ 21-40% □ 41-60% □ 61+ yrs □

4. How do you rate the amount of time given to your student to research using ICT resources?
   Inadequate □ Adequate □

5. What can you say about the general performance of O level students over the past two years?
   Improving □ not improving □ getting worse □
6. How effective is the use of ICT in teaching of your subject(s)?

……………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………

7. To what extent has the use of ICT IN Teaching changed your teaching methods/

……………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………

8. What is your general attitude towards the use of ICT in teaching and learning process

……………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………

9. Are you confident to use ICT tools in front of a class? YES NO

10. Do you use a computer or its application to update your subject knowledge or undertake personal or professional development? Give a reason

……………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………

11. Have you attended any ICT training courses or professional development courses in ICT?

……………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………

12. Do you share with your colleagues the same vision about integrating ICT in teaching and learning at your school?

……………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………

13. What are the barriers to effective use of ICT in teaching and learning at your school?

……………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………

14. Suggest measures that should be taken to motivate teachers to use ICT in teaching and learning?

……………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………

15. Do you have comments, concerns or suggestions for the policy makers in the Ministry of Primary and Secondary Education?

……………………………………………………………………………………………………………………………………………………………………

……………………………………………………………………………………………………………………………………………………………………
Interview Questions for Students Focus Group Discussions

I am a Bindura University Student pursuing a Post Graduate Diploma In Education (PGDE). For the partial fulfillment of this Diploma I am conducting a research and you are kindly asked to respond to these questions. This information will be kept in utmost confidence and will not be used for other purposes beyond this study.

1. Name ICT resources at your school.
2. How do you use ICT in the classroom?
3. How do you rate the amount of time given by teachers to use ICT resources in teaching and learning?
4. What is your average mark in the subject you use ICT?
5. To what extent has the use of ICT impacted your learning experiences?
6. What are the benefits of using ICT tools in your learning?
7. What are the challenges of using ICT tools in your school?
8. What do you think should be done to improve the use of ICT in your school?
**Interview Questions for School Administrators.**

I am a Bindura University Student pursuing a Post Graduate Diploma In Education (PGDE). For the partial fulfillment of this Diploma I am conducting a research and you are kindly asked to respond to these questions. This information will be kept in utmost confidence and will not be used for other purposes beyond this study.

1. What are the objectives that you want to achieve through the integration of ICT in teaching and learning?
2. Do you share the same vision with other teachers and staff about integrating ICT in teaching and learning process?
3. Does the school have enough resources to integrate ICT in teaching and learning? What are the resources?
4. What are the challenges of using ICT in Teaching and Learning process?
5. Do you have any comments, concerns or suggestions for the policy makers’ in the Ministry of Primary and Secondary Education or other teachers about the use of ICT in classroom?
References


Becker, H. “Internet use by teachers” Irvine.CA:Centre for Research on Information Technology and Organizations, University of California


Hennessy, S (2007) Pedagogical strategies for using interactive whiteboards to foster learner participation in school science”, The Interactive whiteboard Phenomenon


Yelland, N “Teaching and learning with information and communication technology for numeracy in the early childhood and primary year of schooling”. *Australia: Department of Education, Training and Youth Affairs*


