MIDLANDS   STATE   UNIVERSITY

FACULTY OF EDUCATION

FACTORS AFFECTING THE ADOPTION AND INTEGRATION OF ICT AS A PEDAGOGICAL TOOL IN RURAL PRIMARY SCHOOLS

A DISSERTATION SUBMITTED

BY

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REG NO. R15170V

IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE BACHELOR OF EDUCATION DEGREE IN EDUCATION MANAGEMENT AND LEADERSHIP SUBMITTED TO THE MIDLANDS STATE UNIVERSITY FACULTY OF EDUCATION

GWERU, ZIMBABWE

NOVEMBER, 2017

DECLARATION

I CHINAKA GIFT declare that this dissertation is my own original work. It has to be submitted for degree purposes to the university. I proclaim that all material in the dissertation is derived from published of works of others who have been duly acknowledged by the researcher.

Student signature: .... Date: ....

Supervisor signature: .... Date: ....

DEDICATION

This document is a special dedication to my mother, Mavis.

ACKNOWLEGEMENTS

Contents

LIST OF TABLES

LIST OF FIGURES

ABSTRACT

Information Communication Technology (ICT) is an important innovation that many education systems across the globe are embracing. ICTs are powerful tools that can be used to enhance the learning experiences of children in schools. However, there are several factors that are militating against effective utilisation of ICT in Zimbabwean primary schools. The use of computers in teaching and learning of subjects in the primary school curriculum has been greatly influenced by many factors. This study examines factors that are militating against successful adoption and integration of ICT in rural primary schools in Bradely Cluster, Shamva District in Mash-Central Province in Zimbabwe. Findings from this study will bring tremendous benefits to all stakeholders of the education system in Zimbabwe.Data in this research paper were collected using a five-item Likert-type questionnaire administered to the participants who were teachers in the cluster's primary schools. The cluster was made up of four rural schools. Data on the level of utilisation of ICTs in teaching and learning processes as well as factors affecting the adoption and integration of ICTs were analysed using tables containing summaries of compiled data and pie charts. This study revealed that lack of infrastructure, unavailability of electricity, teacher's lack of ICT knowledge and skills and lack of funding have emerged as key factors that are affecting the successful adoption and integration of ICTs in rural primary schools. However, issues of gender, age and teacher qualification emerged as other factors that are affecting the adoption and integration of ICTs in the cluster.

Abbreviations

AVS: Audio Visual Aids

CIET: Commission of Inquiry into Education and Training

EMT: Educational Media and Technology

ICT: Information Communication Technology

MOPSE: Ministry of Primary and Secondary Education

NGOs: Non-Governmental Organisations

SPSS: Statistical Package for Social Sciences

TEL: Technological Enhanced Learning

TPACK: Technological Pedagogical Content Knowledge

TPS: Teacher Professional Standards

ZIMASSET: Zimbabwe Agenda for Sustainable Socio-Economic Transformation

CHAPTER 1: THE PROBLEM AND ITS CONTEXT

1.0 Introduction

The world over, ICT has been viewed by many education systems across many countries as a powerful tool to improve teaching and learning. In spite of efforts made by many governments to utilise ICT, the adoption and integration of ICT in teaching and learning is facing numerous challenges and as such schools should use technology to the best of their interests. In Zimbabwean schools, there are quite a number of factors that are militating against the adoption and integration of ICT in teaching and learning (The Presidential Commission of Inquiry into Education and Training (CIET), 1999). Primary schools in particular are facing challenges such as lack of infrastructure, high cost of equipment maintenance and lack of ICT skills from among teachers. This chapter discusses the background of the study, statement of the problem, purpose of the study. It also covers objectives, statement of problem, research questions, assumptions, significance of the study, delimitations, and limitations, definition of key terms to be used in the research study. Finally a summary will mark the end of this chapter.

1.1 Background to the study

Attempts to improve education with modern machines such as the phonograph, lantern slides and television date from the early 20th century (Castro, 2004; Earle, 2002; Reiser, 2001). For the most part such inventions come and go, yet what happens in the classroom looks pretty much the same (Callister, 1992). Information and communication technologies (ICT) were also introduced in schools to transform teaching and learning processes and to improve strategies for better educational attainment (Kozma, 2003; Sunkel, 2006). Global investment in ICT to improve teaching and learning in schools has been initiated by many governments. However, there are many factors that are hampering the effective adoption and integration of ICT in teaching and learning.

To keep abreast with the rest of the world, the Zimbabwean education system has realised the need to incorporate ICT as a pedagogical tool to improve teaching and learning at various levels in the school. The National Science and Technology policy (2002) and the Nziramasanga Commission Report (CIET, 1999) are among major initiatives that the

Zimbabwe government has come up with to enhance the educational utilisation of ICT in schools. Information Communication Technology is one of the pillars for national socio-economic development as enshrined in the Zimbabwe Agenda for Sustainable Socio-Economic Transformation (ZIM-ASSET) blueprint (2013-2018). The third cluster (Public Utilities and Infrastructural Development) in the ZIM-ASSET blueprint in particular, focuses on ensuring that all sectors of the economy and society continue to work on harnessing the power of ICTs for the development of Zimbabwe (Zimbabwe National Policy for Information and Technology, 2015).

In spite of many challenges being encountered in harnessing technology in teaching and learning, the education system of Zimbabwe is working with various stakeholders in ensuring that this phenomenon is embraced in schools. A clear testimony to this is the Presidential Computerisation Programme. Through this programme, many schools across the country were the recipients of the computers donated by the President of the Republic of Zimbabwe. The inception of a Government Ministry dedicated towards improving ICTs in 2013 during the National Unity Government era in Zimbabwe is a clear testimony that Zimbabwe is committed to enhancing the adoption and integration of technology. The Zimbabwe National ICT policy was born as a result of the formation of the Ministry of Information Communication and Technology. It is through this policy that many government sectors have embraced it as a way of realising the value attached to it in promoting efficiency in service delivery. However, so many factors are limiting the successful adoption and integration of ICTs in teaching and learning.

A number of strategies are rolling out in the education sector in an attempt to improve the utilisation of ICTs in teaching and learning. Among these are the use of computers, slides and other electronic devices in lesson delivery, record keeping and assessment of learners. Although there are some discrepancies in the level of technology utilisation in schools, most rural schools seem to be embracing the technology on a tortoise pace. It is therefore important to conclude that improvements in educational technology enable education and technology to coexist, (Schaefer, 2010).

The inception of the Teacher Professional Standards (TPS) this year (2017) was another government initiative to assist in improving the operations of the teaching profession. The

second critical domain of teaching into which TPS are grouped is the professional skills and abilities. Under this domain, there is a call for teachers to make use of various technological tools and teaching strategies to develop knowledge and skills in learners in a variety of ways. One of the purposes of the TPS to teachers is to provide opportunities to enhance the quality of curriculum delivery through improved learning and teaching (Training Manual on Teacher Professional Standards, 2015 p. 3). Thus, teachers need to move along with changes happening in order to promote efficiency during instruction.

In line with the call by the Ministry of Primary and Secondary Education through various initiatives that include the CIET and TPS to have a teacher with ICT skills, it becomes imperative for a study into the levels of ICT integration in rural primary schools which in most cases experience funding challenges. Against the above background, the researcher is going to carry out a study of factors affecting the adoption and integration of ICT as a pedagogical tool in Bradley Cluster, Shamva District, Zimbabwe with the aim to unearth the factors affecting the adoption and integration of ICT as pedagogical tool in rural primary schools.

1.2 Statement of the Problem

In Zimbabwe, there are existing initiatives to support the use of ICT in education (Government of Zimbabwe, 2010); however, there is low to none adoption and integration of ICT as a pedagogical tool particularly in rural primary schools. The current school curriculum focuses more on teaching ICT as a learning area as well as using ICT as a pedagogical tool. In addition, technology uses in primary education suffer from lack of funding and there is no proper documentation. While most of education systems around the world are shifting from teacher-student-textbook model to the blended learning model empowered by digital educational resources, it is a big challenge for a developing country to succeed without axis rigor planning. Rural primary schools in particular are facing numerous challenges in adopting and integrating ICTs as a pedagogical tool. There are indeed many factors that militate against the adoption and integration of technology in the primary school. Hence, the researcher seeks to explore factors affecting adoption and integration of ICT as a pedagogical tool in rural primary schools.

1.2 Aim of the study

To investigate factors affecting adoption and integration of ICT as a pedagogical tool in rural primary schools

1.3 Objectives

- To determine factors that affect adoption and integration of ICT as a pedagogical tool in rural primary schools
- To establish the level of ICT usage in learning and teaching in rural primary schools

1.4 Research Questions

Main research question

- To what extent is the adoption and integration of ICT as a pedagogical tool in rural primary schools?

Sub-questions

- What is the level of ICT usage in learning and teaching in rural primary schools?
- What factors are militating against the adoption and integration of ICT in teaching and learning?
- How can ICT resources be made available in primary schools?
- How can ICT resources be effectively utilised in primary school teaching and learning activities?

1.5 Assumptions

1. It is assumed that the sample taken will be a true representative of the population under study in the cluster.

2. It is assumed that use of ICT as a pedagogical tool in primary schools can be affected by various factors.

3. It is assumed that the response rate on the questionnaires will be so significant that the researcher would obtain complete, accurate and relevant data and thus draw valuable conclusions.

4. It is also assumed that the selected individuals will respond within a reasonable time frame to enable the researcher to conclude the research timely.

5. It is assumed that all participants in the study are qualified teachers

1.6 Significance of the study

To the Researcher

The researcher will broaden his understanding on the factors affecting use of ICT as a pedagogical tool in rural primary schools. The acquired knowledge will be used by the researcher to deal with barriers that hinder the adoption and integration of ICT in teaching and learning. It will also enable the researcher to gain research skills, and experience to conduct research in the future and to combine academic theories with practical procedures. Furthermore, this research study raises the professional status of the researcher by attaining a higher qualification.

To the organisation (**Ministry of Primary and Secondary Education**)

The study is also expected to be useful to educational policy makers when formulating policies with regards to the use of ICT in learning and teaching. In particular, the Ministry of Primary and Secondary Education will come up with a dedicated policy on the utilisation of ICT in schools so that the government is mandated to set aside funds specifically to improve the adoption an integration of ICT. Furthermore, the findings will help government (policy makers), curriculum planners and players (donors) in the educational ICT program to quickly identify schools that have made headway in use of ICTs and those that still need assistance. The research may also help in creating questions for further research on the impact of use of ICTs in the performance of pupils.

To teachers

The study is important to teachers because it equips them with knowledge and understanding of factors that affect adoption and integration of ICT as a pedagogical tool in their schools. The research raises awareness on the use of ICTs in teaching and learning enables teachers to be facilitators rather than being instructors during lessons. Thus, the awareness generated from findings of this research many influence school administrators in carrying out their supervisory roles. Again, when teachers become facilitators it gives learners a chance to discover their knowledge of a subject matter.

To primary school heads

Primary school heads are going to find this study very useful. The school head as an instructional leader and resource provider in the school should take interest in teaching and learning of children by making ICT resources available in teaching and learning. School heads will get feedback on how they can create and develop children's learning through adoption and integration of ICT in teaching and learning. In carrying out supervision programmes, school heads will find research outcomes useful in promoting quality of teaching by implementing some of the recommendations from this study.

To schools in the cluster under study

The research will come up with the state of adoption and use of ICTs in the mentioned cluster. The research findings will not only assist schools to adopt any good practices to be found in the cluster, but also encourage them to find ways to overcome hurdles that hinder them from fully embracing the phenomenon. The schools can hold cluster workshops by considering recommendations from this study on how to overcome challenges faced in the use of ICTs in learning and teaching in the primary schools.

1.7 Delimitations of the Study

The study is going to look at factors affecting the adaption and integration of ICT as a pedagogical tool in rural primary schools targeting Bradely district cluster with four schools namely Nyamaruro, Nyarukunda, Chihuri and Chiimbira Primary schools in Shamva District in Mashonaland Central Province covering the period 2016 to 2017. The research study will be will strictly focus on the adoption and integration of ICT as a pedagogical tool only and not for other purposes. Participants of the study are teachers in the aforementioned schools and not any other schools not in this cluster in order to minimise time and expenses.

1.8 Limitations of the study

There is limited time for carrying out the research because the researcher is a fulltime employed primary school teacher. Limited financial resources are also a limitation that caused the researcher to use a small sample. Inaccurate data may be supplied to the researcher and also the results from the research cannot be generalised to other schools in Zimbabwe. Another limitation of this study is that the sources of information may provide information that misrepresents the status quo due to fear of being labelled illiterate to ICTs. This is

possible because ICTs are still a new phenomenon in the school curriculum and as such not all teachers can effectively use it in teaching and learning.

1.9 Definition of Key Terms

For this study, the following terms are defined as follows:

Attitude: A positive or negative feeling that an individual or individuals hold about an issue which makes him/ her accepts or rejects it.

Pedagogical tool: Resources and equipment mainly computers and their peripherals used in teaching and learning of children.

ICT: Technological tools and resources used to enhance teaching and learning in schools.

ICT adoption: the use of computers and their peripherals in teaching and learning

ICT integration: the linking of knowledge and experiences in the curriculum with technological tools such as computers

Primary School: An institution where formal education from Early Childhood Development up to Grade Seven is offered to learners.

Pedagogy: The art of teaching children so that they acquire knowledge, attitudes and skills.

Qualified teacher: a teacher who has a teaching qualification such as a certificate, diploma or degree in education from the a recognised institution

Training: A process that an individual or groups of individuals goes through to acquire knowledge and skills in ICT.

1.10 Summary

This chapter dwelt on the research problem and its context by focusing on the background to the study, statement of the problem, research objectives, and research questions, assumption of the research, significance of the study and definition of key terms. Delimitations and limitations of the study were also discussed. In brief, what this chapter has done is to introduce the research problem in context so that it paves a way for the researcher to review literature that is relevant to the study in the next chapter.

CHAPTER 2: REVIEW OF RELATED LITERATURE

2.0 Introduction

In Chapter 1 the researcher dealt with the research problem and its context. This chapter focuses on related literature to the problem being studied with a view to bring to light important developments in the utilisation of ICTs in both developed and developing countries. Saunders et al. (2009, p. 98) state that "a critical review of literature is necessary to help you to develop a thorough understanding of, and insight into, previous research that relates to your research question(s) and objectives". This chapter examines the theoretical framework, empirical evidence, gap analysis being guided by the research objectives. The main focus of the chapter is a review of literature of studies conducted in Zimbabwe and other countries related to the study on factors affecting the adoption and integration of ICT as a pedagogical tool. Further, the chapter shall reveal knowledge, attitudes, beliefs and practices on the extent to which ICTs are being utilised in teaching and learning. The chapter ends with a summary highlighting key issues raised in the chapter.

2.1 Theoretical Framework

This research shall be founded on the TPACK model.

2.2 The TPACK Framework

The TPACK framework is a generative framework that guides course design and evaluation for pre-service and in-service teachers' intention to integrate ICT into classrooms (Chai, Koh, Tsai, and Tan, 2011). The framework arose in the context of teacher education (Oliver, 2011), with the complex interplay of three primary forms of knowledge – Technological Knowledge (TK), Pedagogical Knowledge (PK), and Content Knowledge (CK) − that goes beyond seeing these three knowledge bases in isolation (Koehler and Mishra, 2009). The reviewed studies (Chai, Koh, and Tsai, 2011; Koh, Chai, and Tsai, 2010) reported TPACK as a multiplicative framework that continue to guide course design and evaluation for teachers' preparation to integrate ICT into classrooms. A study by (Chai, Koh, and Tsai, 2011) reported that TK, PK and CK have positive influences on TPACK while TK and PK have positive influences on TPK leading to TPK positively influencing TPACK.
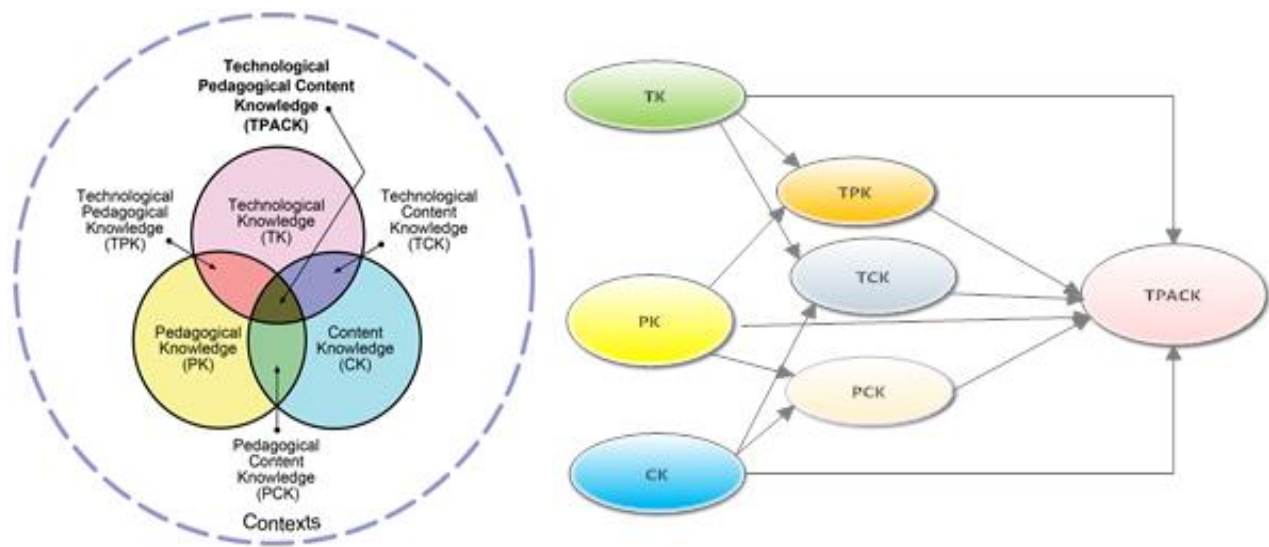
Figure 1 Figure 1: TPACK components and the extract of structural model of interrelationships among TPACK constructs

Adopted from Chai, Koh, Tsai, et al. (2011) and Koehler and Mishra (2009)

As shown on the above diagram, the model is made up of three components which are interrelated. In other words the three complement each other as shown by the intersection of the sets of knowledge. The Pedagogical Content Knowledge (PCK) defines teacher's ability to pedagogically adapt content to students of diverse abilities rather than just delivering subject content knowledge (Abbitt, 2011). Content Knowledge (CK) refers to the body of information that teachers teach to students in a given subject area such as facts, concepts, theories, and principles (Ball, Thames, and Phelps, 2008; Kleickmann et al., 2013). It is what the teacher states under each topic when scheming and planning. A Content Knowledge (CK) strategic thinking incorporates knowing when, where, and how to use domain-specific knowledge and strategies for guiding students' learning with appropriate digital, information and communication technologies (Ronau, Rakes, and Niess, 2012). The TPACK constructs TK, PK, CK, TPK, TCK and PCK are the basic inputs used to explore pre- and in-service teachers' technology use and can be used to adjust training to improve areas that face limitations. As shown in the above diagram, the three components are complementary in nature.

The TPACK model focuses on technology integration in classroom. Three major characteristics differentiate ICT frameworks:

9

1. Promoting technology use based on learning enhancement capabilities,

2. Technology use technical knowhow, for instance general knowledge of how to use hardware and software and,

3. Infrastructure and institutional capacity building for instance availability of computers, software and Internet access devices (Van Braak, and Valcke, 2007). The TPACK framework looks at the Technology, Pedagogy and Content, and argues that teachers need knowledge of all the three components (Abell, 2008; Moroder, 2013). The TPACK presents a graphical framework for teachers to comprehend the effective integration of technology in classroom practices (Koh, Chai, and Tay, 2014).

In line with the problem under study, the TPACK model is quite relevant in understanding the value of technology in teaching and learning the sense that it acknowledges the importance of technology in teaching and learning. The model also emphasises the complementary roles of technology, pedagogy and content to effecting teaching. Furthermore, classroom practitioners can find the model valuable in teaching any subject in the Zimbabwe primary school curriculum.

2.3 ICTs in the school

Attempts to improve education with modern machines such as the phonograph, lantern slides and television date from the early 20th century (Castro, 2004; Earle, 2002; Reiser, 2001). For the most part such inventions come and go, yet what happens in the classroom looks pretty much the same (Callister, 1992). Information and communication technologies (ICT) were also introduced in schools to transform teaching and learning processes and to improve strategies for better educational attainment (Kozma, 2003; Sunkel, 2006). Global investment in ICT to improve teaching and learning in schools have been initiated by many governments. For example in United Kingdom, the government spending on educational ICT in 2008–09 in the UK was £2.5bn (Nut, 2010), in United States, the expenditure on K-12 schools and higher education institutions was $6 billion and $4.7 billion respectively in 2009 (Nut, 2010) and in New Zealand, the government spends over $ 410 million every year on schools ICT infrastructure (Johnson, 2009). Despite all these investments on ICT infrastructure, equipments and professional development to improve education in many countries, Gulbahar (2007) claimed that huge educational investment have produced little evidence of ICT adoption and use in teaching and learning especially in Turkey

The knowledge and competences of teachers' ICT pedagogical application are key attributes for the future of secondary education success (Pilkington, 2008). The goal for use of any new technology in classrooms should always be to support enhancement of effective education as the highest priority (Brás, Miranda, and Marôco, 2014; Loveless & Ellis, 2003, p. 43). A shift in teacher roles from an ICT user to a facilitator retains the need for teachers to serve as leaders in technology enhanced classroom (lesson planning, preparation and follow-up) (Cubukcuoglu, 2013). Integrating ICT into the teaching and learning process should be seen as beyond the technology use only; it is what new technologies could do to promote learners understanding (Merrill, and Bishop, 2014). Using new tools, starts from finding a best fit, followed by experimentation and then practices (Somekh, 2008).

Information and communication technology is a fundamental tool that is widely integrated in the teaching and learning process at all levels (Pilkington, 2008).The ability of teachers to practice pedagogical ICTs is highly influenced by the knowledge, competences, and skills they received during college years (Thomas et al., 2013). In Tanzania existing policies support the use of ICT in education (United Republic of Tanzania, 2007); there is a low intake of the pedagogical ICTs among tutors in teacher training colleges (Andersson, 2014). Teachers' decision to use technology in classroom is mainly influenced by access to resources, quality of software and hardware, ease of use, incentives to change, commitment to professional learning and background in formal computer training (Malhotra,2013). By studying ICT integration in schools, it was determined that the way in which this takes place depends on the educational context. As part of this context, the following factors were also identified: pedagogical approaches and beliefs (Trucano, 2005), teacher confidence, attitudes and skills relating to ICT; school ICT infrastructure, supervision and technical support, involvement and leadership of school principals and time spent by teachers on meetings, training, exercises and lesson planning (Hayes, 2007; Pelgrum, 2001).

Thus, after 30 years of research, the main lesson to have been learned is that integrating ICT in education is not a technical matter (Earle, 2002). ICT should be the tool with which we deliver content and implement educational practices in better ways, based on curriculum and learning principles (Lai, 2008). Integration is determined not by the quantity or type of ICT used, but by how and why it is used (Trucano, 2005). Hereafter, when ICT is used to support

teaching and learning activities, we refer to it as technology-enhanced instructional design or Technology-Enhanced Learning (TEL) (Dillenbourg, 2008). There is need for all stakeholders in the education sector to work towards coming up with a policy that will promote the utilisation of ICT in teaching and learning in primary schools.

ICT utilisation and gender

Many research studies have been conducted in both developed and developing countries on the relationship between ICT and gender. From the studies it has emerged that females and males use technology at different levels. Gender differences and ICT usage have been reported in many studies in many parts if the world. Studies concerning teachers' gender and ICT use have cited female teachers' low levels of computer use due to their limited technology access, skill, and interest (Volman & van Eck, 2001). Research studies revealed that male teachers used more ICT in their teaching and learning processes than their female counterparts (Kay, 2006; Wozney et al., 2006). In the same vein, Markauskaite (2006), investigated gender differences in self reported ICT experience and ICT literacy among first year graduate trainee teachers. The study revealed significant differences that exist between males and females in technical ICT capabilities.

While many studies reveal gender as a major predictor of adoption and integration of ICT, some researchers argue that gender variable was not a predictor of ICT adoption. From a research that was done by Kay (2006), there was generally no difference regarding computer attitude and ability after the implementation of the technology.

ICT utilisation and teacher qualification

Teacher qualification plays a pivotal role in technology adoption and integration. Teachers need training or in-service training in order to keep abreast with what is happening in the education system. In Zimbabwe, the inception of the Teacher Professional Standards (TPS) is an indicator that technology is now highly valued in the teaching profession. In Zimbabwe all teacher education programmes computer skills are now compulsory.

2.4 Factors that are affecting use of ICT as a pedagogical tool in schools

While information and communication technology (ICT) is not a panacea for all educational problems, today's technologies are essential tools for teaching and learning (Moroder, 2013). To use these tools effectively and efficiently, teachers need visions of the technologies' potential, opportunities to apply them, training and just-in-time support, and time to experiment. Only then can teachers be informed and confident in their use of new technologies (Bowes, 2003). ICT integration into teaching and learning is very complex and one can easily encounter a number of difficulties and these difficulties are popularly known as "barriers" (Schoepp, 2005). Stockdill and Moreshouse (1992) identified the variables that need to be assessed regarding successful adoption and integration of ICT as follows: user characteristics, technological considerations, content characteristics and organizational capacity. Balanskat et al. (2007) found that barriers for the successful implementation of ICT are found at teacher-level, school-level, and system-level.

According to Sherry and Gibson (2002), barriers to implementation of ICT can be individual, technological, organizational, and/or institutional. Other barriers to integration of ICT into education programmes include the following: lack of in-service training (Beggs, 2000;; Schoep, 2004), lack of appropriate software/materials (Brush et al. 2003; Bullock, 2004; Mumtaz, 2000; Williams et al, 1998), lack of basic knowledge/skills for ICTs (Brush et al. 2003; Williams et al. 1998), lack of hardware (Beggs, 2000; Brush et al. 2003; Bullock, 2004; Mehlinger & Powers, 2002; Mumtaz, 2000; Schoep, 2004; SchoolNetAfrica, 2004; Williams et al, 1998), lack of technical support (Brush et al. 2003; Bullock, 2004; Schoep, 2004), lack of appropriate course content and instructional programs (Mehlinger & Power, 2002; Schoep, 2004), lack of time (Beggs, 2000; Brush et al. 2003; Mumtaz, 2000; Schoep, 2004), lack of appropriate administrative support (Schoep, 2004; SchoolNetAfrica, 2004).

Becta (2004) proposes that there are two levels of barriers affecting teachers' adoption and integration of ICT in teaching, namely, individual (teacher-level barriers) and institutional (school-level barriers). The teacher-level barriers include lack of time, lack of confidence, and resistance to change and the school-level barriers include lack of effective training to solve the technical problem and lack of access to the resources. Snoeyink and Ertmer (2001) also propose two types of barriers that affect implementation of ICT in schools. The first order barrier includes lack of equipment, unreliability of the equipment, lack of technical

support and other resource-related issues and the second order barrier includes school level factors such as organizational culture, and teacher-level factors. Pelgrum (2001) names two kinds of obstacles to ICT adoption, namely, material and non-material. The material conditions include insufficient computers or software, and the non-material conditions include lack of teachers ICT knowledge and skills, difficulty of integrating ICT based instruction and insufficient time for teachers (Ibid).

In most countries of Sub-Saharan Africa, inadequate technological infrastructure, such as lack of hardware and software, and internet, limit individual and community access to ICT and also pose a barrier to its integration with the curriculum in schools (Menda, 2006; Janczewski, 1992). In addition to the commonly listed issues of infrastructure, the African region faces "many external systemic factors such as electricity, transport networks, import duties" (Jensen, 2005), technical faults and network configuration problems (Minishi-Majanja, 2007).The available literature confirms the well-known fact that the East African countries face a shortage of electrical energy supply. In Tanzania, the national electricity grid is limited to commercially viable areas missing out most of the schools in the rural areas. This, together with frequent power breakdowns and power cuts, has increased the cost of owning ICT infrastructure (Farrel, 2007) and made it almost impossible for schools in the rural areas to access and use ICT in education.

2.4.1 Affordability of technology and Insufficient funds

Available technology needs to be affordable by schools if it is to be adopted (Beggs, 2000). At the national level, affordability could be limited by the high cost of putting infrastructure in place, and is linked with the issue of poverty (Ibid). At the individual or organisational level, expensive hardware and software as well as high costs of communication and services restrict access to ICT (Beggs, 2000). Most schools in Africa do not have the means to purchase expensive computers and hardware, and provide training for their staff (Bullock, 2004).

Effective and efficient use of technology depends on availability of hardware, software and having access to resources by teachers and students and administrative staff (Schoep, 2004). Most of the computers in the schools are as a result of donations or projects from private companies or foreign donors (Mumtaz, 2000). When the project is still funded by the donor,

the maintenance of the computers as well as funding for the teachers is included. Immediately the project comes to an end, then the government has to take over and that is the beginning of the problems (Ibid). The schools realising that there is no funding coming from government, and they want to maintain the computers and the subject be taught in the school then the parents have to pay for the computer classes which is the maintenance of the computers and the teacher's salary (Mumtaz, 2000). In most developing countries it is very hard when it comes to implementing technology into education systems because it involves substantial funding by the government (Williams et al, 1998).

Computers are still very expensive and despite spirited efforts by the government agencies, NGOs, corporate organizations and individuals to donate computers to as many schools as possible, there still remain a big percentage of the schools unable to purchase computers for use by their pupils (Mehlinger and Power, 2002). Using up-to-date hardware and software resources is a key feature in the diffusion of technology but a rare experience in educational institutions (Ibid). The computers are also not enough for the schools, some classes are very large and therefore, it becomes a problem when teaching the students when you do not have enough computers (Bullock, 2004).

2.4.2 Economic factors

Chege (2003) cites lack of acceptance of ICT as an urgent national need as a reason for slow penetration of ICTs in the Africa. Technology is still considered a luxury by many within the region and extreme poverty necessitates countries to choose between feeding the hungry and sheltering the homeless over investing in enhancing technological infrastructure and thereby improving access (Ibid). Schools themselves are under-funded and have little resource to spend on technology. Funding from stakeholders is one of the challenges which many schools face in trying to adopt and integrate technology in teaching. The economic status of individuals in the community is one cause of poor funding. Failure by the parents and guardians of learners in the school to pay school levies can cause failure to acquire new technologies and even servicing the existing ones.

2.4.3 Political factors

Absence of policies to regulate the growth and use of ICT in the country creates a barrier. Minishi-Majanja (2007) mentioned that computers and related items are often treated as

luxury items and heavy government taxes are imposed which increases the cost of such equipments. Many governments are now having strict measures on any organisation or individual who want to donate any educational material in schools. As a security measure, these organisations must seek authority and permission from the Ministry indicating their agenda and targeted group. Deregulation of polices related to satellite communication and other telecommunication links, and regulating ISPs, government and cross-border data flows is needed. Mutula (2004) has argued for government subsidy on technology to educational institutions. The availability of subsidies on the importation of ICT related materials will be a great incentive for schools that want to utilise in technology. Minishi-Majanja (2004) identifies financial sustainability as one of the major constraints for ICT use in schools.

2.4.4 Lack of knowledge, skills and time

Teacher's lack of knowledge and skills is one of the main hindrances in the use of computers in primary education (Reeves, 2008). A study of 42 schools surveyed showed that 66% of the teachers that teach ICT in Swaziland have not been taught how to teach the ICT (Ibid). The teachers were hired to teach the subjects in their areas of expertise and are expected teach ICT as well. The utilisation of ICT is distorted by teachers who have inadequate knowledge and skills to use various technologies in teaching. The demand for ICT learning has been tremendous and the number of teachers who are trained to teach ICT cannot meet the demand (Pilkington, 2008). There are more students willing to be taught computing skills than there are teaches to transfer the skills (Ibid). As a result teachers lack expertise on how to use ICT in lesson delivery.

Teachers have been found to be the major predictors of the use of new technologies in instructional settings (Penuel, 2006).The teachers teach more than one subject and then they have to teach ICT which means they have a heavy load (Ibid). These teachers do not have time to design, develop and incorporate technology into teaching and learning. Teachers' workloads are not conducive and as result most of the time they there a no adequate time to make use of various technologies in teaching. The teacher needs time to collaborate with other teachers as well as learn how to use hardware and software (Penuel, 2006).

The abnormal huge classes as a result of huge expansion in education in Zimbabwe has resulted in a situation whereby primary school teachers teaching classes of more than sixty

learners. In some areas especially in resettlement areas these classes can be composite classes which make it difficult to use ICT resources that cater for the needs of every learner.

2.4.5 Maintenance

There have been several initiatives from the Ministry, the private sector and international partners to introduce computers in schools in the country (Robertson, 2002). Government initiatives have been limited by budgetary constraints (Ibid). Schools that had computers donated by the private sector or bought by government have had challenges in the maintenance and upgrading of the computing equipment (Roblyer, 2005). In the case of a project, at the inception of the project the computer laboratories have all the resources needed as well as networking the computers and Internet connectivity facilities (Ibid). When the project phases out, the maintenance of the computer has to be borne by the students. While a good number of schools have benefited from donated used computers, they have not been adequately equipped with the same on maintenance and repair, hence its very common to see a schools computer lab full of broken down computers, some repairable and some not (Roblyer, 2005).

2.5 Empirical Evidence

Pelgrum (2001) found that the lack of knowledge and skills, insufficient number of computers, lack of infrastructure and difficulty in integrating ICT based instruction in the classroom are the factors that negatively affect the implementation of ICT by teachers in education. A study by Martins et al. (2004) revealed that observability and trialability are the significant factors that affect the implementation of ICT. Studies conducted by Winnans and Brown (1992), Dupagne and Krendl (1992) and Hadley and Sheingold (1993) found that barriers to implementation of ICT are: lack of teaching experience with ICT; lack of on-site support for teachers using ICT; lack of help supervising children using computers; lack of ICT specialist teachers to teach students computer skills; lack of computer availability; lack of time required for successful integration of ICT into the curriculum; and lack of financial support. A report from Ghana indicated that limitations imposed by the inadequate number of the computers in institutions, poor trained educators, and the lack of internet connectivity are the major challenges to implementation of ICT in teaching and learning (Mereku et al. 2009). A research result from Gomes (2005) shows that the science teachers are usually resistant to adopt new strategies so new strategies become obstacles to integration of ICT in science

teaching. Özden (2007) and Toprakci (2006) found that in Turkey lack of in-service training programs for science teachers is the main problem preventing implementation of ICT in schools. Toprakci (2006) found that the limited number of computers, oldness or slowness of ICT systems and scarcity of educational software in schools are the main barriers that affect to implement of ICT in science education. Beggs (2000) found that one of the top three barriers to adoption of ICT is the lack of training for teachers. A study conducted in Saudi Arabia by Al-Alwani (2005) found that lack of time is the main barrier affecting teachers' implementation of ICT. Similarly, a study conducted in Canada by Sicilia (2005) showed that teachers take more time to prepare ICT based lessons compared to traditional methods.

Cox et al. (1999) study revealed that a lack of ICT resources in schools and insufficient time to review software prevents teachers from using ICT. Bisht (2013) found the following reasons for lack of implementation of ICT in schools: lack of access to technology, lack of ICT training and practice in teaching, lack of connection between personal uses of ICT students learning with the help of technology, lack of connection between personal uses of ICT to teaching students to learn with technology attitude towards computers, lack of self-confidence, lack of technical and instructional support, and finally the lack of mentor teachers. Research results from Afshari et al. (2009), Beggs (2000), Newhouse (1999), and Ihmeideh (2009) suggest that time is the biggest factor that negatively affects implementation of ICT in education. A study conducted in Europe by Empirica (2006) found that lack of access, lack of computers, lack of adequate materials and lack of skills are the biggest barriers to use ICT in teaching by teachers. Korte and Hüsing (2007) found that in European schools infrastructure barriers such as broadband internet inhibits implementation of ICT by teachers.

A study conducted by Kessy et al. (2006) found that corruption is one of the main factors that affect implementation of ICT in education. Mamun and Tapan (2009) state that huge budgets are passed to buy ICT peripherals to improve teaching and learning but because of corruption only minor improvements are found in the technical and vocational education sector. Teachers' lack of knowledge and skills is one of the main barriers to use of ICT in the education sector (Mamun and Tapan, 2009; Pelgrum, 2001; Ihmeideh, 2009; Williams, 1995). Furthermore, they also state that lack of knowledge of how to use ICT and lack of skills regarding ICT tools negatively affects the implementation of ICT in teaching and learning in Bangladesh. Furthermore, several factors found by researchers that directly and

indirectly affect the implementation of ICT in education in Bangladesh include poor administrative support (Keengwe et al. 2008), the poor quality of training for teachers (Copley and Ziviani, 2004; Mamun and Tapan, 2009; Afshari et al. 2009) and lack of highly qualified ICT coordinators who can assist teachers to integrate ICT into the classroom, laboratory, and school culture (Afshari et al, 2009; Lim, 2002; Tearle, 2003). Thus, after 30 years of research, the main lesson to have been learned is that integrating ICT in education is not a technical matter (Earle, 2002). ICT should be the tool with which we deliver content and implement educational practices in better ways, based on curriculum and learning principles (Lai, 2008). Integration is determined not by the quantity or type of ICT used, but by how and why it is used (Trucano, 2005). Hereafter, when ICT is used to support teaching and learning activities, we refer to it as technology-enhanced instructional design or Technology-Enhanced Learning (TEL) (Dillenbourg, 2008). There is need for all stakeholders in the education sector to work towards coming up with a policy that will promote the utilisation of ICT in teaching and learning in primary schools.

2.6 Research gap

A lot of research work was carried out in developed nations exploring the factors affecting adoption and integration of ICT as a pedagogical tool in schools and there is little information on the same about developing nations like Zimbabwe and in particular information about rural schools.

2.7 Summary

This chapter has covered literature review, introduction of the topic, theoretical framework and empirical evidence to the study of factors affecting adoption and integration of ICT as a pedagogical tool in schools. The chapter also made a review of different studies conducted in Zimbabwe and in many countries across the world with a view to show similarities and differences in attitudes, knowledge and practices towards ICT adoption and integration in schools.

CHAPTER THREE: RESEARCH METHODOLOGY

3.0 Introduction

Research Methodology is the description of all activities and procedures undertaken during the course of the research (Creswell, 2009). The chapter looked at the activities and procedures used in researching during the course of the research. Having reviewed the relevant literature, the chapter focused on the research plan, population samples, research tools and the procedure in which gathered data would be presented and analysed. The rationale behind the data collection methods and instruments used in this study shall also be discussed.

3.1 Research paradigm

Tuli, (2010) said that roots of positivism is in the belief that knowledge is based on observable facts positivist paradigm asserts that reality is stable and events can be observed empirically, quantifiable, and can be explained with logical analysis and described objectively. As positivism paradigm is most appropriate for quantitative sort of research so this research will consider positivism approach. Research concepts concerning ontology argues that knowledge exist and it should be studied using objective methods and discovered using quantitative methods (Bassey, 2005). Considering the ontological approach, this study is to examine factors affecting adoption and integration of ICT as a pedagogical tool in rural primary schools in the teaching and learning of primary school subjects. Epistemological research design concerns with the framework to get knowledge closer to reality and is reliable by empirically observing and manipulating the reality often using experimental methods (Denzin and Lincoln, 2000). Considering the epistemology approach this study will be based on empirical findings. The nature of this research will be descriptive as a model is developed by reviewing the literature.

3.2 Research design

Research design is a detailed blue print used to cause a research study towards its desired objectives (Orodho, 2003). Research design ensures that the data collected meets the informational needs of the decision maker. The research design enables the researcher to gather empirical data of variables under needed by the researcher. The researcher sought to

achieve the research objectives by using primary data. Primary data is defined as data, which was collected directly from targeted respondents (Creswell, 2009). Research design will be concerned with turning research questions into a testing question and deals with at least four questions that is; what question to study, what data are relevant, what data to collect and how to analyse the results. After determining the research design, the researcher established the research method.

3.2.1 Descriptive Research

Descriptive research design is one that will allow the researcher to collect data that is descriptive in nature and tells us more on what is going (Kothari, 2004). This study was conducted using the descriptive survey approach. As a research design, the descriptive survey is used to obtain information concerning the current status of a phenomenon, that is, ICT usage and factors that influencing its adoption in teaching and learning. The method was chosen because it is more precise and accurate since it involves description of events in a carefully planned way (Flyvbierg, 2006). Furthermore, descriptive survey design allows observation of subjects in a completely natural and unchanged environment and yields rich data that leads to important recommendations.

3.3 Target Population

Kumar (2003) defined a population as the set of all objects that possess some common set of characteristics with respect to some research problem. According to Kumar (2003) population comprises all elements or units under investigation for a specific study. In this research the targeted population was teachers from Bradley Cluster in Shamva District.

3.4 Stratification of the study area

The sample size was drawn by sampling from each school as a stratum on proportional bases in order to cover the diversity of adoption and integration of ICT in those schools. The sample representatives are shown on table 1.

Table 1Table 3.1 Sample schools under study

School	Population of Teachers	20% of the Teachers
Nyamaruro Primary School	30	6
Chihuri Primary School	30	6
Nyarukunda	35	7
Chiimbira	25	5
Total sample representative	120	24

Kothari (2005) states that sampling frame is a physical representation of the target population which comprises of all units that are potential members of a sample. Twenty percent (20%) of the all the teachers (120), that is 24 was used as the sample size. A sample size of 20% of the target population is considered large enough (Kerlinger, 2006). It was impossible to cover all involve all teachers in the cluster due to many reasons. The sample size is influenced by many factors such as the objectives of the study, available resources such as time, money, personnel, among others.

3.5 Research instruments

Data collection involves the acquiring of useful data relating to the research topic (Creswell, 2009). The environment in which the data is to be collected affects the technique to be used. For this research study, the researcher used questionnaires.

3.5.1 Questionnaires

The researcher came out with various definitions of the term questionnaire. Some authors for example, Kervin (1999) reserve it exclusively for surveys where the person answering the question actually records their own answers. Others for example, Bell (1999) uses it as a more general term to include interviews that are administered either face to face or by telephone. Questionnaires can be self-administered where answers are recorded by respondent or interviewer administered where answers are recorded by interviewer. Self-administered questionnaires can be on-line, postal or mail and, delivery and collection.

Questionnaires will make it possible for the researcher to quantify various aspects of research that are being studied. The researcher used the questionnaire based on the following advantages according to Saunders (2009); the respondents can put thought and verification into the process as they are not under pressure to respond immediately, if the questions have been prepared and designed correctly, the questionnaire can provide accurate and straight forward responses; hence relevant information for the project can be obtained, it is the cheapest method of gathering data relative to other data gathering methods such as interviews, a questionnaire allows for better comparability of responses because of the uniformity in the questions that all respondents are asked. Basing on the aforementioned justifications of using questionnaires, the researcher thinks they are the best instruments for this study.

3.5.2 Interview guide and Interviews

According to Nordquist (2010), an interview is a conversation in which one person (the interviewer) elicits information from another person (the subject or interviewee). The following are advantages as cited by Nordquist (2010); Respondents usually respond when confronted in person, Personal interviewing is not rigid but flexible and the Interviewer has control and can also probe some more issues to get more detail. Interviews also give an opportunity for the researcher to compare and contrast information from questionnaires and those from the interviews.

3.6 Reliability and validity

The validity of a questionnaire relies first and foremost on reliability. Validity refers to whether the questionnaire or survey measures what it intends to measure (Gliem and Gliem, 2013). It can also be defined as a degree to which a research study measures what it intends to measure. To ensure validity, accuracy and validity of results, the researcher used Kendal coefficient for examining validity of the questionnaire and approved models in drawing sample size. The questions used were simple, short and not ambiguous so that they can solicit valid answers from the respondents.

Reliability basically has to do with consistency of the results. It pertains to a measure whereby similar results are generated overtime and situations (Raulin and Graziano, 2012). Moreover, it is also a degree to which measures are free from errors by giving up consistent

results. In this study reliability of the questionnaire was examined through Cronbachs' Alpha value generated by SPSS. The use of questionnaires was used because generally is strong on reliability.

3.7 Data Analysis and Presentation

3.7.1 Data Analysis

The researcher checked for completeness of questionnaires and performs editing, coding and general cleaning of the data. Data collected was analyzed using Statistical Package for Social Sciences (SPSS Version 21.0) program and Microsoft Excel for generation of reports. Since the study was descriptive in nature, descriptive analysis was made on the data. For descriptive analysis, the mean, mode, variance and standard deviation were used to determine the respondents' agreement or otherwise with statements under each variable.

3.8 Ethical Considerations

According to Polit and Hungler (2006), ethics are systems of moral values that are concerned with the degree to which research procedures adhere to professional, legal and social obligations. Participants were approached with an introductory letter from Midlands State University's Department of Educational Foundations, Management and Curriculum Studies. Information in the letter was about the researcher and the department's in case the participants had queries or wanted to verify the identity of the researcher. In this research, we shall seek authority and permission from school authorities and from the respondents. The participants' voluntary freedom to participate or withdraw from the exercise was clarified. All study participants were treated with respect, fairness and dignity. Anonymity, confidentiality and privacy of study participants was explained to the participants that their personal data is not going to be used to link results to them, and names were not to appear anywhere on the questionnaire so that completed questionnaires cannot be linked to the participants. The questionnaire is designed to exclude personal identification data.

3.9 Summary

This chapter basically focused on the research methodology by discussing the research design, target population, sampling techniques and sample size, research instruments, data collection procedure and data analysis to be used in this research study. As each component of the methodology was looked at, some justifications for their usage in this research were also done.

CHAPTER 4: DATA PRESENTATION, ANALYSIS AND INTERPRETATION

4.0 Introduction

In this chapter data findings were analysed, presented and interpreted as they relate to the theory that underlies the study. Data was analysed using descriptive statistics. These findings were linked to those of literature review and to the research objectives. The chapter also constantly referred to Chapter Three which gave an outline on how data was to be gathered. For the analysis, tables, bar charts, pie charts and simple percentage were used to present data. Furthermore, in order to reduce the bulkiness of data, relevant data were analysed to address the problems and objectives of this research study. Data were analysed to come up with conclusion on the factors affecting the adoption and integration of ICT as a pedagogical tool in rural primary schools. Data were presented on the material and information obtained by the researcher throughout the research. A sample of 23 teachers which is a 20% of the total population was chosen. Analysis of data presented was made using SPSS and descriptive statistics analysis.

Table 4.1 Questionnaires Response Rate from Four Primary Schools

School	Target	Actual	Response Rate
Nyamaruro Primary	6	6	100%
Chihuri Primary	6	5	100%
Nyarukunda Primary	7	6	85.7%
Chiimbira Primary	5	5	100%
Total	**24**	**23**	**96%**

The table above depicts a 96% response rate on the questionnaires and this is quite a good response that was considered as appropriate for analysis for the research. This indicated that the participants contributed immensely to the gathering of information by the researcher. The

high response rate was attributed to the fact that the participants were given enough time to complete the questionnaires. The questionnaires were collected by hand and hence the researcher had a close contact and follow-up with the participants.

4.1 Descriptive Statistics

This section focuses on the descriptive statistics to illustrate the characteristics of the sample studied. Frequencies for the questions in the questionnaire were presented on tables which reflected the mean, and the standard deviation. Information on gender of participants was presented on a pie chart whilst age and academic qualification were present on bar graphs.

4.2 Profile of Participants

The participants' characteristics were in the first section of the questionnaire. Descriptive statistics of the participants are presented in sections below.

Gender of participants
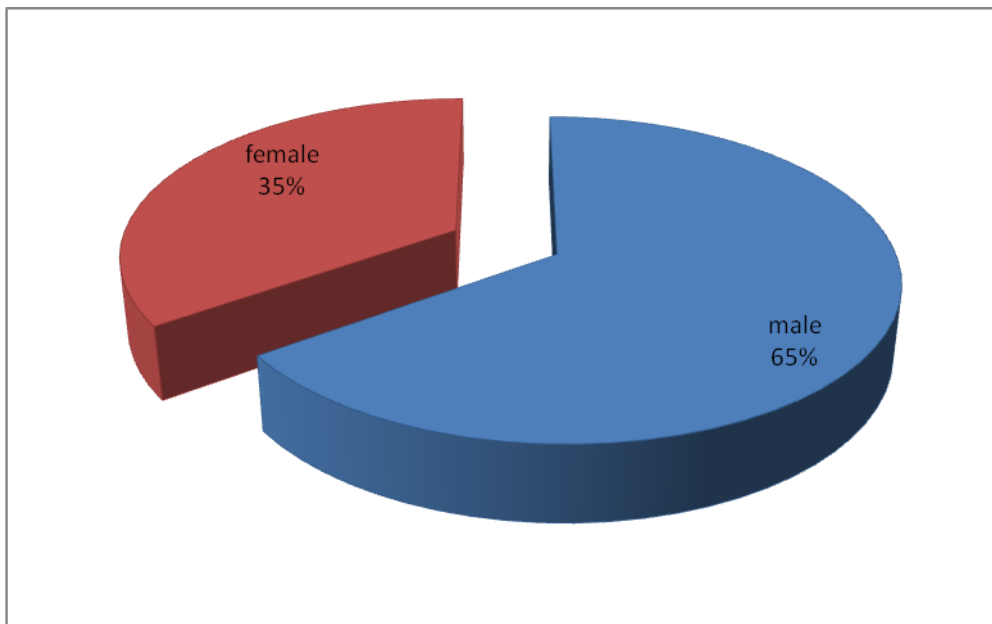
Figure 2Figure 4.1 Gender of participants

Figure 4.1 above depicts that of the participants that were selected from four different schools, 65% were male and 35% were female. The results revealed that the majority of teachers who took part in this research study in Bradely District Cluster are male. The researcher used random sampling to select participants to respond to questionnaires. In

Zimbabwe, statistics of Computer Science students in universities and colleges showed that for the year 1995 there were 23 male students and no females and 1998 there were 129 males and 21 females (CIET, 1999). The difference in numbers shows that gender issue is impacting the adoption and integration of ICTs. Some scholars argue that in terms of technology adoption, female teachers lag behind while male teachers a leading role. Basing on a research that was conducted by Kay (2006), there was generally no difference regarding computer attitude and ability after the implementation of the technology. The researcher was not convinced that gender had very little effect in the use of technology for the purpose of teaching and learning.

Age of respondents
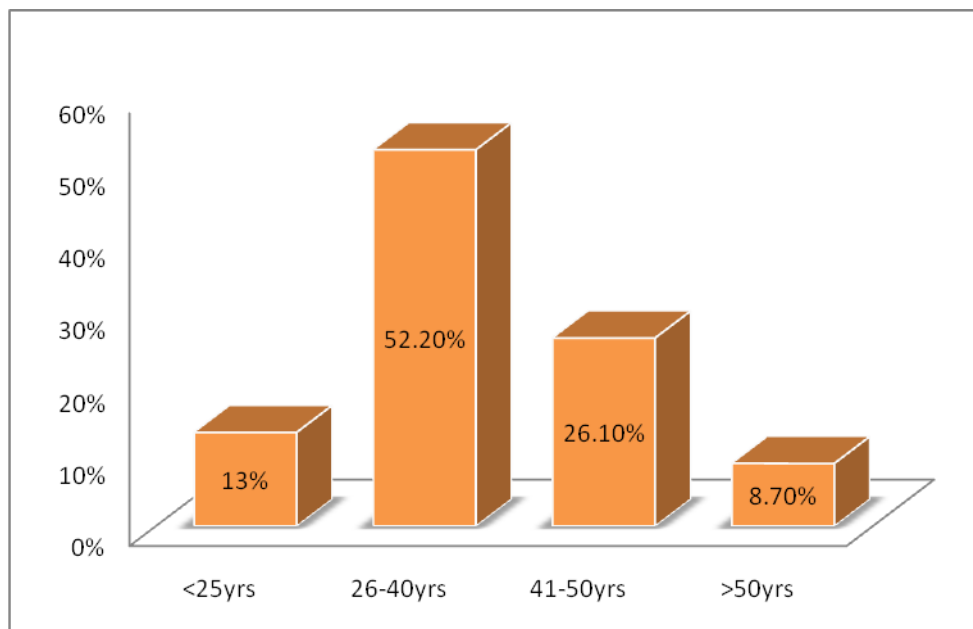
Figure 3Figure 4.2 Age of respondents

The research results revealed that the majority of participants (52.2%) were aged between 26 and 40 years followed by those within the age group 41-50 years (26.1%). However, the least two categories were those below 25 years of age (13%) and those above 50 years of age (8.7%). Age as a demographic variable plays an important role in determining the use of technology in the sense that because there is close relationship between age and technology use. Young age groups use more technology than old age groups.

Professional Qualifications
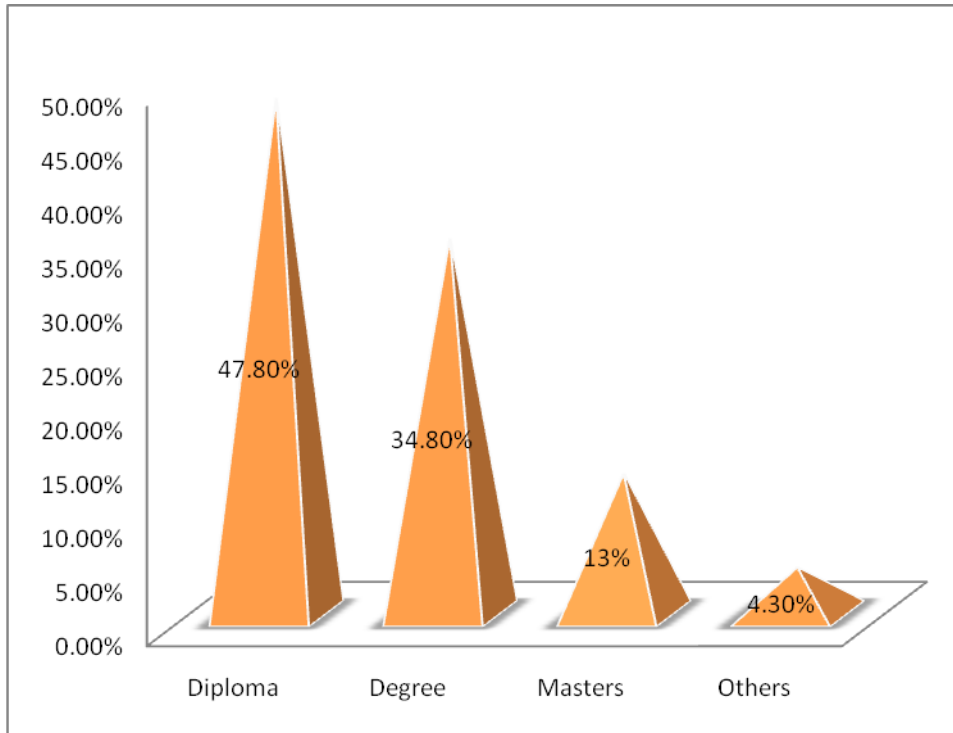
Figure 4Figure 4.3 Education levels of the teachers

The results from figure 4.3 above show that (47.8%) of participants in rural primary schools have attained a Diploma in Education as their highest level of academic qualification. Diploma holders constituted most participants. The second group of participants 34.8% had a degree as their highest level of academic qualifications and finally 13% had masters degrees. 4.3% were classified as others. The level of teacher qualification is important in the adoption and integration of ICTs in schools in the sense that the use of ICT tools like internet, emails and Microsoft packages is now compulsory in every tertiary education in Zimbabwe. Teachers especially those who have acquired degrees have been exposed to the use of ICT in their studies hence they can appreciate the need to make use of ICT in teaching. In teacher education programmes in Zimbabwe, ICT is now a compulsory component of the curriculum which is under Educational Media and Technology (EMT) department.

4.3 Instrument reliability test

The questionnaire was tested for reliability for every item using Cronbach Alpha value on SPSS

Table 4.2 Reliability Statistics

Cronbach's Alpha	No. of Items
.969	21

Instrument reliability was tested and Cronbach Alpha value of 0.969 was obtained for the all items on the questionnaire. The alpha coefficient ranges from 0 to 1, and it is common practice to take 0.60 as the minimum acceptable alpha value. Smith et al. (2011) argued that a reliability coefficient in the order of 0.60 is acceptable, while De Vaus (2002) and Bryman and Bell (2011) suggest a minimum alpha value of 0.70 and 0.80, respectively, for reliability purposes. The alpha value indicated that the instrument was highly reliable.

4.4 Factors affecting use of ICT as a pedagogical tool in schools

The research probed factors affecting use of ICT as a pedagogical tool in four rural primary schools using a five point Likert Scale as follows:

(a) Strongly disagree =1;

(b) Disagree =2;

(c) Uncertain =3;

(d) Agree =4;

(e) Strongly agree = 5.

 The responses were computed in the form of mean values as shown on table 4.3 below.

Table 4.3 Factors affecting use of ICT as a pedagogical tool in schools

	N	Mean		Std. Deviation
	Statistic	Statistic	Std. Error	Statistic
A. Lack of proper infrastructure	23	4.9130	.06007	.28810
B. Unavailability of electricity at our school	23	4.6957	.09810	.47047
C. Teacher's lack of knowledge and skills	23	4.3043	.09810	.47047
D. Lack of funding	23	3.7391	.09362	.44898
E. High software costs inhibiting acquisition of appropriate software	23	3.6522	.10154	.48698
F. Expensive hardware	23	3.6522	.10154	.48698
G. Teachers do not have time to design, develop and use technology in teaching and learning.	23	3.3913	.19620	.94094
H. High costs of maintenance of the ICT resources	23	3.3043	.17142	.82212
Valid N (listwise)	23			

The information displayed in the above table is summarised diagrammatically in the pie chart below. The pie chart shows the mean values of the eight factors identified by the researcher.

Factors affecting use of ICT

H 10%, A 15%, G 11%, F 12%, E 11%, D 12%, C 14%, B 15%
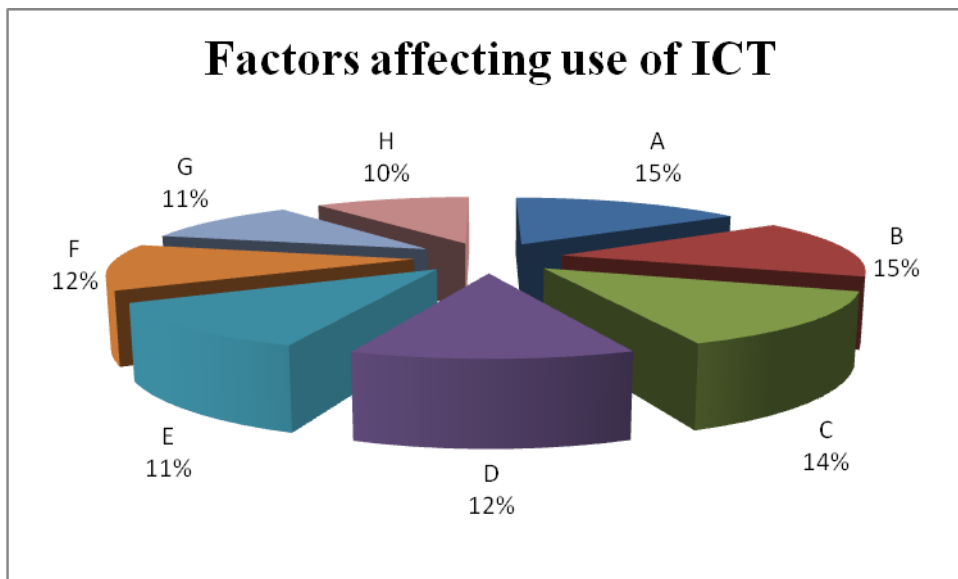
Figure 5Factors affecting use of ICTs

4.4.1 Lack of proper infrastructure

The research findings indicated that lack of proper infrastructure with mean value of 4.9 and standard deviation (SE ±0.06) to a very great extent affect the use of ICT as a pedagogical tool in schools in Bradley Cluster. The factor was rated at first position. The study sought to explore the availability of the ICT infrastructure in the primary schools because this has a direct effect on the use of ICT in teaching and learning. The uptake of ICT is not possible unless the necessary equipment and supporting infrastructure is present in the schools. The results were consistent with the findings of the study conducted by Jensen (2005) who concluded that proper and adequate infrastructure is vital for the adoption of ICT in learning and teaching.

To effectively introduce technology into schools is largely dependent upon the provision of ICT resources such as hardware, software and communications infrastructure. If ICT resources cannot be accessed by the teacher, as in so many education settings in Sub-Saharan Africa (SSA), then it will not be used (Hennessy, et. al 2010).

4.4.2 Unavailability of electricity

Unavailability of electricity at schools especially in classrooms (mean =4.7; SD=0.5) was also ranked on second position on the list of factors. The factor to a great extent influences the adoption of ICT as a pedagogical tool and these results were in agreement with Farrel (2007) who views that in many rural schools in Africa there is no connectivity to power or electricity hence this militates against the use of ICT for learning and teaching. Electricity must be made available to all classrooms so as to allow the use of technology such as over head projectors in lessons.

4.4.3 Funding challenges

The results also indicated that lack of funding (mean=3.7; SD=0.4) coming from government was to a great extent influencing the use of ICT in schools. Use of ICT for teaching and learning is a capital intensive program hence financing from the government or other agencies like non-government organisations. Rural primary schools are facing funding challenges due the macro-economic hardships in Zimbabwe. Lack of funding in this research study is ranked number four. However, lack of funding is closely related to high cost of software and hardware.

4.4.3 High cost of software

Beggs (2000) revealed that technology must be affordable at the national level. Affordability could be limited by the high cost of putting infrastructure in place, and is linked with the issue of poverty which is rife is many rural schools. High software costs inhibiting acquisition of appropriate software (mean= 3.7; SD= 0.5) and expensive hardware (mean=3.7; SD=0.5) to a great extent influences adoption of ICT as a pedagogical tool in schools and this is also coupled by the aforementioned factors of lack of funding.

4.4.4 Lack of time to design and develop technology

The study findings indicated that teachers do not have time to design, develop and use technology in teaching and learning as indicated by the mean and standard deviation (SD) which are 3.4 and 0.9 respectively. This means to a great extent is affecting the use of ICT in teaching and learning in schools. It would appear that the majority of teachers in this study highlighted lack of preparatory time to use various ICTs in their lessons citing reasons such as high work load caused by the expansionist policy in education system in Zimbabwe.

4.4.5 High maintenance costs

High costs of maintenance of the ICT resources with mean value of 3.3 and standard deviation of 0.8 (SE ±0.17) was also cited as one of the factors that influences adoption and integration of ICT as a pedagogical tool in schools. These results were similar to the findings by Mehlinger and Power (2002) the Philippines were he observed that one of the major obstacles to optimizing computer use in high schools has been the lack of timely technical support and maintenance. In some extreme cases involving schools in remote areas particularly rural schools, disabled computers take months to be repaired since no technician is available in the immediate vicinity and so the computers have to be sent to the nearest city hundreds of kilometres away.

4.5 Level of ICT usage in learning and teaching in rural primary schools

The study inquired about the level of ICT usage in learning and teaching in rural primary schools. The responses were also computed into mean values as shown on table 4.4.

Table 4.4 Level of ICT usage in learning and teaching in rural primary schools

	N	Mean		Std. Deviation
	Statistic	Statistic	Std. Error	Statistic
A. There is a dedicated school budget to support the implementation of ICTs in teaching and learning.	23	1.4783	.10650	.51075
B. Learners at our school are conversant with using ICT tools.	23	1.4783	.10650	.51075
C. It is mandatory to use ICT tools for teaching and learning at our school.	23	1.3913	.10405	.49901
D. Learners at our school are conversant with using ICT tools	23	1.3478	.10154	.48698
E. I often use computers and the internet	23	1.3043	.09810	.47047
F. I have frequent access to computers and internet for teaching and learning purposes.	23	1.2174	.08794	.42174
G. I use ICT tools in teaching and learning of primary school subjects.	23	1.0870	.06007	.28810
Valid N (listwise)	23			

The information displayed in the above table is represented diagrammatically as shown on the pie chart below.
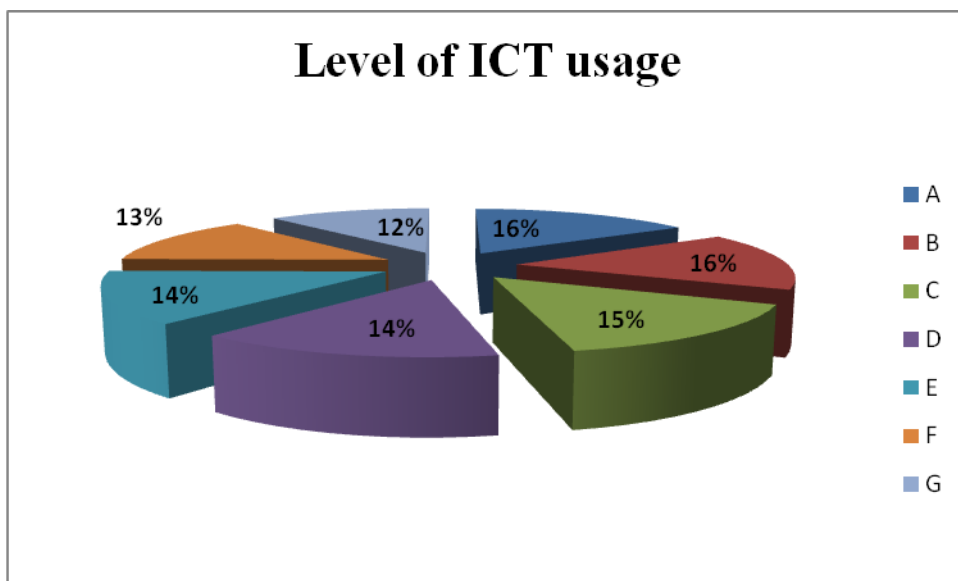
Figure 6Level of ICT usage

33

The results on table 4.4 revealed that the respondents disagreed that there was a dedicated school budget (*mean=1.5; SD=0.5*) to support the implementation of ICTs in teaching and learning in rural primary schools. ICT use is generally weak in many schools since most of the primary schools in the cluster do not walk the talk of ICT integration in teaching curriculum subjects. Generally, they do not give it a priority in their annual budget even though they do say ICT use, especially in management purposes, is beneficial. The study also revealed that participants disagreed that learners at schools in Minishi-Majanja (2007) cluster were conversant with using ICT tools (*mean=1.5; SD=0.5*) and also disagreed that it is mandatory (*mean=1.5; SD=0.5*) to use ICT tools for teaching and learning at our school. This finding may be attributed to the fact that teachers in primary schools have not fully embraced the use of computers in teaching and learning processes since most of them have minimal ICT skills and knowledge, a low level of ICT resources available as evidenced by low computer to student ratio (1: 162) and lack of on-site technical support. It was also revealed that the participants hardly use computers and internet (*mean=1.3; SD=0.5*) and this indicated a very low level of ICT usage in teaching and learning in those schools. The results collaborated with the findings by Roblyer (2005) in primary schools in Kenya where he concluded that ICT adoption and integration in rural schools is mainly hindered by lack or virtually no access to computers and internet by both learners and teachers.

The study further showed that teachers in Reeves (2008) cluster rarely use ICT tools in teaching and learning of primary school subjects as shown by the mean value of 1.1 and standard deviation of 0.3 (*SE=±0.6*). This was supported by findings from the interviews whereby it was cited that teachers generally lacked training in computer use. These results echoed the research findings by Pilkington (2008) that many schools in Africa had at most one teacher sponsored for ICT training, while the rest had not. It is clear that most of the teachers had not been trained in computer use in the cluster and hence lacked the necessary skills as well as pedagogical knowledge for integrating computers in teaching and learning. This explains the low use of computers in teaching and learning as revealed by this study.

The information gathered through the interviews revealed a range of opinions as narrated below. Many good and experienced teachers are resistant to ICT with valid and strong reasons that must be taken into account. Although many of them may never get actively involved in using computers in a lab (but may use a screen projector in their classroom in

very few occasions), they will undoubtedly provide a healthy and necessary tension that will impose on policy-makers the need to use rigorous arguments in favour of ICT utilisation in schools.

Two of the teachers interviewed argued against using ICT in education citing that these technologies represent a threat to their professional status because they will diminish their role (i.e. stories about software that might substitute for them), will degrade their relationship with students and will take over initiative and control within the classroom to the detriment of teachers. Other teachers are simply not willing to make changes in their teaching praxis because they perceive it adequate as it is; still others were simply afraid of using computers and similar technologies such as TV recorders, cameras and screen projectors ("technophobes"). The teachers also revealed that there was also the case of many schools with large classes (e.g. more than 60 children per room) without enough computers, poor Internet bandwidth, unreliable networks, inadequate software and other problems directly related with the technology that constitute a barrier for the teachers.

The school teachers admitted during the interview that there is a serious shortage of ICT equipment in the schools. They agreed that this has a direct impact on the use of e-learning in schools. Some of the gadgets and equipment are very expensive and the schools' budgets are already far much stretched to accommodate the extra items with budgetary implications they revealed. Most teachers cited insufficient access to computers as the main obstacle in ICT for education programmes. This is particularly relevant for educational institutions located in the rural areas where the school or training institution is often the only access point for computers. Although this will require massive investments in the infrastructure, it is nevertheless essential in order to guarantee equal access and overcome the digital divide (IICD, 2007).

Furthermore, the researcher found out that most of the teachers indicated that they had little knowledge of the benefits of using ICTs in their teaching. For example, one of the interviewed teachers revealed that he preferred to use traditional medium to the use of technology because most of the learners were used to it.

4.6 Summary

Basing on the data gathered in the study, the overall results revealed that there are various factors that influence the adoption and integration of ICT as pedagogical tool in rural primary schools. Among the main factors include lack of proper infrastructure, expensive hardware and lack of ICT knowledge and skills by teachers. In connection with factors that affect the adoption and integration of ICT as a pedagogical tool, the level of ICT usage was also analysed with a view to reveal the level of ICT utilisation by teachers in the four schools in Bradely Cluster. The next chapter will cover conclusion and recommendations of the study.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.0 Introduction

The study aimed at examining factors affecting the adoption and integration of ICT as a pedagogical tool in rural primary schools. The results from the study were presented and analysed with a view to come up with a conclusion and recommendations. The study revealed that the identified factors are significantly affecting the successful adoption and integration of ICT in schools. This chapter gives conclusions and recommendations on the research topic based on a critical analysis of the research findings. Therefore, in line with research objectives of this study we conclude and suggest recommendations based on the findings presented and the literature review.

5.1 Summary of the study

The research explored factors affecting the adoption and integration of ICT as a pedagogical tool in rural primary schools. The research objectives of the study were as follows; to determine factors that affect adoption and integration of ICT as a pedagogical tool in rural primary schools in teaching and learning and to establish the level of ICT usage in learning and teaching in rural primary schools. The problem and its context were dealt with in Chapter 1. In that chapter clarity was made that rural primary schools were experiencing problems in adopting and integrating ICT for the purposes of teaching and learning. The study is significant as it seeks to unpack factors that are affecting the adoption and integration of ICT as a pedagogical tool in rural primary schools. The background to the study, statement of the problem, the significance of the study, delimitation of the study and limitations of the study were examined by the researcher. A review of related literature was also made in trying to reveal what accredited scholars say about the problem under investigation. In reviewing literature related to the study, published articles such as journals and textbooks were cited.

The methodology used in this study was covered in Chapter 3. In this chapter research design, population sample, research instruments, research instruments and data analysis plan were discussed with a view to come up with reliable data gathering methods. Descriptive survey was adopted by the researcher. A random selection of twenty-three (23) teachers was used for this study. In this research study were questionnaires and interview guides were used for data collection.

Data gathered was analysed using SPSS package. The data gathered was presented in the form of graphs, pie charts and tables. The research study rounded up by giving summary, conclusions and recommendations.

5.2 Findings

The results of research revealed that lack of proper infrastructure and unavailability of electricity in schools to a very great extent affects the adoption and integration of ICT as pedagogical tool in primary schools located in Bradely Cluster under study. It was also indicated that teacher's lack of ICT knowledge and skills, lack of funding from government, high software costs inhibiting acquisition of appropriate software and expensive hardware to a great extent influence the adoption of ICT in primary schools. The study also showed that the participants were uncertain about the influence of high costs of maintenance of the ICT resources and the fact that teachers do not have adequate time to design, develop and use technology in teaching and learning.

The research findings indicated that the respondents strongly disagreed that there was a dedicated school budget to support the implementation of ICTs in teaching and learning and that learners at their schools were conversant with using ICT tools. They further strongly disagree to the issue that it is mandatory to use ICT tools for teaching and learning at their schools. The teachers strongly disagreed that they often use computers and the internet and have frequency access to computers and internet for teaching and learning purposes. The teachers also indicated that they do not use ICT tools in teaching and learning of primary school subjects.

5.3 Conclusion

Despite the various efforts to enable rural primary schools to adopt and integrate ICT as a pedagogical tool, rural primary schools have continued to face numerous challenges.The results from the study showed that in spite of the government visions and polices for the use and integration of ICT in schools, three very important features of integration and adoption are lacking namely lack of proper infrastructure, human resource development in terms of skilled teachers to use ICT in teaching and learning processes was another factor that significantly influences integration of ICT in teaching and learning and lastly lack of funding

from the government was found to significantly influence the level of ICT integration in teaching and learning.

From a practical perspective, stakeholders in the education sector will find the results of this study useful. Their understanding of target areas for a successful adoption of ICTs in teaching and learning will be enhanced.

5.4 Recommendations

ICT is an influential instrument for the development of quality teaching and learning in educational systems around the world, as well as a means for fundamental transformation into the existing school principles and practices for the preparation of learners in meeting the innovations in the global arena. In view of the conclusions, the following are the recommendations:

- The government should promulgate an ICT policy in education supported by a budget from the national coffers. More funds should be voted for the development of software and hardware that will promote the use of ICT in schools. The ICT policy should not be a general policy but a dedicate policy which mandates teachers to make use of technology in instruction. The Ministry of Primary and Secondary Education should start prioritising investing in technology use in rural primary schools. Literature which stress on the importance of technologically aided teaching should be made available to primary school so that they learn the importance of ICT in schools. The government must prioritise investing in ICT resources so that school teachers would make use of it. The government should come in and subsidize ICT equipments that are used in schools. The government should consider waving import tax for ICT equipment for schools which want to invest in technology integration.

- Rural schools should be equipped with relevant and adequate infrastructure for supporting the adoption and integration of ICT. The infrastructures include electrified classrooms and other devices that are used along with computers. The funding can come in schools as School Improvement Grants (SIG) dedicated to improve infrastructure that will promote the use of ICTs. SIG will go a long way in assisting schools in raising funds for acquisition of ICT facilities. Although SIG funds are dedicated for the acquisition of equipment and material that directly benefit the learner, very few schools are use the funds to invest in technology use. Instead of

going to a computer lab, lessons can be conducted in any classroom because the infrastructure will allow for the use of such technology.

- Schools should be supplied with electrical power to enable them to effectively harness the use of ICT in education and training. Classrooms must be electrified to allow computers and other gadgets that require power to be used in lessons. Alternative sources of power such as generators, solar technology and batteries should be explored in the absence of the electric power.

- That training interventions for teachers should be conducted in the use of ICT tools in teaching and learning. These training interventions should focus on promoting ICT integration in teaching and learning and should incorporate components that promote basic competence in use of ICT tools as they form the foundation for ICT integration in teaching and learning. In-service training is needed for teachers already in service. Training is integral to the utilisation of ICTs in teaching (Reeves, 2008). Training programmes can be done at school level, cluster or national level to ensure that all teachers acquire the knowledge on how to use ICTs as a pedagogical tool. ICT training workshops can be carried out at various levels as a way of staff developing the teachers on the use and importance of harnessing technology during classroom instruction.

- There should also be more sensitisation of school heads and education officers on the need to support teachers in ICT integration. School heads as instructional leaders are resource providers and as such should have adequate knowledge on the value of using ICT as a pedagogical tool so that they would help in the acquisition of such equipment. ICT workshops which focus on promoting the use of technology in schools, clusters, districts or provinces should be done.

- Investments in custom-made digital materials with highly relevant content for Zimbabwean schools in rural areas are required. The Audio Visual Services (AVS) should make technology that are affordable and user friendly to rural schools.

- The Ministry of Primary and Secondary Education should take full responsibility for funding affordable broadband internet connectivity in schools through the AVS. This can be done by provision of computers and other ICT resources

5.5 Future areas of study

This research endeavour might have made a considerable stride in the understanding of some of the factors influencing ICT integration in teaching and learning. The following are suggested areas for further research:

Future research of the same study can be done in other provinces in Zimbabwe and compare the results with this research. Data should be collected from different sources. This would include further case studies, interviews or face-to-face communication, and secondary data analysis. This would enrich and improve the study currently been carried out. It is equally important to observe ICT integration in the classroom to confirm the type of integration taking place in schools.

5.6 Summary

The purpose of this chapter was to wrap up the study by giving summary, conclusion and recommendations basing on an analysis of findings from the four primary schools in Bradely Cluster. Findings from this study indicated that ICT adoption and integration is facing challenges. Conclusions and recommendations were also outlined. Emphasis was made on the need for all stakeholders to contribute in the removal of all barriers to the successful adoption and integrate ICT as a pedagogical tool.

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APPENDICES

MIDLANDS   STATE   UNIVERSITY

DEPARTMENT   OF   EDUCATIONAL   FOUNDATIONS, MANAGEMENT AND CURRICULUM STUDIES

BACHELOR OF EDUCATION IN EDUCATIONAL MANAGEMENT AND LEADERSHIP (BEML)

My name is CHINAKA GIFT. I am an undergraduate student at Midlands State University pursuing a Bachelor of Education Degree in Educational Management and Leadership. I am required to carry out a research project in partial fulfilment of the requirements for the degree. As such the student is carrying out a research on "**Factors that are affecting the adoption and integration of ICT as a pedagogical tool in teaching and learning in primary schools.**" The researcher is kindly asking for your assistance as participants to the research understudy by filling in the questionnaire. The responses you will provide will be treated with utmost confidentiality and will be used exclusively for academic purposes. Your co-operation will be greatly appreciated.

INSTRUCTIONS:

- Please answer all the questions honestly.
- Please kindly indicate your answers by ticking where appropriate in the boxes and writing in the spaces provided.
- Your name or identity is not required.

SECTION A: GENERAL INFORMATION

1.1. Gender of participant

Male ☐   Female ☐

1.2. Age of participant

Less than 25 years ☐   26-40 ☐   40-50 ☐   more than 50 ☐

1.3 Your Academic Qualification

Diploma ☐   Degree ☐

Masters ☐   Others (Specify) ☐

1.4 Which ICTs have you found useful in teaching and learning?

…………………………………………………………………………………..

1.5 Which ICTs have you found most appropriate in your teaching and learning practices?

....

1.6 Have you ever attended any ICTs training course, workshop, or seminar?

YES ☐   NO ☐

SECTION B: FACTORS AFFECTING USE OF ICTs AS A PEDAGOGICAL TOOL

Indicate the extent to which the following factors are affecting use of ICTs in schools

[1] no extent   [2] little extent   [3] neutral   [4] great extent   [5] very great extent.

		1	2	3	4	5
1	Expensive hardware					
2	High software costs inhibiting acquisition of appropriate software					
3	High costs of maintenance of the ICT resources					
4	Lack of funding coming from government					
5	Unavailability of electricity at our school					
6	Lack of proper infrastructure					
7	Teacher's lack of knowledge and skills.					
8	Teachers do not have time to design, develop and use technology in teaching and learning.					

Comments

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SECTION C: LEVEL OF ICT USAGE IN LEARNING AND TEACHING

Indicate the extent to which you agree or disagree with the following levels of ICT usage in learning and teaching at your school.

[1] strongly disagree   [2] disagree   [3] neutral   [4] agree   [5] strongly agree

		1	2	3	4	5
1	I use ICT tools in teaching and learning of primary school subjects.					
2	I often use computers and internet for teaching and learning purposes.					
3	It is mandatory to use ICT tools for teaching and learning at our school.					
4	Learners at our school are conversant with using ICT tools.					
5	There is a school budget to support the implementation of ICTs in teaching and learning.					
6	Expensive hardware					
7	Teacher's lack of knowledge and skills					

Comment

……………………………………………………………………….......................
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Thank you for your co-operation

APPENDIX TWO: INTERVIEW GUIDE

1. Which ICTs have you found useful in teaching and learning?

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2. Which ICTs have you found most appropriate in your teaching and learning practices?

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3. Have you ever attended any ICT training course workshop or seminar?

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4. What factors are militating against your school's adoption and integration of ICT in teaching and learning?

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5. How can ICT resources be made available in primary schools?

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6. Which software packages do you use in teaching?

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7. What challenges are you facing in the use ICT software?

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8. Which factors do you think are affecting the use of ICTs as a pedagogical tool?

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9. Are your learners conversant with using ICT tools in teaching and learning?

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10. What efforts is your school doing to ensure that technology especially computer technology is incorporated in teaching and learning?

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11. What do you think can be done to improve the use of ICT as pedagogical tools in teaching at primary school level?

MIDLANDS STATE UNIVERSITY

P. BAG 9055   Telephone: (263) 54 60404/60337/60667/60450
Gweru   Fax: (263) 54 60233/60311
Zimbabwe

FACULTY OF EDUCATION
DEPARTMENT OF EDUCATIONAL FOUNDATIONS, MANAGEMENT AND CURRICULUM STUDIES

24 May 2017

TO WHOM IT MAY CONCERN

The bearer......CHINAKA   GIFT.........................is a B.Ed/~~MED/PGDE~~ student at this University. ~~She~~ / He has to undertake research and thereafter present a Research Project in partial fulfilment of the degree programme.

In this regard, the university kindly requests both your institution and personnel's assistance in this student's research endeavours.

Your co-operation and assistance is greatly appreciated.

Thank you

....
Dr. C. Manyumwa
(**Chairperson – Educational Foundations Management and Curriculum Studies**)

APPENDIX THREE: CLEARANCE LETTERS

All communications should be addressed to The Secretary for Primary and Secondary Education"
Telephone: 799914 and 705153
Telegraphic address : "EDUCATION"
Fax: 791923

ZIMBABWE

Reference: C/426/3 Mash. Central
Ministry of Primary and Secondary Education
P.O Box CY 121
Causeway
Harare

31 July 2017

Chinaka Gift
Midlands State University
P Bag 9055
Gweru

RE: PERMISSION TO CARRY OUT A RESEARCH AT NYAMARURO, NYARUKUNDA, CHIHURI AND CHIMBIRA PRIMARY SCHOOLS: SHAMVA DISTRICT: MASHONALAND CENTRAL PROVINCE.

Reference is made to your application to carry out a research at the above mentioned school in Mashonaland Central Province on the research title:
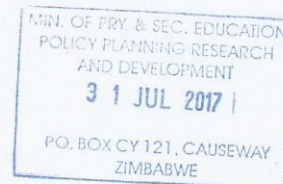
"FACTORS THAT ARE AFFECTING THE ADOPTION AND INTERGRATION OF ICT AS A PEDAGOGICAL TOOL IN TEACHING AND LEARNING IN PRIMARY SCHOOLS ."

Permission is hereby granted. However, you are required to liaise with the Provincial Education Director Mashonaland Central Province, who is responsible for the schools which you want to involve in your research. You should ensure that your research work does not disrupt the normal operations of the school. You are required to seek consent of the parents/guardians of all learners who will be involved in the research.

You are required to provide a copy of your presentation and a report of what transpired to the Secretary for Primary and Secondary Education.

E. Chinyowa
Acting Director: Planning, Research and Statistics
For: **SECRETARY FOR PRIMARY AND SECONDARY EDUCATION**
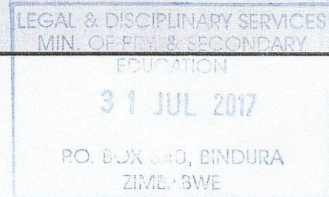cc: PED – Mashonaland Central Province

MIN. OF PRY. & SEC. EDUCATION
POLICY PLANNING RESEARCH
AND DEVELOPMENT
3 1 JUL 2017
P.O. BOX CY 121, CAUSEWAY
ZIMBABWE

All communications should be addressed to
"The Provincial Education Director
Mashonaland Central Province"
Telephone:0271- 6948/6996/7134/6994
Fax:0271-6997

ZIMBABWE

Ministry of Primary and Secondary Education
Mashonaland Central Province
P.O Box 340
Bindura
Zimbabwe

31 07 2017

LEGAL & DISCIPLINARY SERVICES
MIN. OF PRY & SECONDARY
EDUCATION
3 1 JUL 2017
P.O. BOX 340, BINDURA
ZIMBABWE

Chinaka Gift
Nyamaruro School
Shamva.

RE: PERMISSION TO CARRY OUT RESEARCH IN MASHONALAND CENTRAL PROVINCE: SHAMVA DISTRICT: AT NYAMARURO, NYARUKUNDA, CHIHURI AND CHIIMBIRA SCHOOLS;.

Reference is hereby made to the Secretary for Primary and Secondary Education's minute dated 31 July 2017 granting you permission to carry out a research in Mashonaland Central Province on the research title:

"FACTORS THAT ARE AFFECTING THE ADOPTION AND INTERGRATION OF ICT AS A PEDAGOGICAL TOOL IN TEACHING AND LEARNING IN PRIMARY SCHOOLS."

I am pleased to inform you that the Provincial Education Director has granted you permission to carry out your research in Shamva District. You should, however, liaise with the D.I.S. Shamva District before you start.

Finally, you are advised to submit a copy of your findings to the Ministry of Primary and Secondary Education.

....

K. Kamudyriwa (Mr)
FOR PROVINCIAL EDUCATION DIRECTOR:
MASHONALAND CENTRAL PROVINCE

ZIMBABWE

Ministry of Primary and Secondary Education
Shamva District Office
P.O Box 130
Shamva
Zimbabwe

31.JULY.17

MR CHINAKA G
 Shamva District

Re: PERMISSION TO CARRY OUT RESEARCH IN MASHONALAND CENTRAL PROVINCE: SHAMVA DISTRICT CHINAKKA GIFT EC NO. 0959555T: NYAMARURO, NYARUKUNDA, CHIHURI AND CHIIMBIRA PRIMARY SCHOOLS

Reference is made to the Provincial Education Director's minute dated 31 July 17 granting you permission to carry out research in Shamva District at the above mentioned schools on the research title:

"FACTORS THAT ARE AFFECTING THE ADOPTION AND INTERGRATION OFICT AS A PEDAGOGICAL TOOL IN TEACHING AND LEARNING IN PRIMARY SCHOOOLS"

I am pleased to inform you that the District Schools Inspector has granted you permission to carry out your research at **Nyamaruro, Nyarukunda, Chihuri and Chiimbira Primary schools** You should however liaise with the Heads of the chosen schools before you start.

Finally you are advised to submit a copy of your findings to the Ministry of Primary and Secondary Education.

TICHARWA E
HUMAN RESOURCES OFFICER
 FOR DISTRICT SCHOOLS INSPECTOR

MIN. OF PRY. SECONDARY EDU
INSPECTOR EAST
SHAMVA DISTRICT OFFICE

3 1 JUL 2017

P.O. BOX SHAMVA