MIDLANDS STATE UNIVERSITY

FACULTY OF EDUCATION

DEPARTMENT OF APPLIED EDUCATION

An investigation into the integration of Information Communication and Technology in the teaching and learning of Geography in five schools in Chitungwiza District.

BY

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A DISSERTATION SUBMITTED TO THE FACULTY OF EDUCATION IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE BACHELOR OF EDUCATION DEGREE IN GEOGRAPHY AND ENVIRONMENTAL STUDIES

GWERU, ZIMBABWE

May, 2018

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MIDLANDS STATE UNIVERSITY

FACULTY OF EDUCATION

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Requirements for the Bachelor of Education degree in geography and environmental studies.

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YEAR GRANTED: 2018

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DEDICATION

A dedication to my husband Passmore Chawanji, daughters Ratidzo and Ruvarashe.

ACKNOWLEDGEMENTS

Firstly, l wish to express my deep gratitude to my supervisor Dr Dzimiri the guidance, suggestions, advice and approval he made to my research project.

I also sincerely wish to thank my husband for the support and encouragement he gave me, my sisters and my daughters and all those who made this project a success.

I also wish to thank school administrators, teachers and students in Chitungwiza District who constituted the sample of my study.

ABSTRACT

The study aimed at investigating the integration of ICT in the teaching and learning of geography. The data used in this research was obtained from one hundred geography students drawn from form twos, four and six, twenty-five geography teachers and five school heads from five schools selected in Chitungwiza district in Harare Metropolitan Province. Data was collected through questionnaires and semi structured interviews. Findings from interviews were presented, analyzed and interpreted using descriptive method whilst findings from questionnaires were presented in form of tables, pie graphs and bar graphs. The findings revealed that in high schools they had the potential to use a variety of ICT tools such as laptops, smart phones, and cameras, white boards, projectors, desk top computers, televisions photocopiers, scanners but these resources are a scarcity to fully utilize them in the learning of Geography. The internet being the most used ICT tool by both teachers ,learners and administrators but a lot of challenges were being faced like poor signal ,unrecompensed websites accessed by learners and lack of guidance on the part of learners. The ICT integration in schools were hindered by lack of equipment, lack of ICT skills and power cut and other factors. These challenges are the main drawbacks mentioned by schools in effective ICT integration in teaching and learning of Geography, they need to be dealt with as matter of urgency to improve ICT integration by geography teachers and learners as they highlighted that it benefits them a lot.

ACRONYMS

ICT - INFORMATION COMMUNICATION AND TECHNOLOGY

GIS - GEOGRAPHICAL INFORMATION SYSTEM

GPS- GLOBAL POSITIONING SYSTEM

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CHAPTER ONE: THE PROBLEM AND ITS SETTING

1.0 Introduction

The purpose of this study was to explore the extent to which information communication and technology (ICT) is being integrated in the teaching and learning of Geography. According to Perron,etal (2010) Information and communication technologies (ICTs) are defined as electronic ways of ferrying, keeping and handling information. According to him these include e-mails, text messaging, video chat and online social media like face book. He said that also includes various electronic devices like laptops, desktops and smart phones that carry out wide range of communication purposes. All these electronic tools constitute the information and communication technologies (ICT) and are used to transport, handle and keep information. This approach prompts the researcher to consider a wider range of ICT tools and activities rather than to simply concentrate on computer as an ICT tool only. To achieve this, the study looks at teacher's perceptions and nature of Information, communication and technology tools they use. The study also seeks to look at the challenges faced by schools in utilization of information, communication technology in their teaching and learning of Geography.

1.1 Background of the study

This research seeks to assess the integration of ICT in the teaching and learning of geography. Countrywide integration of information, communication technology (ICT) into the teaching of Geography has advanced since the introduction of the new curriculum in 2015 to 2022. People are using ICT in the teaching and learning of geography to meet their needs and today new

technologies are used in the schools in Chitungwiza district. Isaac (2007) said that Zimbabwe had developed an ICT policy in 2005 which had since pave way for the promotion of ICT in the education system cited by Musarurwa (2011). The new curriculum syllabus also has a topic map work and Geographical information system for form one to six and it is compulsory .For the form five and six it is called Geographical Information System (GIS) and Remote sensing, GIS is computer based system that enables users to collect ,store ,process, analyze and present spatial data in Geography. This topic is compulsory at all levels and it requires the use of ICT tools such as computers, laptops, color printers, scanners and global positioning receiver. This prompts the researcher to embark on an investigation on the extent to which ICT is being integrated in the teaching of Geography.

The interests of Curriculum Development Unit as well as the Ministry of Education seem to be centered on a paradigm shift from teacher centered pedagogy to learner centered approach. They have declared a curriculum in which information communication technology is the answer to the shift and emphasis that ICT should be adopted in every learning area as it provides a resource that is enrich environment for a learner centered approach that can alter the teaching and learning interaction or relationship. Geography is one of the most difficult subjects and it seems to be abroad subject which should be taught in a manner that learners can easily grasp the concepts.

It is important for educators to understand how best use of ICT is in teaching and learning of geography. If they do not understand the effective use of ICT in the classroom, expenditure on computers, software, whiteboards and are likely to be meaningless in terms of teaching and learning .This study assesses the integration of ICT its nature and level of adoption in the teaching and learning of geography in five high schools in Chitungwiza District.

ICT is now a significant feature in teaching geography. Students use internet as a resource to improve and develop their knowledge. Teachers need to be skilled in ICT in order to meet these expectations and national goals for ICT skills development in education. In order to achieve successful integration, schools, and teachers are required to change their beliefs and attitudes about using technology (Brown, 2003). There is little research concerning ICT integration with established practice in high school.

The emphasis on ICT has resulted in the integration of ICT education in school. Information Communication Technology seems to have an impact on our lives including the education system. Students in Zimbabwe are expected to be computer literacy and able to use a computer that is word processing, research on internet and even power point presentation. In geography major emphasis is now on Geographical Information System (GIS) which involves the use of ICT and it used in problem solving in each topic in the currently introduced Geography syllabus 2015 – 2022.

1.2 Statement of the problem

The researcher has a general belief that ICT tools are there in the schools in Chitungwiza district but they are not being fully integrated in teaching and learning to enhance interactive learning. Despite the belief and assumption that ICT tools are there in the schools and teachers are lacking necessary skills in ICT, learners still find it difficult to fit into the world of technology hence need for this research.

1.3 Main research question

To what extent is ICT integrated in the teaching and learning of geography?

1.3.1 Research sub questions

1.3.1.1. What are the teachers' perceptions regarding the integration of ICT in teaching geography?

1.3.1.2. Which ICT tools do teachers and learners use in the teaching and learning of geography?

1.3.1.3. To what extent are the teachers capacitated in using ICT in teaching and learning of geography?

1.3.1.4. What challenges are faced by schools in the utilization of ICT in teaching and learning?

1.4 Importance of the study

The study benefited teachers, policy makers, planners as well as the researcher in Chitungwiza district, Harare province and even the head office to evaluate the extent to which ICT is integrated in the teaching and learning of Geography as highlighted below:

1.4.1 Theory /literature

The study will be used as a base for future researchers in the area of teaching and learning of geography in the Zimbabwean context. This research adds on empirical evidence on the extent to which ICT is being integrated in teaching and learning of geography in secondary schools. University library will also benefit with available research on ICT integration.

1.4.2 Policy makers

The research also provides knowledge to teacher's colleges and curriculum planners on actual use of ICT in context so that they improve their programs. This research enlightens them on how best they can promote ICT integration in secondary schools to improve teaching and learning.

1.4.3 Teachers

Teachers will be equipped to deal with problems encountered in ICT integration and how to solve them. The research will also informs teacher's readiness and attitude on ICT in geography and this will help to determine the need for staff development so that teachers can fully integrate ICT their teaching.

1.4.4 Researcher

The researcher being a student at Midlands State University by carrying out this study will help me to fulfill the requirements of Bachelor Degree in Education at Midlands State University needed to be submitted in person at the completion level. The research can help me also as a Geography teacher currently in the education field on how to fully integrate ICT ,its advantages as well getting ideas from other colleagues in the same field on how best can we improve ICT integration for improvement in teaching and learning geography.

1.5 Delimitations

This study focuses on five out of fifteen secondary schools in Chitungwiza District of Harare Metropolitan province. The study mainly concentrates on the nature and level of ICT integration in the teaching and learning of Geography at secondary level.

1.6 Limitation

The study was undertaken while the researcher is full time employed as result finding time to conduct the interviews was a problem. There is also travelling expenses to do consultation as well as printing and stationary expenses. Collecting data from teachers, students and school heads during working hours was not easy since they usually have a busy schedule at school.

1.7 Assumptions

This study was based on the following assumptions;

- Schools in Chitungwiza district have ICT related tools. Therefore there is integration of ICT in teaching and learning of Geography
- Teachers have necessary skills in ICT usage.
- Administrators are monitoring the use of computers in various subjects

1.8 Definition of terms

Information Communication Technology (ICT) refers to computer based and computer related devices. It also includes a variety device that can be used for information and communication purposes like internet, mobile phones, digital cameras, plasma screens and digital videos recorders.

Administrators –in this study administrators refer to school heads, deputy, senior masters and senior mistresses who organize human resources materials needed in the school

Computer –it is defined by Bradely (1987:11) as" basically a processor of information." It is an electronic device that is designed to accept input data, process the data, store information available.

Computer literacy –it is one's ability to use a computer in learning, at school, at work or anywhere. One who is computer literacy is one who knows the advantages and disadvantages of using a computer.

Geographical Information System (GIS) –a computer based system capable of assembling, storing, manipulating and displaying geographical information. According to West (1999) geographical Information System (GIS) simplify many geographical concepts and present large amounts of non-sequentially related data in simple and readily accessible formats, allowing pupils to concentrate on interpreting and analyzing data.

High school- this is a six year program of learning by learners after primary education and it stretches from form one up to six.

Internet - A worldwide, publicly accessible series of interconnected computer based networks.

Perception – the way someone thinks or view or feel. (Cited by Cambridge University Press, 2015)

Teachers –in this study , a teacher is one whose occupation is to instruct or facility learning .Gwarinda (1993)say that a teacher organize , coordinate and make decisions concerning resources and teaching strategies. According to the new curriculum (2016) a teacher is just a facilitator of learning.

1.9 Summary

This chapter covered the background of the study, research questions, purpose of the study, assumption, delimitation, limitations as well as definition of terms. The next chapter provides a review of related literature in accordance to the research questions. The next chapter also included the obstacles which hinders ICT integration in schools and possible solutions.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.0Introduction

This chapter focuses on related literature on the use of ICT in teaching and learning, teacher capacity in relation to ICT use, nature of ICT and activities, challenges and possible solution to the problems faced in schools in trying to integrate ICT in education.

2.1 Teacher's perceptions on ICT integration

According to Amaldhour (2010) said that there is still limited research done on teacher's perceptions on ICT integration. Pepe (2016) said that teacher's perceptions on technology have great effect on student learning and performance hence affect daily classroom activities. The findings showed that most teachers perceived ICT as very useful and making teaching and learning easier. Main reasons why teachers use ICT are that teachers feel that their own use of ICT benefit their learners and also teachers feel learners benefit from using ICT themselves, they gain confidence , self esteem and revived motivation (Haddad and Draxler 2002).

Amaldhour (2010) suggest that teachers still use ICT to teach as they have always done which undermine the potential for ICT use to improve teaching and learning hence need for further research on teacher's perceptions .Cubans (2001) cited by Almadhour (2010) study of Californian high schools and universities long exposed to ICT found that teachers actually used the new technology to do what they had always done, they claim to see changes in their teaching. Hennessy et al (2005) said that teachers has little to comment about ICT previously they have

little to say about ICT integration their role was to implement policies and not to question them. He add on to say that this was evident in Europe and other countries with a centralized curriculum teachers has nothing to say but they are there to just put into practice what is set by policy makers. Olson (2000) hence argue that integrating new things in education without the teacher' knowledge or consultation can be viewed as challenging teacher's workhence leaders should involve teachers in curriculum planning to avoid negative critics of the change.

Hennessy etal (2005) identifies that the teachers who use ICT do so in order to support and expand their existing classroom practice. Becker (2000) noted that while technologies have allowed some teachers to put into practice amore student-centered pedagogy, they have not changed the teaching practice of the majority of teachers' particularly secondary school teachers. Cuban (2001) cited by Amaldhour 2010 found that most teachers had integrated ICT to match their instructional practices.

Hennessay et al (2005) assert that a few teachers are integrating ICT in their subjects in a motivation way to their pupils which boost student reasoning capacity. He went on to say some teachers integrate ICT for their own interest not for the pupils benefit.Amaldhour (2010) advocate that teachers express gratitude as they use ICT as it help them to present complex and dangerous issues in an easier way. Thus ICT help them to bring real world to the classroom using audiovisual presentation.

2.1.1 Benefits of ICT integration in geography for teachers

Audet and Paris (1997) say that using GIS can improve geography teaching and learning environment. The use of digital photography help teachers to keep pupils work undertaken

during fieldtrips and other learning output not readily recorded in traditional ways paper and pen method. (Storey2002)

Tylor (2003) say that ICT enables teachers to involve and motivate pupils about geographical concepts toa greater depth. He went on to say using GIS software to produce and exploit maps in a short time at the same time yielding quality results.

Tylor2003) says that the internet increases access to reputable geographical data and information sources. Kelper (1999) also in support with Tylor saying that GIS software can enable teachers to focus more closely on teaching geographical skills at the same time cultivating a sense of location and place.

Newman (2002) content that ICT enables learners and teachers to use videos and share learning materials ,reduce costs and improve quality of teaching and learning especially in schools with lack of teaching resources. Wheeler (2000) also support the above view saying that where there are networked computers learners can do online collaborative learning through text or via websites through the internet .so teachers through the use ICT they are able to communicate with their students and other teachers in other areas.

According to Sweet and Mooiji (2001) and Bangert (2008) cited by Mwalongo 2011, ICT integration in education promote learner centered approach, critical thinking and online learning.

2.1.2Benefit of ICT integration in learning geography on learners

Mikre (2011) said that learner who use ICT tools and activities always excel in their studies. This means that learners benefit a lot by using ICT in their learning. Mathuvule (2014) said that Newman (2002) and Wheeler (2000) argue that benefits of ICT include sharing learning materials, ideas and cooperative discussion. According to West (1999) geographical Information System (GIS) simplify many geographical concepts and present large amounts of non-sequentially related data in simple and readily accessible formats, allowing pupils to concentrate on interpreting and analyzing data. Hence by using computer learners can analyze and interpreted Geographical data with a short period of time.

Cox and Abbott (2003) say that using simulations and modeling tools can facilitate understanding of geographical topics such as erosion and agriculture. According to Storey (2002) says that using digital photography in classroom mapping activities helps learners to develop, recall, reflect and have self assessment skills. Storey also advocates that interactive ICT such emails enables the exploration of a sense of place, through communication with people as well as through pictorial features. Hence using emails and postcards to make comparison of places helps pupils to gain a better appreciation of other culture (Storey, 2002)

2.2 ICT tools

2.2.1 Nature of ICT tools and activities in schools

Finger etal (2007) cited by Almadhour (2010) stated that the term ICT is usually used to refer to computer –oriented and computer associated devices .however , it is said that it include other devices such as internet, mobile phones, plasmas, video recorder and wireless technology like WIFI. Finger etal (2007) in Almadhour (2010) observed that for more than a decade, ICT and education strategies have been essentially built around personal computer tools, but rapidly change in nature of ICT has expanded the use of its tools.

Doughty and Molenda (2008) postulated that ICT refers to the study and ethical practices of facilitating learning and improving performance by creating, using and managing appropriate technological processes and resources. Also use of emails, what app groups, as well as face book and learning is part of ICT tools that can be used in teaching and learning of Geography.

According to Evoh (2007) ICT tools refers to hardware, software networks and media used for collecting ,keeping processing ,ferrying and presentation of information in form of text or pictures. Perron et al (2010) Information and communication technologies (ICTs) are defined as electronic ways of ferrying, keeping and handling information. According to him these include e-mails, text messaging, video chat and online social media like face book. He said that also includes various electronic devices like laptops, desktops and smart phones that carry out wide range of communication purposes. ICT tools and activities in school follow the above mentioned views by different scholar not just confining to computers only.

2.2.2Status of ICT in schools

According Musarurwa (2011) president's office also launched a campaign by providing school with computer related equipment. He also said that even remote schools and universities were given a challenge to utilize ICT in teaching and learning although audit is yet to be done to see if the resources are still there and functional. The issue is not on availability but the condition of functioning .Alkahni (2017) said that ICT tools must be available but in a working condition to facilitate proper learning and bring change in education.

Nowadays every school has computers. Jonassen (2000) advocate that schools are judged on how many computers they have .he went on to say the number of computers a school has is not an issue, but the issue is how they are used. Cell phones are now everywhere they can be used in some learning issues. He said that teachers have insufficient training and experience with computers and they are trying to re-invent the wheel by trying to find out good software, workout how to fit into the classroom curriculum.

In most cases the computers are now old; he cited the inability of teachers to know how to use computers effectively.

According to the new curriculum requirements, the ratio of computers to the teaching and learning should be seriously improved. Previously researchers established that computers were required to be used by computer students only, that are student who chooses computers as their practical subjects. According to Shumbayaonda and Maringe (2000) they claim that the majority of schools in Zimbabwe do not have adequate and up to date computers hence need to establish whether schools in the district under target on adequacy of computers. Computers are the most common ICT tool found in schools although some are outdated.

2.3 Teacher capacities in ICT

Teachers recruited to teachers in secondary schools should have degrees, diplomas or certificate in education. According the Progressive teachers association survey carried in 2000, it was established that about 7.5% of teachers teaching in Zimbabwean secondary schools were untrained. In this era the researcher assumed that most teachers are now computer literacy in Chitungwiza district. Marlow (2003) said that candidates for teacher education or any training were to possess an adequate self-concept. The self-concept relates to knowing and imparting subject matter and skills as well as accepting pupils as learners and human beings Marlow (2000) say that competency in subject matter and knowledge is of utmost importance. Subject matter acquired must be relevant and used in teaching and learning in the public schools.

Almadhour (2010) advocate that in this era of technology a lot of teachers already have knowledge on some ICT, but what is only needed is to motivate and support them locally and globally with resources needed. By so doing this will enhance effective ICT integration.

Some researchers established that in order to facilitate in ICT adoption, the teacher need basic skills and knowledge on how to use ICT resources. The teachers also need the knowledge as whether the computer are stand alone or they are networked storage of data and accessing the computer files. Shumbayawonda and Maringe (2000) claim that most university programmers today need some kind of computer literacy courses which help students, hence to need to establish and find out whether ICT is integrated or not at secondary schools as well as problems which hinders the integration of ICT in teaching and learning.

A report by Mujakachi (2005) on impact of a school based information communication and technology centered in Binga district Zimbabwe, established that school pupils, teachers, local

government officers and public at large were trained on and receives certificates in computer application.

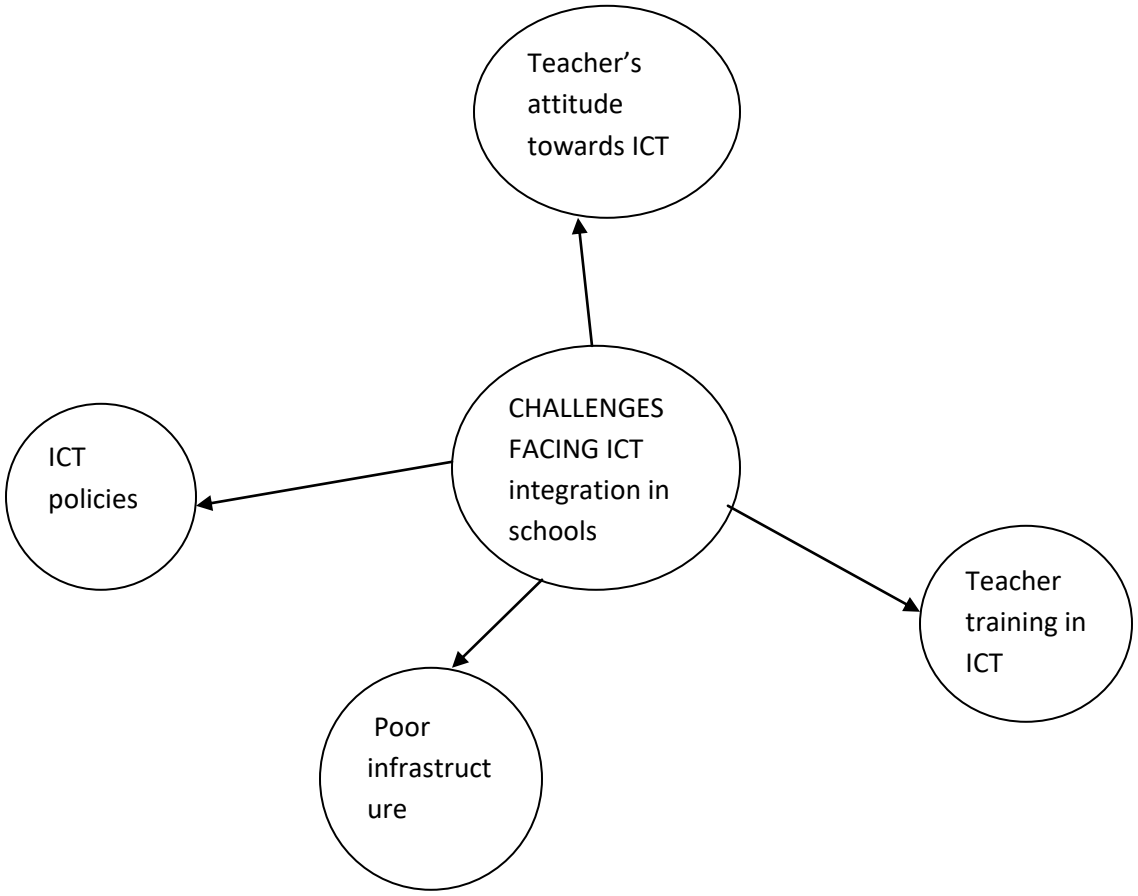
Sani (2010) said that the most important issue for ICT integration in schools is for teachers to have a professional development to increase skills. Some researchers said teachers who attend a professional development have chances to discover ideas on their own since they are adults so they can exhibit a tendency of self motivation in their learning.

Galanouli, Murphy and Gardner (2004) cited by Almadhour (2010) said that there is need for teachers to first be equipped with necessary skills on ICT so that they effectively integrate it in their teaching. This implies that if they are imparted with skills it means they became capacited in ICT hence the fully integrate it.

2.4Challenges faced by schools in utilization of ICT

Although benefits for utilization of ICT can be noted in the teaching and learning a number of challenges can be faced by schools in their effort to try and utilize ICT. According to Bingimlas (2009) cited by Mathevula and Uwizeyimana 2014 ,the act of integrating ICT into teaching and learning is a very big process and one can face a number of challenges. Technology taking over in many ways that people cannot resist it but has to accept and use it but in so doing problems arises. Korte and Husing (2007) in Mathevula and Uwizeyimana(2014) assert that common obstacles to successful ICT integration include lack of teacher confidence ,lack of teacher competence ,lack of effective training ,resistance ,lack of technical support and lack of infrastructure.

These factors are summarized below



Source: adopted from Korte and Husing (2007) cited by Mathevula and Uwizeyimana, (2014)

In the above diagram shows major challenges faced in trying to integrate ICT in teaching and learning. Some of the challenges are discussed below.

2.4.1Teacher training in ICT

Mudzebele (2013) advocate that teacher's lack of knowledge and skills in ICT are a barrier of ICT integration in education. In addition to that, she said that lack of knowledge and expertise and software have limited use of ICT tools in teaching and learning .she also assert that if there is lack of appropriate staff training and quality training for teachers results of ICT integration will

be poor.Mathevula and Uwizeyimana (2014) argue that ICT is a dynamic thing of which teachers need a continuous update in the changes and new teaching methods, failure to do so teachers will just ignore ICT yet it is vital. Teacher training should always be there to equip teachers with knowhow on new technology. Finger et al (2007) cited by Almadhour (2010) sum up this challenge saying that to integrate ICT in any subject teachers need both commitment and necessary knowledge. Training brings about professional skills in ICT and teachers cause the skills to integrate ICT in their teaching. The national ICT policy (2015) cited that inadequate ICT skills can be attributed to shortage of skilled manpower to train others. This policy said that there is need to integrate ICT from ECD education level which means manpower is needed from ECD up to the highest level.

2.4.2Teacher's attitude towards ICT

According to Mikre, 2011 and Oladosu, 2012 as cited by Mathevula and Uwizeyimana (2014) assert that teacher's attitude play a crucial role in the process of integrating ICT in teaching and learning. This will automatically mean if one has a positive attitude makes an effort to utilize ICT but a negative attitude may lead to resistance. Bingimlas (2009) as cited by Mathevula etal (2014) said that resistance is not a problem but is an indication of presence of a serious problem. The problem might be triggered by lack of knowledge and skills in ICT. Mikre (2011) as quoted by Mathevula and Uwizeyimana (2014) concluded on this issue of attitude by saying that motivation and confidence to integrate ICT in teaching and learning could only be possible if ICT equipment and necessary skills are there.

2.4.3 Lack of infrastructure

According to Muller and Paterson,(2005) as cited by Mathevula and Uwizeyimana (2014) poor infrastructure remains a challenge in many developing states. Mndzebele (2013) also support the above notion saying that development of ICT infrastructure in a country depend on the availability of the resources. She went on to say that computers, scanners, projectors, printers, updated hardware and software should be there but they are not available in the institutions. Looking at the above notions it means it not only a computer which is needed for successful integration of ICT in learning and teaching.

Brycki and Dudt (2005) argue saying that unavailability of working and updated equipment is also a challenge. This means that the equipment like computers might be there in excess but not in a working state or wit outdated software or without antivirus software still ICT integration and utilization becomes impossible. Hence lack of infrastructure and updated equipment are serious challenge which hinders teacher's progress in their lessons.

2.4.4 Lack of time

Mandzebele (2013) noted that another challenge faced is of lack of time, for instance most the teachers' teacher two subjects at secondary schools; others are over loaded with lessons. Hence the teachers need time to design, develop and integrate ICT in their lessons. Some teachers need time to meet experts in computers to be updated on how to use the hardware and software. It can be noted that time is a limiting factor in ICT integration since more time is needed to prepare

,pretest and assemble the ICT equipment to be used thus putting extra burden on the already overloaded teacher.

2.4.5Maintenances

This is another barrier in schools as they utilize ICT in teaching and learning. Mndzebele (2013) is of the notion that ,schools that have computers donated from the private sector and the government have challenge of maintains of the equipment and upgrading the system which is expensive for them. Donors simply give away equipment the burden of building safe computer laboratories updating the equipment wit antivirus, updated software goes to the schools that already lack funds this end dragging behind the utilization of ICT in schools.

2.4.6 Internet

The internet is another important source of up to date information of which schools can utilize. Mndzebele (2013) assert that it is expected that schools make use of the internet but in vain is only available in urban schools; there is limited access to internet in rural areas because of limited electricity and poor backgrounds. Moreover in those areas with internet access sometimes internet network is not available or slow. Hence if the internet has some problems yet it is vital in the integration of some ICT tools it becomes a big challenge which hinders progress of ICT integration in teaching and learning.

According to Musarurwa (2011), he said that Manyati (2006) carried out and come up with a summary of the challenges which include lack of skills on the teachers and students, lack of training, shortage of infrastructure, lack of capital to purchase the required hardware and soft

ware which is sufficient for the whole institution and lack prioritization of ICT on institutional budgets. These challenges hinder the rate at which ICT is integrated in schools.

2.5 SUMMARY

This chapter reviewed literature on teacher's perception, ICT tools, teacher capacity in ICT integration and challenges faced in schools in effort to try and integrate ICT. Chapter two provide a foundation for analysis of data in chapter four.

CHAPTER THREE

METHODOLOGY

3.0 Introduction

This chapter will focus on the research methodology. A discussion and description of research design, population, sample and sampling procedures to be used. Data collection instruments used will also be examined. The reliability and validity of instruments to be used to gather data such as questionnaires and interviews are to be provided and discussed.

3.1 Research design

According to Leedy (2013), research design is a plan and approach on investigation used to acquire answers to research questions. It provides the plan of the overall program of the research. This means that the researcher has to design a plan of action which involves ways, steps and procedures to methodically carry out the research. Descriptive survey was used as the research design because it is suitable considering accessibility of the population of my study. According to Chiromo (2009) descriptive survey enable extracting conclusions about a population based on a representative fraction. The researcher used the above view to choose a survey as a research design. Descriptive survey enabled the researcher to draw her conclusions about the ICT integration in teaching and learning of Geography in Chitungwiza District using a sample of five schools, hundred Geography students, twenty-five Geography teachers and five school heads. According to Best and Khan (2000) descriptive survey is used to attain information regarding the recent position of phenomena to express what exist with regard to variables or circumstances in a situation. The researcher used Best and Khan‘s view to choose descriptive survey as a research

design because it enabled the researcher to obtain information about the current position of the integration of ICT in the teaching and learning of Geography in secondary schools in Chitungwiza District. The descriptive survey design in cooperate both qualitative and quantitative methods of drawing data. According to Chiromo (2009) questionnaires, observations and interviews are part of the main ways of data collection in descriptive survey. In other words this design allows the use of a variety of data collection instruments. Hence because of the stated advent age a survey was chosen as research design because it allows the use of questionnaires, observations and interviews in my research and a large quantity of data was collected. According to Merriam and Simpson (1984), the technique represents a class of technique that use questioning as a tactic to get information. This makes descriptive survey the most suitable for my research.

According to Creswell (2007) when using both mixed methods approach the researcher mixes both quantitative approach that collects numerical data and qualitative that collects text data in a single study. Data collection method enable the researcher to see the same phenomenon from a different perspectives in order to understand the problem more completely because data in qualitative may require quantitative measures to meet requirements of specific research study. Quantitative data help to present statistical results in numbers and qualitative helps with descriptions. The researcher will use descriptive survey that only selects a part of the population to participate in the study. In my research survey was used to get information from geography teacher, geography students and administrators on their opinions on my research question. A survey was chosen because it allows the use of questionnaires, interviews and observations which allow a large quantity of data to be collected .A survey was used because it is simple, a group of geography students, geography teachers and administration will be selected.

3.2 Study population

Fridah (2002) assert that population is a collection of people, things or items from which a fraction is drawn from it for further investigations. Cannel and Kahn (2012) is in agreement with the above definition saying that study population is a group of people with the same characteristics from which a researcher intends to collect data. It is a subject of interest to the researcher. In this case geography students (form twos, four and six), geography teachers and school administrator were selected from five different high schools in the five clusters of Chitungwiza District to represent the population. These students were chosen because they are pioneers of the new curriculum, the geography teachers were chosen basing on the fact that they are the ones teaching the students and as for the heads they were picked because they are the ones who provide the ICT tools to be used The main reason for selection of these schools is to show the difference and allow some comparisons to be made. A sample was drawn from this population for a further investigation.

3.3.1 The sample

Webster in Yount (2006) defines a sample as a part of the targeted population .Wegner (2000) asserts that a sample is as subset of the whole population on which observations are to be drawn from. Hence from the above definitions a sample was used to represent the characteristics of the whole group because it was impossible to study the whole population of Chitungwiza district schools. The primary focus of this research was to look at the extent of ICT integration in teaching and learning of Geography, so a sample of five secondary schools do best. One hundred

geography students, twenty-five geography teachers and five administrators were selected to be participants of the study. The totals of one hundred and thirty participants were chosen.

3.3.2 Sampling procedure

This is this manner in which elements of a sample are selected from a given population.

3.3.2.1 Simple random sampling

The researcher used simple random sampling this is a probability type of sampling everyone has a higher chance of being selected. Baker (1998) said that in random sampling each member of the population has an equal and known chance of being selected. The researcher used simple random sampling to select geography learners and geography teachers to participate in the research. The researcher wrote pieces of paper with YES or NO and they were mixed to select classes, students and teachers to participate. Twenty-five teachers and one hundred students were picked at random basing on the fact that these are the learners doing the new curriculum and the teachers are the ones teaching them, all these participants are the end users of ICT tools in the teaching and learning of geography.

3.3.2.2 Purposive random sampling

Burke and Larry (2012) state that purposive sampling is a feature of qualitative research where the researcher hand picks cases to be included in the sample on the basis of their judgment. The researcher selected five high schools using purposive sampling technique to get a representative sample of schools from each of the sub-locations making up Chitungwiza District. Chitugwiza

District has five clusters each cluster with three secondary schools and of the three one is a high school. The researcher wrote names of high schools in each of the five clusters and five were picked at random. High schools were chosen because thus were a full secondary level ends unlike secondary school level ends at O level. Purposive sampling was used in order to have access to knowledgeable people those who have knowledge about the issues. In this case schools who offer geography from form one to six were chosen. School heads were also chosen using this technique taking into account that in schools we only have one school head.

3.4 Data Collection Instruments

Research instruments are tools to be used for data collection. In this study questionnaires and face to face interviews are to be used by the researcher .data to be collected from students and teachers through questionnaires and interview guide.

3.4.1 Questionnaires

According to John and Christensen (2012) a questionnaire is a way of gathering information and number of questions to be answered by respondents. The questionnaire should have an introductory letter informing the person of the purpose of the questionnaire, how the respondents were chosen, reasons for encouraging the person to respond and assurance of confidentiality Chiromo (2009).

According to Kumar (2011) he said that a questionnaire is series of questions to be answered by a respondent and answers to be noted down for each question and simple language to be used.

This is done to make it clearest to the respondents since the researcher will not be present during time of completion to clarify on issues failed to be understood by the respondent.

The researcher used the above guidelines to design questionnaires for the geography teachers and geography students. Questionnaires were administered to hundred geography learners and twenty-five teachers using self administering method. Kumar (2011) said that self administering method is whereby questionnaires are distributed to the people at a different places and times by the researcher. This method is fast and reliable as the researcher get the completed questionnaires here and there, at the same time saves travelling expenses to come back and collect the papers.

The researcher used open ended and closed ended questions. Cohen et al (2005) advocate that open ended questions gave respondents room to give their own views in their own words. Open ended questions used at both teachers and student questionnaires gave the respondents freedom to write their experiences and perception about ICT integration in Geography.

In this qualitative researcher mixed questionnaires are to be used because possible answers are unknown and the questionnaire will be explanatory. Open ended questionnaires can enable respondents to answer as much questions as they wish and qualify their responses and avoid the limitation of present categories of responses (Cohen et al 2005).

3.4.2Interview

Cannel and Kahn (2010) said that an interview is a two person conservation initiated by interviewer for specific purpose of obtaining relevant information and focus by him on content specified by research objectives of systematic description, prediction or explanatory. Powney and Watt(1984) cited by Alkana (2017) also is in agreement with the above definition of

interview saying that it is a dialogue between two or more people where the participants will be replying what is being asked by the interviewer.

The researcher used face to face semi structured interview to obtain information from the school heads. This helped the researcher to gather information about attitudes and opinions of school heads on ICT integration in their schools. Oppenheim (1992) said that face to face interview is made to explore tone of voice, facial expression and provide a lot of information that could not be explored from written responses can be obtained.

I planned my interview following Robson (2002) idea cited by Alkana (2017) said semi structured interview need the following introductory remarks, list of questions to be followed closing remarks. This is how the researcher planned her interview guide shown on the Appendix. At the beginning of each interview section, the researcher first introduces herself and explained the purpose to investigate the ICT integration in teaching and learning of geography.

Chiwawa (2000) said that interviews provide a desirable combination of objectives and depth valuable data that questionnaires cannot obtain. Because of this advantage thus why the researcher used it. Interview was also chosen because it has a high response rate, all questions were answered. Gall et al (1996) said that interviews involve the collection of data through verbal interaction between individuals and there is a high response rate.

However interview need proper planning so that better results are yield. Tuckman said that interviews should not induce uneasiness to the respondents hence this can result in violation of ethical issues. Babbie (1992) argue that interviews can be stressful to both the interviewer and interviewee. The researcher find some difficulties in making appointments to interview the

school heads some would say they are busy , some un available on the interview date which end up stressing the researcher but finally it was successful.

The researcher preferred to use interview because specific questions were repeated when the response indicates that the respondent misunderstood. Interviews also have a better response rate because many people feel more confident over speaking than writing ability (Woolfork, 1990)

3.5 Data collection Procedure

The researcher obtained information about ICT integration in Geography from five schools in the Chitungwiza district. The researcher obtained a letter of permission to carry out a study from Midlands State University Faculty of Education, then researcher went to the head office where she was granted a letter to take to the province for further permission. Then the researcher was granted authority by the Harare province to go to Chitungwiza district. Chitungwiza District inspector gave the researcher permission to visit the sample schools. The researcher visit the sampled school where she made some pre-arrangements to visit their schools and interview dates will be scheduled. The researcher visited the schools to collect data prior to the dates agreed. The researcher administered questionnaires to the geography teachers and learners selected. Confidentiality of both schools and participants were provided .each teacher and learners were given a questionnaire clearly starting information of confidentiality.

The researcher visited the schools after making appointment to conduct interviews with school heads. Responses were recorded. Interviews guide were used which consist of open ended questions which require a detailed responses. The researcher finally gave a vote of thanks to all the participants.

3.6 Ethical measures

The ethical issue concerning the relationship between the society and the sciences revolves about the study including. A description of all features of the study might reasonable influence willingness to participate. The research will first agree with participants before interview them. Participants will be informed not to write their names and assured that their information will be private and confidential.

3.7 Data analysis plan

According to Burke and Larry (2012) the data were collected through questionnaires and face to face interviews with the use of tapes as the interviews were conducted. As the researcher planned to use during interviews voice recorder to capture information from participants .Data was entered into the computer for storage, segmenting and coding. Next stage was to develop categories systems, identifying relationships such themes, patterns, construction of tables, graphs and diagrams. Then collaboration and validating of results is lastly done.

According to Burke and Larry (2012) in data analysis the researcher needs to rely on data that will help to understand the case and answer research questions. Questionnaires which are open ended and depth interviews helped to provide information which was qualitative data it was presented in form of text. Tables, pie charts and graphs will be used to present the information. Research questions and relevant findings will be presented for each question formulating themes or subtopics. Topics and themes will be around the extent to which societal concerns and cultural values should direct the course of the research as stated by Manion and Morrison (2011).the

researcher will intend to inform the participants developed in the analysis especially those formulated from interview questions.

3.8 SUMMARY

The research methodology showed the research design, instruments and data collection procedure and data analysis plan. A descriptive survey design which enabled the researcher to use a variety of instruments like observations, questionnaire and interviews .These research tools and their justification was done in this chapter. The next chapter contains the presentation of findings, analysis and discussion of the findings in relation to the literature review.

CHAPTER FOUR

ANALYSIS, PRESENTATION AND DISCUSSION OF FINDINGS

4.0 Introduction

This chapter presents findings, analysis and discussion of main research findings isolated from interview and questionnaires administered in five High schools studied in Chitungwiza district. The research was aimed at investigation into the integration of ICT in teaching and learning of Geography.

A total of twenty-five questionnaires were sent to twenty-five teachers and all were returned. All the participants were geography teachers and they were from twenty years and above. A total of hundred questionnaires were administered to students asking about gender, level of students, whether they are given opportunity to use ICT and challenges faced in trying to integrate ICT in their learning of Geography. The rate of return was hundred percent. Five school heads were interviewed and results were presented in the summary after they have been transcribed and key points noted.

4.2 .1 Teachers perception regarding integration of ICT in teaching Geography.

Table 4.1 Teachers' responses on whether ICT integration in teaching geography improved quality of student learning and performance.

RESPONSES	**FREQUENCY**	**PERCENTAGES %**
No change	2	8
Improved	23	92
Totals	25	100

All participants were geography teachers 92%had a positive view regarding integration of ICT in their teaching of geography. A question was asked “if you use ICT in teaching and learning to what extent do you think use of ICT has improved the quality of student learning and performance? “ .Most participants perceived that ICT use improved the quality of students learning and performance.

On the other hand, 8% of the teachers had a negative view. They argue that they had found no change in integrating ICT in teaching geography. These participants, I later discovered that they had been teaching for more than twenty-five years and hold diploma in Education only. It is possible that these are long serving teachers who did not know the impact of ICT on their student learning.

4.2.2Pupils perceptions on ICT integration in learning of Geography

The following question was asked “Rate the extend of your agreement that if ICT tools are integrated in learning of Geography enhance your “

Table 4.2 distribution of responses on pupil’s agreement

Responses	**Frequency**	**Percentages %**
Strongly disagree	0	0
Disagree	0	0
Agree	90	90
Strongly agree	10	10
Total	100	100

From the table 4.1 the all learners had a positive view on whether ICT if integrated in their learning it can improve and enhance their understanding in geography. From the above table it shows that most learners had a positive view that if ICT is integrated in their learning they become actively involved in learning of Geography.

4.3 ICT tools and activities found in schools

Table 4.3 tools used by geography teachers

School	ICT tools and activities
A	Laptops ,computers ,internet ,projectors ,smart phones what app
B	Projectors ,internet ,smart phones ,camera ,computers ,what app
C	Internet ,laptops ,computers ,what app ,internet
D	Internet ,computers ,laptops ,interactive boards, projectors, smart phones ,emails ,what app
E	Smart phones ,what app, computers ,internet

Table 4.2 shows that internet is the most common and important ICT tool used by teachers' .smart phones and computers are also used by teachers. The researcher asked a question "how often do you use the following ICT tools and activities?" from the responses internet was the most commonly used tool by the respondents. Cell phones and what app groups for educational learning are also commonly used by Geography teachers.

4.3.1 ICT tools which are being used by Geography learners at school A.

Below is a picture of students taken using some the ICT tools in their Geography GIS LESSON?

Fig 1: geography upper sixth students in a GIS lesson using ICT tools

The above fig 1 shows some Geography students in their geography lesson. The picture shows us learners using their laptops during a GIS lesson. The picture shows another ICT tools that is a projector and an interactive white board used by the teacher to facilitate his power point presentation. Another ICT used by students in the above picture is the GIS software as well as the internet.

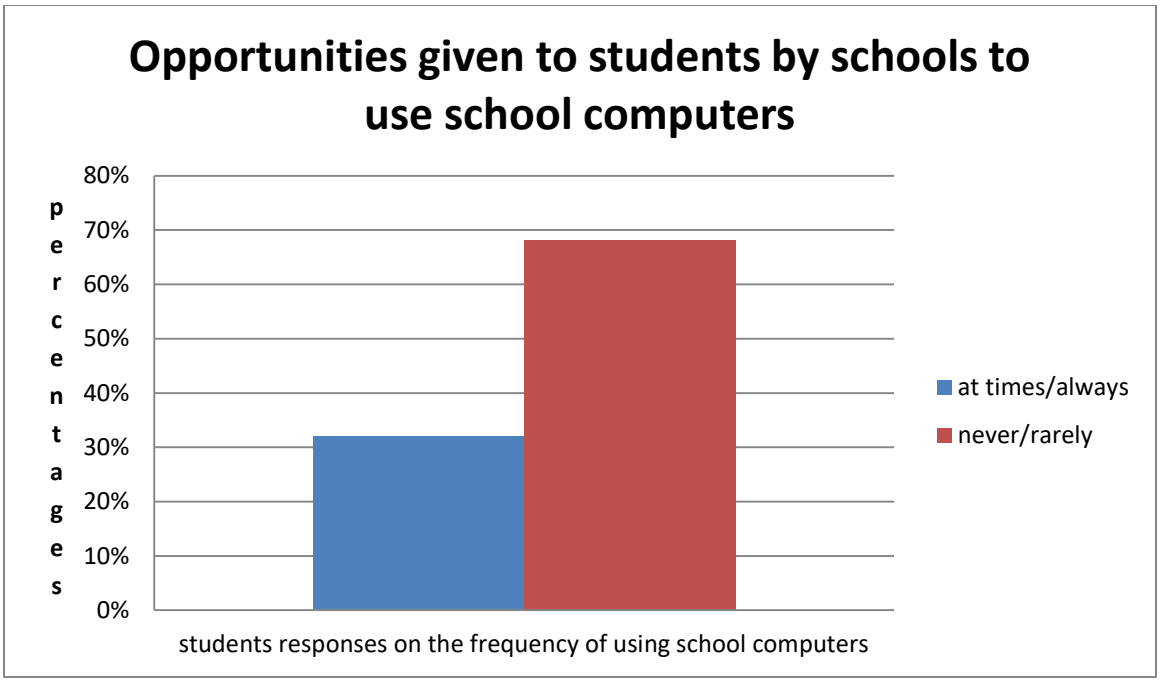


Fig.2 Use of school computers in the learning of Geography

Fig 2 above shows that 68% of the students indicated that they were rarely allowed to use school computers in learning Geography. The Geography students indicated that computers were mostly used by those students who take computers as a subject. From figure 2 shows that only 32% of the students were allowed always to use school computers.

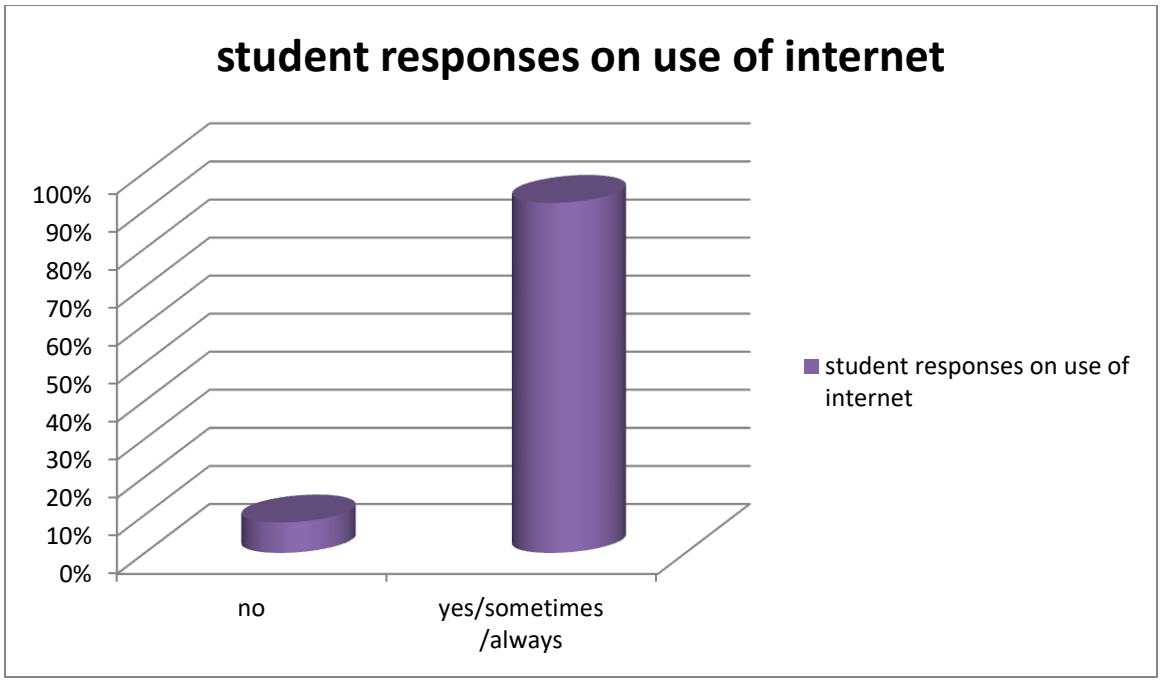


Fig 3 student responses on the use of internet to look up for geography notes and assignments

Fig 3 above shows that 92% of the students were using the internet an ICT tool to search for Geography notes and assignments. About 8% of the students said that they do not use the internet to search for Geography information, notes and assignment. Most learners were in agreement that they always and sometimes use it. Very few who say that they are not using it they claim that they do not have the gadgets connected to the internet.

Administrators were also asked about the number of computers they have at their schools. 40% of the administrators state that they had more than fifty computers and sixty percent state that their schools have less than fifty working computers.

Also from the information l got from the administrators in terms of students allowed bringing to school their laptops and smart phones. All the administrators of the five schools say that their

school policies only allow A level students to bring these to school. O level and ZJC students are not allowed to bring laptops and smart phones the use at their homes. Only those who take computer as a practical subject are allowed to use computers in the computer lab.

The administrators said that they use what app and emails to communicate with their staff. They also use typed notices which used to be pasted on the notice board to convey messages. In terms of the extent to which ICT is used in their schools they all agree that tools like computers, WIFI for internet use, projectors and laptops are used but there is need to increase and improve on the provision of the facilities. Schools lack funds to improve these tools at a faster rate.

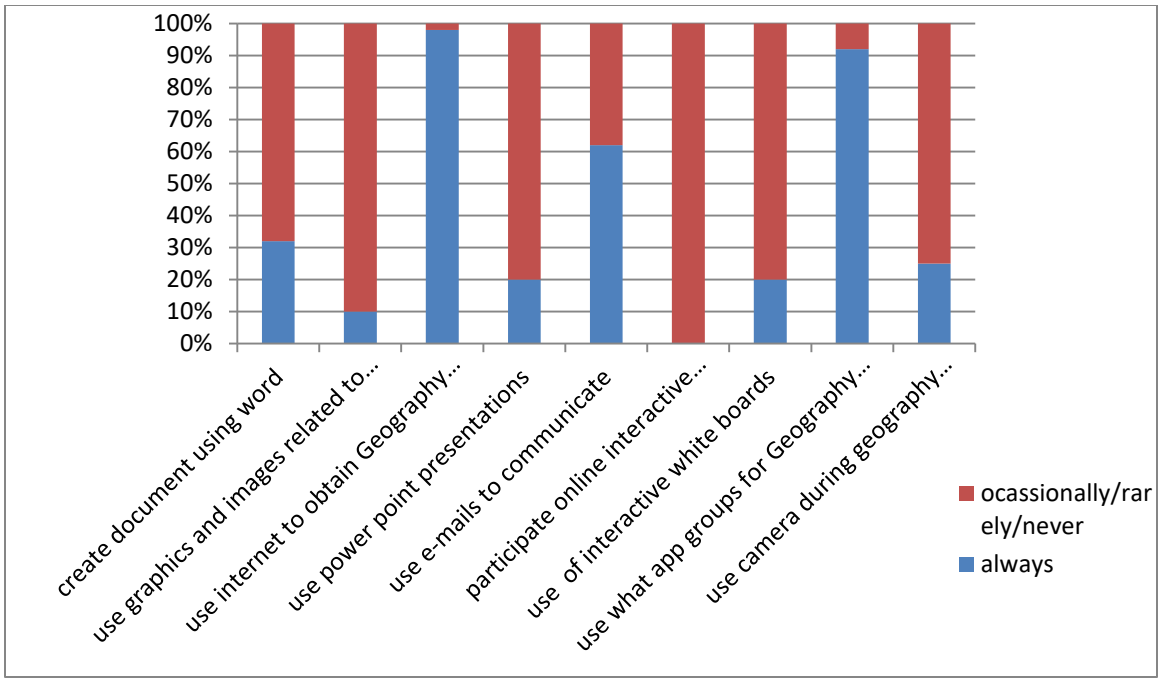


Fig 4 usage of ICT tools and activities

Fig 4 shows that 32 % of the teachers were able to use computers to create word documents whilst the bulky 68% do not use it. 10% of the teachers always used graphics and images related to geography, a larger number 90% rarely or never used these in their lessons.fig 4 also shows that 20% of the teachers always used power point presentation and the rest more than three quarter 80% do not regularly used power point presentation.66% of the teachers used e-mails for communication whilst 32% do not use them. All the teachers indicate that they do not participate on online interactive geography discussions.fig 4 shows that 98% of the teachers used what app groups to discuss geography materials only 2% dot use them .A quarter 25% of the total teachers indicate that they used cameras during fieldwork whilst 75% do not use cameras during Geography field work.

4.3 How capacitated are the teachers in using ICT in teaching?

A question was asked whether one has attended any ICT course below is the responses

Table 4.4 Data on ICT course attendance

Responses	Frequency	Percentages %
Yes	10	40
No	15	60

Table 4.4 the above table shows that a large proportion 60% of the teachers have little knowledge about ICT. About 40% have knowhow on ICT. This shows that teachers are not well informed about ICT usage yet they are expected to integrate it in their teaching.

From the interviews with administrators, 100% of the administrators indicated their teachers had skills in ICT. One of the school head at school B said,"50% of teachers at my school have been trained by ZANET to incorporate ICT in teaching"

4.4 Challenges faced by schools in the utilization of ICT in teaching and learning.

4.4.1 Challenges faced by teachers

These findings are drawn from teachers' questionnaires.

Teachers identified a number of challenges they were facing in trying to integrate ICT in their teaching. On the teachers' questionnaires the teachers commented that there is quick expansion in technology so there is need for professional development courses to improve skills and integrate ICT meaningfully. Teachers wrote that they lack the knowledge on ICT.

Another challenge noted by the teachers is that of fear of technology. The teachers say they have little knowledge about ICT hence becomes difficult for them to integrate. On the teachers' questionnaire Teacher X even cited that,

…… *the learners know better than us hence teachers end up getting afraid of embarrassment from the learners who are the best teachers of technology in their community*.

Teachers had fear because they thought learners who are minor know better than them when it comes to technology.

Teachers noted that learners end up misusing the internet downloading pornography and bullying, uploading and posting embarrassing pictures of people on the internet. On the teachers questionnaire Teacher Y wrote that,

…….. *some students ended up accessing pornography and all sorts of things and taking photos of people and post them in groups created for learning purposes of which is wrong.*

This just gave challenge to teachers almost daily as received reported cases of pupils complaining about that issue.

Another teacher on the questionnaires cited that,

…….*our learners ended up downloading heaps and heaps of stuff which they have no idea what it is or they will just copy and paste.*

Learners cannot select information which suits their level of learning or using irrelevant information from unreliable sources like Wikipedia. Thus their challenge as they mark pupil's assignments pupils simply copy and paste because they cannot select appropriate staff.

Teacher Y also cited a challenge they were facing with their learners using the internet saying that,

……our learners are accessing pornographic materials that affect their psychological thinking. It is difficult for them as teachers to monitor students on internet both most them no engaged in drug abuse, rape of minors and prostitution is because they want to experiment what they have seen on the internet. Cases of drug abuse and rape of minors are increasing blame is the internet.

Teachers also noted that they are facing a problem of lack resources and limited time to use these tools since they need pretesting before use. They note that there is a compulsory topic from form one to six in geography Map work and GIS which demands use of computers on it yet the facilities are not there and even the teacher does not have the knowledge.GIS software is expensive some schools cannot afford it. Color printers, scanners, digitizers, GPS receiver and computers with a large memory are needed in GIS but they are not available in the studied schools.

Another challenge faced by the teachers is that lack experience in GIS since it is newly introduced in the curriculum and it is used across from form one to six yet the teachers do not have any knowledge about this .this create problems on the teacher's side. From the teachers' questionnaire Teacher Z even wrote that,

……. I graduated from a teachers' college eighteen years ago nothing was taught there about GIS but am expected to teach it from form one up to four but l have no idea about it. This seems to be a great challenge to all teachers because this is a new this integrated in curriculum.

4.4.2 Challenges faced by learners in trying to integrate ICT in learning geography

Form twos and four noted that they were facing a challenge of not being allowed to bring smart phones and laptops to school yet the new curriculum demand them to research on the internet. From the students' questionnaires one of the students A said that,

…a*t home we also faced a challenge that parents thought they are still too young to own a laptop or a smart phone.* Students were complaining saying that they have no freedom and lack support in ICT integration both at school and at home.

Some students even acknowledged that they were from poor backgrounds they cannot afford to buy the laptops. These students also noted that only those who take computers as a practical subject are the ones allowed in the computer lap to use school computers. Student Z wrote the student questionnaire that,

……..at my school we are not allowed to be in the computer lab if you don't take computer as your practical subject this is unfair to us who are from poor background at home we have nowhere to research on internet our assignments. Pupils were facing challenges in their schools as they are not given enough support on ICT.

The A level students although they were allowed to bring laptop and smart phones they are facing a number of challenges. First one being of poor WIFI signals sometimes at the school, poor internet due to congestion, power cuts, virus in the laptops, lack of devices to use and shortage of time to fully utilize the ICT tools. One A level student B wrote on the student questionnaires that,

……. *yes we are allowed to bring laptops and smart phones but at my school we are tired of thieves in the classrooms*. Thieves had increased in numbers at school as students end up store each other's gadgets.

Another A level student C wrote on the questionnaires that,

…….. *Yes WIFI is there at our schools but most of the time it is slow or even unavailable and this worsen things*. Poor WIFI signals were always experienced yet internet is the most used and needed ICT tool.

4.4.2.1Possible solution to the problems encountered by students

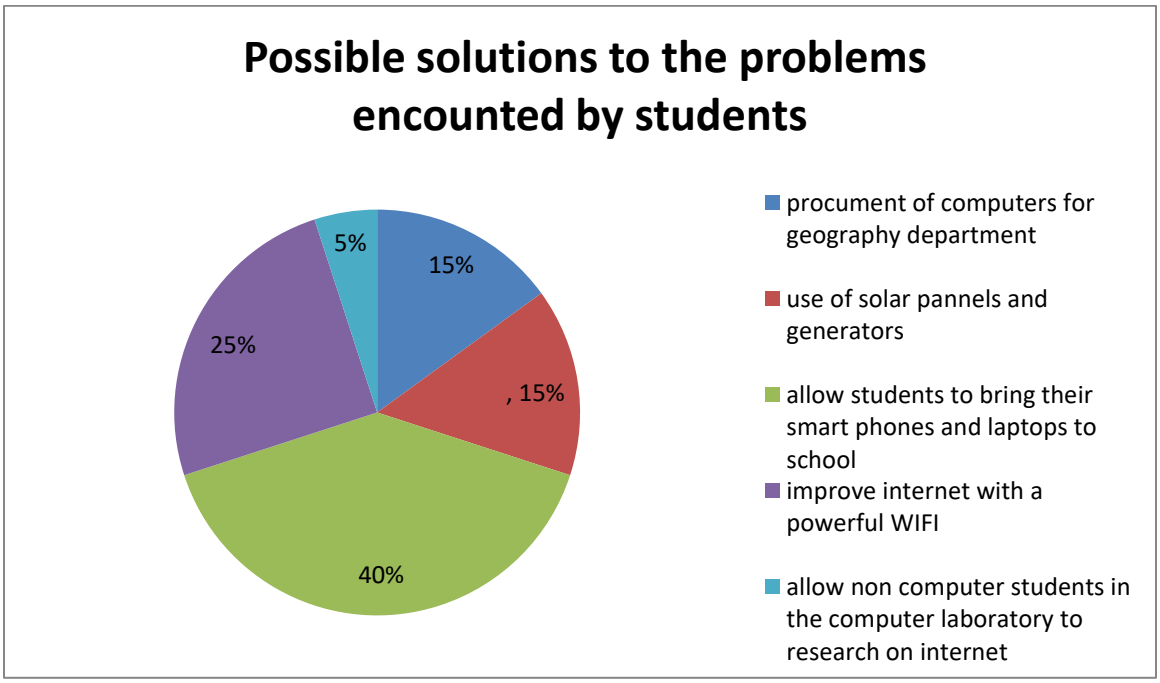


Fig 5 below major possible solutions raised by students on problems they encounter during ICT integration in Geography

Fig 5 shows possible solutions cited by students 40% recommend that the school authorities should allow them to bring their own smart phones and laptops to school .this view came from the lower level students ZJCs and O level students. A Level student 25% is one who raised the issue of improving the internet with a powerful WIFI signal. Most schools allow A level students to bring their laptops and smart phones to school.15 % of the students recommended the purchase of generators and solar panels to prevent lesson disruptions when using power point presentations or when using computers in their lessons. Another 15% of the students suggest that the schools should acquire more computers specified for the Geography departments. The last segment about 5% suggest that non computer students should also be allowed in the school compute laboratory so they will utilize the computers in whatever they want to research.

4.4.3 challenges faced by both teacher and students in try to integrate ICT IN Geography

Table 4.5 summary of challenges faced by both teachers and learners in ICT integration in Geography

CHALLENGES	POSSIBLE SOLUTIONS
Inadequate ICT tools	Need for the school to purchase laptops for teachers and request parents to buy laptops and smart phones for their children
Lack of knowledge and skills	Need for staff development and training for both teachers and learners on ICT use
Power cuts	Purchase of generators and solar panels to supplement power
Slow and poor internet signals	Purchase by schools powerful internet WIFI
Lack of adequate time to fully integrate ICT	Allocate sufficient time
Failing to understand the Microsoft and pastel	Need for enough training in ICT

The above table gave a summary of common challenges encountered by teachers and learners in trying to integrate ICT and their suggested possible solution.

4.4.4 Challenges faced by school administrators in trying to integrate ICT

From the interview with the administrators, 100% of the school heads said that they were facing a challenge of lack of funds to purchase new ICT tools for the schools. Head of school at school E said that,

…… *most pupils are not paying up their school fees yet the schools had a lot requirement to meet so we end failing to purchase more equipment children has to share the little that is there* .Most schools lack adequate funds to purchase more ICT tools hence ICT are a scarcity.

From the interview with school heads one of them even mention a challenge of resistance from the teachers saying that,

…….. *Some teachers resist change they are unwilling to attend programs done to enhance their skills some are ignorant they attend workshops on ICT but they do not implement what they had been taught just resort to old ways.* So teachers' attitude is affecting ICT integration in their schools.

Head at school C cited a major challenge they are facing at their schools of over enrollment.

The problem with us schools locate in high density suburbs is of over enrollment our classes are too big hence became a problem in providing adequate ICT tools to cater for all these students. Thus what was said as a challenge hindering the rate at which ITC is integrated in schools?

All the school heads said from the interview that their school policies allow only A level students to bring their laptops and smart phones .They said that problems of theft has increased among the A levels what more if the whole school bring their gadgets it becomes a high risk. Network congestion is the cause of poor and slow wifi signals.

4.2 DISCUSSIONS OF THE FINDINGS

4.2.1 Teacher's perceptions on ICT integration

From the teachers' responses it is noted that they had a positive view that by using ICT this can lead to student centered and involve active learning in the classroom. The old curriculum long back seem to be teacher-centered it was book centered, pupils were not active involved however learning become more learner centered when ICT was introduced in teaching geography. Learning improved a lot.

According to Khino and Fisher, (2003), they supported teachers' view saying that when learning is learner centered this gives room for learners to develop new ways of thinking and actively participate in their learning system. Hence learning of geography has improved a lot since the integration of ICT.

Isaac (2007) cited by Mathuvule (2010) supported teachers' perception saying that the use of ICT in secondary schools improve the quality of education in the short run. Peter (2010) also supported the above view and said ICT use leads to an increase in efficiency and effectiveness of educational tasks especially in vocational subjects

According to Macho(2005) cited by Almadhour (2010) he argue that some researchers oppose the above view saying that there is no enough evidence supporting the information that using ICT in education bring change in student learning to a better position. 92% of the teachers disagree with Machos' view and stand firm that ICT integration in teaching improve student learning. Maybe the 8% the teachers with a negative perception on ICT integration are the ones in agreement with Machos' point of view. Teachers with a negative view I discovered that they had not attended any ICT course, they have more than twenty-five years in service, and they are

holders of diploma in education. Probably these teachers have a phobia of technology and they are resisting change

From the findings 8% of the teachers who said that they found no change if ICT is integrated in teaching geography. They are supported by Kozma (2003) cited by Mathevula (2010) who said there is a negative relationship between frequency of computer use and school achievement. This means over use of ICT tools leads to student's failure because they end up abusing the tools.

From the findings teachers view that the most ICT tool used in schools is the internet so when they that wrote about the challenges encountered during ICT integration most wrote on their questionnaires challenges brought about by the internet. Most teachers on the questionnaires wrote that cyber bullying and pornography materials are what their students end up assessing with the ICT tools. This is a big challenge from the teacher's perspectives .Finger et al (2007) cited by Almadhour (2010) supported teachers' views saying that pornographic materials and pictures can affect learners minds in a negative way. Pupils end up engaged in anti social behaviors trying to imitate what they had found on the internet. Hence research is in agreement with teachers' perspectives.

Wolak, Frinkler and Mitchell (2004) cited by Almadhour (2010) is in agreement with findings from teachers. They said that most crimes like sexually abuses committed by young children are enhanced by what they discovered on the internet hence bad experiences.

4.2.2 ICT tools and activities used in schools

From the research findings ICT tools such as laptops, computers , internet, smart phones, camera and projectors activities found in schools are what app ,emails, power point presentation ,create word documents, graphic and image related videos were used in the sampled schools. From the findings ICT tools found in schools are not specifically for geography departments but for the whole schools especially computers. The findings from teachers, students and administrators showed that they have a variety of ICT tools in their schools but they are inadequate.

Literature is in support with the findings on ICT tools found in schools. Finger et al (2007) cited by Almadhour (2010)said that long back ICT and its' integration in education used to highly focused on computer tool but because of rapid change in this era of technology ICT has widen to involve a lot of tools. This is in agreement with findings as the schools are using a variety of tools and not just a computer.

Perron, etal (2010) Information and communication technologies (ICTs) are defined as electronic ways of ferrying, keeping and handling information. According to him these include e-mails, text messaging, video chat and online social media like face book. This is in agreement with the findings as most teachers, learner and administrators were using emails and what app to communicate with colleague this which had to with education. Perron, etal (2010 said that also ICT tools includes various electronic devices like laptops, desktops and smart phones that carry out wide range of communication purposes. This is in agreement with findings on the ICTs tools the only difference is that schools did not mention face book as an ICT tool that can be used for educational purposes.

The findings indicated that very few teachers 25% used cameras as an ICT tool in field work. Surprisingly teachers seem to have smart phones with digital cameras but they indicated they do not use cameras yet the use their smart phones to take pictures during field work.

Findings showed that none of the school did mention anything about scanners, color printers and GPS receivers .Literature said that these tools are essential in GIS but none of the school had any of the tools. Mndzebele (2013) said that computers, scanners, projectors, color printers and updated software and hardware should be there for educational institution.

Findings showed that the Geography departments in all the five schools studied, have limited range of computer hardware, software and they do not have the required GIS software like DIVA, GRASS and QGIS. The internet is an important tool which also supports GIS usage to locate geographical areas and location is fast if internet transmissions are fast. Due to computer shortages this means internet is also limited which affect student learning who end relying on outdated text books. From the table of tools listed it shows that Geography departments of studied schools do not have color printers, scanners which can be used to print out GIS images and input data into computers like maps scanning. None of the schools mentioned that they have Global Positioning System (GPS) receiver needed to work out the exactly location of the users. Looking at usage of ICT tools and activities above it shows that schools are utilizing a variety of these tools. It shows that internet is most frequently used ICT tools. Activities such as what app groups, emails, Google they make use of the internet. In this era of technology most teachers communicate electronically with their students and other teachers. Smaller percentages in the use power point presentation, use of graphics and images as well as create word document it it's not because teachers do not want to use them it is caused by challenges. Lack enough equipment like projectors, power cuts, shortage of computers and laptops and even lack of skills in computers.

The graph shows that ICT tools are utilized but not 100% fully utilized in schools. Shortage of equipment is a problem in schools. As for the internet it not fully used because sometime it is not available in some areas or even slow hence some can note use it always. Another ICT used greatly is smart phones this is revealed by a high percentage of people participating on what app group discussing geography and also use of emails and even searching for geography teaching resources is also done on smart phone.

4.2.3 The extent to which teachers are capacity in ICT

From the analysis of table of results less than half of the studied sample of teachers can have the capacity to integrate ICT in their geography lessons.60% which is more than half cannot utilize ICT because they lack enough knowledge hence less skills in ICT. There is need for staff development and short ICT courses to be provided at school level so that teachers will be equipped with necessary skills in ICT. Teachers cannot impart change in their teaching methods without enough knowledge on what to do exactly other they will end up resist or ignore the changes to be effected not because they do not want but because they lack the expertise in that area. Literature supports the findings that lack of skills in ICT result teachers failure to integrate ICT. Jonassen (2000) said that teachers are well trained and do not have enough skills with ICT, they are struggling using limited knowledge in order to fit into curriculum.

Finger et al (2007) supported teacher's findings saying that teachers need both commitment and skills. If they lack skills they cannot integrate ICT. Limited ICT integration is best attributed to teacher lack of capacity and skills in IC T.

Musarurwa (2011) said that the president's office donated computers and related equipment to all schools and universities .teachers colleges and polytechnic were left out yet these are sources of teacher's knowledge. This implied that the produced teachers were not well capacitated in computers yet they are expected to teach the students in schools. Lack skills in ICT affect the teachers' capacity to integrate it in teaching and learning. Mwalongo (2011) argue that for effective ICT integration in education, quality teacher training needs to be done. This is in agreement with the findings, teacher's failure to acquire skills from a course result in them not integrating ICT in teaching Geography.

4.2.4 Challenges faced by schools in utilization of ICT in teaching and learning.

From the findings on the challenges faced by schools in utilization of ICT, it shows that there is inadequate use of ICT tools in Geography departments of the studied schools. Students and teachers have limited access to working computers at schools. These influence their rate of ICT integration to be slower in the teaching and learning. Muller and Paterson (2005) supported the findings; they said that poor and limited ICT infrastructure remains a problem in developing countries (cited by Mathevula and Uwizeyimana (2014). Mndzebele(2013) is also in agreement with the findings, she said that updated software and hardware should be there in the institutions but they seem to be unavailable. So lack ICT tools in school affect the extent to which information communication and technology is being integrated in the teaching and learning of Geography in schools. Brycki and Dutch (2005) also argued that unavailability of working and updated equipment is a barrier to ICT integration in teaching and learning.

The findings reflected that one of the challenges faced by schools in utilization of ICT is lack of skills and knowledge in ICT. Teachers and students indicated that they need training in ICT especially on how to use the ICT tools so that they can improve their state of ICT use in their lessons. Mudzebele (2013) supported the findings; he asserted that lack of knowledge and skills in ICT is a barrier to ICT integration in Education. This was also supported by Jonas senior (2000) who pointed out that teachers are not well trained in ICT; they do not have enough

experience with computers hence they are trying harder to fit into the curriculum. Pepe (2016) said that teachers need a professional development in ICT to equip them with necessary skills. These views by previous researchers are in agreement with the findings of the research.

From the data collected from the teachers it is clear that fear within the teachers is great challenge in ICT integration in teaching Geography. Teachers fear technology and they also fear embarrassments from the students as they thought that students are ahead with technology that adults. Mitchell et al (2009) pointed out that many innovations are not put into practice because of fear of change in the status quo.

The findings from teachers indicated a challenge of their learners who lack guidance and end up down loading unnecessary materials from the internet and even failure of pupil to select learning stuff suitable to their age. Scholars such as Mikre (2011) cited in Mathevula and Uwizeyimana (2014) agreed with the findings pointed out that there is a danger that learners may end confused by too much information on the internet. At the end they download unnecessary information.

Results indicated that schools are facing a big problem of learners accessing websites with unrecompensed materials like pornographic materials pictures that end up affecting the learner's psychological thinking. From the findings a challenge of learners misbehaving as they try to imitate what they could have experienced on the internet. Mathevula and Uwizeyimana (2014) agreed with the findings and said that use of ICT to access websites may lead to some students engaged in Satanism, promiscuity and drug abuse as the learners try to experiment what they had found online.

The findings from students indicated that they facing a challenge of poor and unavailability of internet in schools. Mudzebele (2013) is in agreement with the findings saying that, schools are expected to have internet access but only urban schools mostly can provide it, rural areas and some other parts internet is limited.

From the result of the interview with school head the said computers are there in schools but a few of them are still in good condition working. The issue of maintenance of available ICT tools is a challenge in schools due to lack funds. Mudzebele (2013) agreed with the findings, he pointed out that schools have computers donated by the private sector and government but they

are facing a challenge of upgrading, service and maintain the available equipment due to limited funds in schools.

Results differ from literature in that form two and four students cited they are facing a lack support from both schools and home. They are not allowed to bring laptops and smart phones at school at the same time some parents their children are too young to own ICT hence this challenge hinder them to fully integrate ICT in their learning of Geography.

Data collected from the students indicated that A level students were facing a challenge of high levels of theft of their ICT tools. This became a barrier to them because they now cannot fully utilize ICT tools in learning. Their gadgets may be stolen so they resort to use them at home rather than at school. Nothing is said by literature about this.

Findings from school head indicated that over enrollment in schools is a barrier to effective ICT integration in schools. Nothing is said by literature concerning this issue.

Literature also notes some barriers to ICT integration which were left out by the participants. Mikre (2011) highlighted a number of problems that can be faced by some individuals and schools in their effort to utilize ICT. He said that that computer based learning has effects on physical body of end user such as vision or eye problems. Findings never mention any thing about health issues. He went on to say that students end neglecting other learning resources in favor of internet and computers. Another challenge he cited is that students end losing opportunities to use oral skills and handwriting and lastly he said students through the use of ICT only benefits brighter students than weaker students who always need teachers' guidance. All these problems were not reiterated by the research findings.

Literature also said that teacher's attitudes need to be addressed as it affects Integra. Mikre (2011) and Oladosu (2012) pointed out that teacher's attitude affects ICT integration, a positive attitude brings a good motive and confidence in ICT integration. (Cited in Mathevula and Uwizeyimana (2014). Sani (2000) asserted that teachers lack beliefs in ICT value. Findings didn't mention anything about teacher's attitudes yet it influences ICT integration.

Internet seems to be an important tool in geography, but is not reliable because most of the time the internet network available or is slow. If the challenges are not addressed this will hinter ICT

progress in teaching geography .From the above analysis students raise a possible solution that they should be allowed to bring their own laptops and smart phones to school to use them in their lessons. Probably this will solve the problem of shortage computers in schools where everyone will be congested in the few computer laboratory computers which are few. Contrary to this if all the students from form one to six are allowed to bring laptops and smart phones to school a lot of problems arise for example high rates of theft a school, burden on poor parents who cannot afford, high electricity bills in school and even congestion on the network which will result in its slower speed.

Possible solutions from student which says procurement of computer specified for Geography departments. This is a noble idea as it easy congestion in the school computer laboratories. In addition to that Geography department use GIS software which need to be installed in their specific computers hence if they use computer practical students' laboratories they use a different soft ware they end up confusing each other or fighting with each other.

The idea of using solar panels and generators as alternative sources of energy is good since it prevents disruption of lessons when using ICT such as computers, projectors, printers and even the internet is not affected. Lastly the issue of allowing non computer students in laboratories can be affected whilst students wait for the school to purchase equipment specified for Geography department.

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4.3 Summary

This chapter presented, analyzed and interpreted the findings to establish the extent to which ICT is being integrated in the teaching and learning of Geography. The researcher found out that there is inadequate use of ICT in the Geography departments in the studied schools. Geography teachers and learners do not have enough access to school working computers. Although the student and the teachers in the Geography department can have access to their home laptops or computers from the computer lab, the problem is that these computers cannot be installed with the GIS software to use in Geography lessons as these computers are also used for the computer practical who uses a different software. Hence these problem leads to the slow progress in ICT integration in teaching Geography. Teachers were using a variety of ICT tools and activities in Geography lessons from the findings. Teachers in my study believed that if ICT is fully integrated in Geography it improves students learning. Teachers thought that they lack adequate skills and resources thus why the rate at which they are using ICT is at a slower pace. Staff development and professional development are needed as a matter of urgency.

CHAPTER 5

SUMMARY, CONCLUSION AND RECOMMENDATIONS.

5.0 Introduction

This chapter concludes the research by giving a summary of the issues covered in the first four chapters of the study to give conclusions and recommendations are discussed below.

5.1 SUMMARY

The focus of the study was to investigate the extent to which information communication technology in the teaching and learning of Geography in five schools in Chitungwiza district. A total of five administrators, twenty-five Geography teachers and one hundred Geography students selected in from form two, form four and upper sixth were consulted. The descriptive survey was used as a research design. Data gathering instruments such as questionnaires for Geography teachers and students were designed and administered to them to gather the qualitative and quantitative data. An interview for the administrators ensures that qualitative data was collected. The data collected was then presented, analyzed and discussed in chapter four. Despite the time constraints and other problems encountered as an employed person, student and a mother, the researcher was able to finish the research from which the conclusions were drawn and discussed below.

5.2 CONCLUSIONS

The findings showed that ICT is integrated in schools in the teaching and learning of Geography but the tools are inadequate and are partially used in teaching and learning. Computers, laptops and smart phones are used by both students and teachers using the internet services as their backup. Some geography teachers and students were able to share geography materials and difficult tasks with other colleagues from other schools or internally via the internet.

The following problems were cited as hindrances to limited integration of ICT in teaching and learning of geography in schools.

- Teachers and students cited lack of knowledge on the use Microsoft and word processing and in GIS
- Constant power cuts
- Lack of infrastructure like the resources to use for example computers laptops, scanners, color printers, software and GPS receivers.
- Lower internet access
- Misleading information on the internet
- Lack of time

Geography teachers cited that there need to have staff developments on computer usage, lack of projectors for power point presentation for those trained to teach using ICT .These problems hinders to put into practice knowledge gained from Computer society of zimbabwe.

Students cited that the schools should allow everyone to bring smart phones and laptops. In addition to that, schools should allow all the students into the computer laboratory to access information on the computer rather than allowing to those who take computers as their practical subject. Students from most of the schools said that there is need to have geography laboratory installed with computers specifically for them to use since their syllabus now demand the to do a GIS practical that requires use of computers and special software

Administrators cited that lack of funds to acquire more hardware and software for available computers and laptops. Money to buy big generators and solar panels for back when there is power cuts .They are making efforts to make teachers trained but lack laptops for the teachers to use after training to put into practice. Although it is a ministry policy for ICT integration in teaching and learning the schools are facing a challenge of large enrollments which makes it difficult for schools to cater for each learners needs in terms of ICT.

5.3 RECOMMENDATIONS

- Basing on the conclusions above, administrators of schools should be seen to put resources together in acquisition of computers, projectors, generators, solar panels, teacher's laptops, computers specifically for Geography departments so that lessons are not disrupted.
- The use fast and powerful network providers to be acquired by the school.
- Use e-learning and e-library at schools
- Teachers to be encouraged to buy laptops from companies like Creative Computers who offer credit facilities.
- Parents to be encouraged to buy laptops and smart phones for their children so that effective communication between teachers and students is facilitated.
- Administrators to organize regular staff in servicing training programs to have teachers equipped with necessary up to date developments
- Administrators to also use ICT to disseminate information to its staff, parents and children so that everyone develop interest and positive mind as well as adjust to change.
- Teacher's colleges to incorporate ICT in their courses so that geography student teachers when they go into field of teaching will have necessary knowledge
- All students should be given a chance to learn using computers so that they will be able to research their geography notes and assignments. A time for computer utilizations for all class should be put in place so that everyone is given equal chance to use school computers in their lessons.
- Computers should constantly service to prevent virus and network failures. Software should be installed to block all unrecompensed information like pornographic materials and uneducated games so that students cannot access them
- Student should be given guidance on how to use the internet ,benefits and effects
- This study also recommends that further research be conducted on teachers' attitude and on ICT integration in teaching geography versus what they are actually doing in schools.
- Future researchers could also use larger sample size which engage rural schools in order to compare the extent of ICT integration in rural and urban schools.

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QUESTIONNAIRE FOR GEOGRAPHY TEACHERS

My name is Brenda Chawanji , a student at Midlands State University doing Bachelor of Education Degree in Geography and Environmental Studies ,conducting a research entitled ;an investigation into the integration of Information Communication and Technology in five schools in Chitungwiza District.

Your participating in this research is completely voluntary and greatly appreciated. I assure you that all information received will be treated in a strict and confidential, manner and used only the purpose of research.

Please tick in the appropriate box or comment where necessary.

1**. Sex** Male ☐ Female ☐

2. **Age** 24-25 ☐ 26-30 ☐ 31+ ☐

3. Which levels do you teach ZJC ☐ O Level ☐ A level ☐

4. **Professional Qualifications**

Certificate in education ☐

Diploma in education ☐

Degree ☐

Others (specify)……. ☐

5. **Number of years in teaching …….year/years.**

6. Have you attended any ICT course? 1. YES ☐ 2.No ☐

6 how often do you use any of the following ICT tools and activities for teaching your geography lessons?

Please tick the option that indicate your responds

	never	**occasionally**	**rarely**	**always**	
Create a document using word processing					
Use images and graphics software related to					

geography					
use internet to obtain geographical teaching resources					
Create lessons using power point presentation software					
Use email to communicate with other teachers					
Use emails to communicate with your students					
Participate in online interactive geographical discussions					
Use interactive whiteboards					
Use whatapp groups for geography discussion with other geography teachers					
Use ,cameras during fieldwork in geography outdoor lessons					

7. If you use ICT in teaching and learning to what extent do you think use of ICT has improved the quality of student learning and performance?

No change ☐ somewhat improved ☐ improved ☐ very improved ☐

8. What challenges are you facing in trying to integrate ICT in teaching Geography?

……
……
……
……
……
……
…….

9.what can you recommend to be done to improve on the challenges stated above?.....
.....

Thank you for your participation in this survey

Geography students questionnaires

Put (x) in the space provided and explain briefly in spaces provided

1. Type of school 1.council ☐ government ☐ private ☐ mission ☐ others specify ☐

2. Gender 1.male ☐ 2.FEMALE ☐

3. Which level are you in? ZJC ☐ 2. O LEVEL ☐ 3. A LEVEL ☐

4. At school how often do you use computers in the learning of geography?

Never ☐ Rarely ☐ At times ☐ Always ☐

5. Are you given opportunities to use ICT in learning of Geography?

1. Yes ☐ 2. No ☐ 3. Sometimes ☐ 4.Always ☐

6. Do you use the internet to look up geography information for notes or assignments?

1. Yes ☐ 2.No ☐ 3.Sometimes ☐ 4. Always ☐

7. Rate the extent of your agreement that if ICT tools if integrated in learning of geography enhance your understanding?

1. Strongly disagree ☐ Disagree ☐ Agree ☐ strongly agree ☐

8. What challenges do you face in the process of trying to integrate ICT in your Geography lessons?

……
……
……
……
……

9. Propose what you think can be done to improve the integration of ICT in geography.

……
……
……

THANK YOU FOR PARTICIPATION

INTERVIEW SCHEDULE FOR SCHOOL HEADS

My name is Brenda Chawanji , am carrying out a research entitled,"AN INVESTIGATYION INTO THE INTEGRATION OF INFORMATION COMMUNICATION AND TECHNOLOGY IN TEACHING AND LEARNG OF GEOGRAPHY IN FIVE SCHOOLS IN CHITUNGWIZA DISTRICT"

You are kindly asked to respond to this interview schedule am carrying out in selected schools in Chitungwiza District. This interview is part of my investigation .it will not passed to anyone else .your response to all questions is sincerely appreciated.

1. How many computers do you have in your school?
2. What is your school policy on students bringing their laptops and smart phones at school?
3. How do admin communicate with teachers and staff?
4. What is the extent of ICT use in teaching and learning in your school?
5. How capacitated are your teachers in the use of ICT tools?
6. What programmes are there at your school to ensure that they are capacitated in use of ICT?
7. What challenges are the schools facing in utilization of computers in teaching and learning?

THANK YOU FOR YOUR COOPERATION IN THIS SURVEY.