CHALLENGES OF USING INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN THE TEACHING OF GEOGRAPHY IN MALAWI: THE CASE OF SECONDARY SCHOOLS IN ZOMBA URBAN

MASTER OF EDUCATION IN CURRICULUM AND TEACHING STUDIES (SOCIAL STUDIES EDUCATION) THESIS

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UNIVERSITY OF MALAWI

CHANCELLOR COLLEGE

MARCH, 2017

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By

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Submitted to the Department of Curriculum and Teaching Studies, Faculty of Education, in partial fulfillment of the requirements for the degree of Master of Education **(Social Studies Education)**

UNIVERSITY OF MALAWI
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MARCH, 2017

DECLARATION

I, the undersigned hereby declare that this thesis is my own original work which has not been submitted to any other institution for similar purposes. Where other people's work has been used acknowledgements have been made.

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Full Legal Name

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Signature

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Date

CERTIFICATE OF APPROVAL

The undersigned certify that this thesis represents the student's own work and effort and has been submitted with our approval.

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DEDICATION

To my daughter, Monica: baby I did this for you. To my late parents: John and Monica Chaika, I owe this to you.

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I give thanks to God Almighty for seeing me through this; it was a long and winding rough road but finally I have done it. I am really grateful to my supervisors, Dr. K. Ndala and Mrs. M. Gausi, who endured persistent knocking on their doors for guidance. They were really a great help, I felt enlightened every time I conferred with them.

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ABSTRACT

It is now acknowledged that the Information and Communication technologies (ICT) are important to the advancement of knowledge and growth of a country's development. In recognition of this fact, the government of Malawi has taken a step towards the integration of ICT in education. This study investigated the challenges of using ICT in teaching Geography in selected urban secondary schools in Zomba. To obtain the relevant information the study used concurrent mixed methodology which combines the qualitative and quantitative approaches. The theoretical framework of the study is Social Construction of Technology (SCOT). Self completion questionnaires, interviews and observation were used. The self completion questionnaires were distributed to twenty nine (29) teachers of Geography, only twenty seven (27) were returned. Four interviews were conducted with headteachers who were purposively selected. In spite of the positive attitude towards the use of ICT, the study revealed that Geography teachers faced a number of challenges including lack of basic knowledge in the use of ICT for teaching their subject, lack or inadequate hardware and software and lack of technical support. A majority of them never used ICT in the preparation or teaching the subject. In view of this, the study recommended that adequate resources be made available to the schools so that the institutions can buy the hardware and software as well as maintain the ICT devices to increase accessibility. In addition, pre-service teachers must be trained in ICT use at the teacher training institutions. In-service training should also be offered so that the teachers can keep abreast with advances in technology.

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LIST OF ACRONYMS AND ABBREVIATIONS

BECTA	British Educational Communications and Technology Agency
CD-ROMS	Compact Disc Read Only Memory
CDSS	Community Day Secondary Schools
CPD	Continued Profession Development
CSS	Conventional Secondary Schools
DFES	Department for Education and Skills
DVD-ROM	Digital Video Disc Read Only Memory
GIS	Geographical Information Systems
HOCS	Higher Order Cognitive Skills
ICT	Information and Communication Technologies
IT	Information Technologies
MM	Multimedia
MOEST	Ministry of Education, Science and Technology
OFSTED	Office for Standards in Education
SCOT	Social Construction of Technology
TDC	Teacher Development Centre
UNESCO	United Nations Educational, Scientific and Cultural Organisation.
WWW	World Wide Web

CHAPTER ONE

INTRODUCTION

1.0 Chapter Overview

This chapter discusses the background to information and communication technologies and how they are influencing every sphere in life including education. It also discusses the purpose of the study and the specific research questions that assisted in guiding the study, the problem statement, significance of the study and the thesis structure is also presented in this chapter.

1.1 Background to the Study

In the 21st century, information and communication technologies (ICT) have proved to be the latest trend in all spheres of life; business, leisure, communication, banking as well as education. The computer, multimedia, hypermedia, CD-ROMS, DVDs, and the Internet are the latest ICTs increasingly replacing the radio and television. The integration of ICT into teaching and learning is intended to improve the standards of education so as to suit the younger generation. According to Shelly, Cashman, Gunter and Gunter (2006), the digital revolution has resulted in one unintended consequences: today's youth are much more media centric than previous generations. Learners use different technologies to communicate and access information from various sources.

ICTs are defined in different ways. UNESCO (2002) defines ICT as tools which enable accessing, obtaining, recording, organising, using and presenting information electronically and include hardware (computers, scanners, digital cameras, radios etc.) and software (data base and multimedia). Telecommunication tools such as telephones, faxes, modems and computers which enable accessing and using information are also included in the definition. According to Khan, Hasan and Clement (2012), briefly, ICT is applied to education as technologies that include computers, the Internet, broadcasting technologies (radio and television). ICT in education has excluded the use of cellular phones despite that they are ICT devices. In this study, the term "ICT" excludes cellular phones. Shelly et al., (2006) observes 'digital generation is profoundly different from previous generations and these differences need to be understood by teachers if they are to facilitate effective learning for today's digital learners' (p.7). Thus, the use of these ICTs would enhance the teaching and learning process at the same time exposing today's learners to tools that are being used in the information age. This is not to say that old technologies should be discarded in favour of new ones or that these new technologies are the answer to all the problems associated with quality education, rather they serve to complement the older technologies.

Some scholars recognise ICTs as catalysts for change in working conditions, handling and exchanging information, teaching methods, learning approaches, scientific research, and in accessing information (Mikre, 2011). According to Reddi (n.d.), since there is a high demand for education, ICTs are very essential for education more especially in adult learning. The use of ICT in adult learning not only fulfills the need for the adults to learn at their opportune time but also ensures that the learner is not confined to the classroom.

Teachers must adapt to the changes as best as they can to keep up with the pace at which ICT are advancing. Hence, there is a need for the teachers to acquire necessary skills to be effective in a world that is fast advancing in ICT. In the view of Ham and Cha (2009) teachers ought to develop new creative teaching methods that embrace new technologies to redesign curricular content.

However, Vrasidas et al.,(2010) observe that attempts to integrate technology in education have provoked a variety of responses from teachers that range from enthusiasm and skepticism to fear and uncertainty. In addition, Dexter, Anderson and Becker (1999) also observe that in the use of ICT in education, teachers range along a continuum of teaching styles from those who use ICT for imparting facts and procedural skills to learners (the teacher-centred way) to those who act as facilitators to the learning process. ICT is used as a complement to those who use software and information technology to allow learners to work in active ways, that is, ICT is used as a tool for learners to construct knowledge. Thus, Dexter et al. (1999) observe that teachers have used ICT in two basic ways: to impart facts and skills to learners in the traditional teacher-centred way or to enable learners to explore the concepts which they learn in class on their own. In the latter approach, learners take the responsibility for their own learning while the teacher assumes the role of facilitator. In the former approach, the teacher maintains his/her role as the arbitrator of knowledge with the learner as a passive recipient of that knowledge.

Although the importance of ICTs in education is recognised, teachers in less developed countries face many challenges which hinder the use of ICT as tools for teaching. These challenges include lack of resources (the devices, finances, time), lack of professional training in basic ICT use for teachers, large classes, lack of policies on ICT in education, access to ICT, just to mention but a few, hence they are unable to train their learners how to use the technologies (Richardson, 2011; Hare, 2007). The situation is different in the developed countries such as the United Kingdom (UK) and United States of America (USA). In these countries, teachers are trained to use ICT so that most schools' communication is done through the internet (Wheeler, 2000). Tolani-Brown, McCormac and Zimmermann (2009) observed that educational interventions that seek to integrate ICTs into the classroom or other learning environment face a different set of challenges in developing country contexts compared to those in developed countries due to economic, infrastructural, cultural and social factors that tend to affect the way interventions are implemented. Thus, the digital divide will always manifest itself in the way ICT is integrated into the learning environment

In Malawi, the teaching of Geography is done to provide opportunities for learners to understand the world they live in and the interdependence of societies at local, regional and global level (Ministry of Education, Science and Technology, 2001, p. vi; Ministry of Education, Sports and Culture, 1998, p. x).Internet connection can enhance the learners' understanding of the world beyond their national borders. There is a need, therefore, for the teachers in Malawi to shift from depending entirely on non projected instructional materials (chalkboards, charts among others) to more advanced ICT materials such as

internet applications, CD-ROMS and other computer applications. In most cases, teachers use the traditional materials and different teaching and strategies in order to impart the necessary information to the learners through the use of textbooks, charts, pictures (Mtunda & Safuli, 1985; Smaldind, Russell, Heinich & Molenda, 2000; Wright, 2000). This is not to suggest that ICT and e-learning is an end in themselves; rather they are enablers of broader change that is to be brought about in the schools (DfES, 2003a).

1.2 Statement of the Problem

Geography is a combination of both natural and social science. Its body of knowledge is constantly expanding as new knowledge and information become available. For instance, as a natural or physical science, if a volcano erupts in an area, new features are formed (Bunnett, 1973). Thus, an area which never used to have a mountain would have one as a result of the volcanic eruption, or an island might be formed if the volcano occurred in the ocean or sea. Therefore, the geographical landforms of that particular area will be different from the previous ones. As a social science, Geography covers topics that affect or influence people's activities, for example, population, settlement, agricultural systems, industries, and climate change among others. These aspects are continually changing (Jones, 2004). Thus, it is important for Malawian learners of Geography to be aware new developments in the subject so that they can contribute effectively in the society. The use of ICT in teaching of Geography therefore becomes very pivotal in this respect. Although policies in some countries recognise the importance of ICT in development of a country and the need to integrate it in education, literature has shown that these countries lag behind in implementation and utilisation and consequently fail to benefit from its

advantages (Hawkins, 2002: Isaacs, 2007; Richardson, 2011; Fall, 2007).Furthermore, despite that teachers of Geography in Malawi are aware of the benefits of using ICT in teaching of the subject, they are not using it. Therefore, this study sought to investigate the reasons for this phenomenon.

1.3 Purpose of the study

The purpose of the study is to investigate the challenges of using ICT in the teaching of Geography in Malawi.

1.4 Main research question

The main research question was: What are the challenges that teachers of Geography encounter when using ICT?

1.5 Specific research questions

The research was guided by the following specific research questions:

1. Do teachers of Geography possess the knowledge, skills and attitudes needed to use ICT into their lessons?
2. Are physical conditions conducive in schools and classrooms for teachers of Geography to use ICT in their lessons?
3. How do teachers use ICT in the teaching of Geography?
4. What are the challenges that teachers encounter when using these ICTs?

1.6 Significance of the study

Recent times have experienced rapid advances of knowledge in all academic fields. Most of this new knowledge is easily accessible via ICT especially the internet. It is important that a learner be able to access this new knowledge as it becomes available. This is not possible using traditional instructional materials.

It is hoped that the findings of the study would provide a springboard for further research into the use of ICT in education.

Secondly, it is the hope of the researcher that the findings would assist teacher trainers to equip their teacher trainees with the necessary ICT skills so that the trainees can ably use them for teaching. Studies have revealed that in developing countries there are poor ICT skills (Isaacs, 2007; Richardson, 2011; Fall, 2007). This affects the economic development in the countries since economic development in the knowledge-based era is highly linked to advancement in technology especially ICT (Ham & Cha, 2009). Therefore, incorporating ICT in teaching would prepare the learners for their future working lives. It is the hope of the researcher that the findings would contribute to the results found in a study done by Carrier, Finholt-Daniel and Sales (2012) where they studied the viability of using the media player for continued professional development (CPD). The evaluation was on ease of use, effectiveness of instruction and potential for long term scalability. The results showed that with a small amount of initial training the devices were easy to use and they effectively deliver instruction.

The findings would assist educators on how best to implement the policy on the integration of ICT in education as stipulated in Vision 2020 and the National Policy for Development in Malawi (Malawi Government, 2006) and the government to provide the necessary ICT to assist in achieving the national aims of education so as to fit in the global village.

Definitions of key terms

Information: This means what can be communicated and understood (Hornby, 2000)

Technology: It is the process of using scientific, material and human resources in order to meet human need or purpose. (Hornby, 2000)

ICT: This stands for Information and communications technology/technologies .It is an umbrella term that covers any communication device or application viz: radio, television, cellular phones, computers, and network hardware and software, satellite systems which enable accessing, obtaining, recording, organising, using and presenting information electronically (UNESCO, 2002)

Teaching and learning materials/instructional materials: They are materials that a teacher uses in a lesson in order to help him/her teach more effectively and they also assist the learners understand the concept easily (Mtunda & Safuli, 1985).

Teaching strategies or methods: These are means by which a teacher delivers her/his lesson (Parkay, 2006).

CD-ROM: compact disc read-only memory (Hornby, 2000).

DVD: Digital versatile disc (Hornby, 2000).

Digital divide: It is the difference between developing and developed countries in terms of access to the internet, information and opportunities derived from the same (Shelly, Cashman, Gunter & Gunter, 2006).

Information overload: It is a situation where a person absorbs so much information in the expanding world so much so that he/she does not know how to use it (http://www.maximise-ict.co.uk-03.htm.)

Digital generation: This is a term that is used to refer today's youth who are advanced in modern technology (Shelly, Cashman, Gunter & Gunter, 2006).

World Wide Web: This refers to data bases (Schwartz & Beichner, 1999).

Information infrastructure: It is a term used to refer to the Internet and the World Wide Web to mean databases (Schwartz & Beichner, 1999).

Hypertext: It is data storage system of storing images, texts and other computer files that allows direct link to related images, texts, sound and other data (http://www.maximise-ict.co.uk-03.htm.).

Hypermedia: It refers to a multimedia hypertext that supports linking of graphics, audio and video elements and texts (http://www.maximise-ict.co.uk-03.htm.).

1.7 Thesis Structure

The thesis is presented in five chapters. The first chapter introduces and provides a background to the study. This is followed by a statement of the problem, the purpose of the study, research questions, significance of the study and the chapter summary. The second chapter provides a review of literature on the definition of information and communication technologies (ICT); functions and trends of ICT in education in general. It later explores the ICT policies in education in different countries and Malawi in particular. This is followed by a review of literature on the role of ICT in the teaching of Geography and the disadvantages of ICT use. Furthermore, the thesis explores the barriers to the integration of ICT in education. The chapter ends with the theoretical framework as a guide to the study. The third chapter describes and justifies the research process including the research design and methodology while the fourth chapter presents

an analysis of data and the findings of the study. Finally, in the fifth chapter the researcher makes conclusion, based on the findings of study presented and discussed in chapter four, recommendations and suggested areas for further study.

1.8 Chapter summary

The chapter discussed the background to ICT and that teaching Geography using these ICT would benefit both the teachers and learners to use ICT. Hence, the study sought to investigate the challenges that teachers of Geography encounter when using ICT in their lessons in Malawi based on Zomba district. The chapter also discussed how the study is significant to Malawi. The next chapter discusses literature review and the theoretical framework that guides the study.

CHAPTER TWO

LITERATURE REVIEW

2.0 Chapter overview

This chapter discusses the literature under the following sub-headings; what information and communication technology is; roles of ICT in education, the benefits of using ICT as well as the barriers or the challenges encountered when using ICT as an educational tool. It is followed by the theoretical framework of Social construction of technology (SCOT) theory which guides the study and argues that technology and human action are dependent on each other and influence each other.

2.1 Literature Review

2.1.1 What is Information and Communication Technology?

Literature has shown that in the past decade, ICT has made tremendous changes such that information keeps on flowing at a fast rate. Furthermore, ICT has managed to penetrate all spheres of life such as the school, work, leisure, and business. Although ICT has many definitions depending on how it is used, in this study, ICT has been used as an umbrella term that includes any communication device or application encompassing computer and network hardware and software, television, radio, printer, LCD projectors, overhead projectors, satellite systems in addition to various applications and services associated with distant learning. For instance, the computer is an electronic machine that has programmes on it for storing, writing, and calculating information. It can be used as a stand-alone device but it can also be used to download information from the internet and

be used to teach or to access the information directly from educational programs. The electronic book (e-book) is a book published on the Internet. Learners can access the book from the Internet or from a CD-ROM or a DVD. In addition, the radio is a system of broadcasting information and programmes that people can listen to. It can be used by airing out lessons in various subjects of the curriculum during the school day. An interactive whiteboard is a touch sensitive display which is connected to a computer and a projector. It reacts to the information and instructions that a person gives it (DfES, 2003). Teachers and learners can write on the whiteboard touch screen making learning highly engaging and interactive (Ross, Morrison and Lowther, 2010). The teacher organises and facilitates the lesson by preloading lesson elements and outlines the flow of the lesson in the computer .Whilst the LCD projector and overhead can be used to project images or simulations from the computer to a white screen then the teacher could use these to teach without using the traditional means of teaching. Mobile gadgets (cellular phone, smart phones, and handheld interactive learning aids) are equipped with programmes just like a computer which enables them to perform as mini personal computers. The television is a piece of electrical equipment with a screen that is used for watching programmes. Although it is usually used as a form of entertainment, it can be used in education, by airing educational programmes in Geography during class time or a teacher can pre-record the educational programmes and use them in class. However, ICT in education is referred in the context of ICT provision, teacher factors that support teaching and learning as well as policy. Thus, despite the fact that the study is particularly investigating the challenges in using ICT in general, the primary focus is on the

computer, printer, projectors, Internet, television, radio and not the mobile gadgets not the interactive whiteboards.

2.2 Functions of ICT in education

Although studies cannot conclusively determine the impact of ICT on learning, the few studies that have been conducted tend to be biased towards the full integration of ICT across the curricula. For example, according to the study done by Van der Westhuizen, Nel and Richter (2012) where they investigated the effect of integration of the DVD into Geography teaching and learning for full time pre-service teachers, the study revealed that learners' academic performance was jeopardised by this new and unfamiliar DVD method. They used qualitative and quantitative methods. They used questionnaires, personal interviews, comparison between averages and standard deviations of academic performance, analysis of average the final mark of learners of a particular year using traditional lectures and those with those using DVD method, recording keeping of contact and group sessions and informal conversations and observation of the lecturer.

Meanwhile, Bagarukayo, Weide, Mbarika and Kim (2012) noted that using multimedia (MM) in instruction showed the same results as when a textbook is used. In their study, they used both qualitative and quantitative methods to determine the impact of learning driven constructs on perceived higher order cognitive skills (HOCS).There was control and experimental groups. Attitude pre-test and post-test questionnaires were administered and interviews were conducted. They found out that there was no significant difference of those that only used the textbook and those that used multimedia. However, they were quick to point out that the materials were not adapted for the Ugandan context. In spite of

this is being the case, ICT had diverse roles in education apart from teaching. It can be used in administrative, pedagogical as well as cultural, social and professional roles (Hepp,Hinostroza,Laval &Rehbein, 2004) and these are explained in detail in the sections that follow.

2.2.1 Administrative Role

The use of ICT in education can only be successful if the stakeholders accept and support the utilization of ICT. According to Dermirci (1999), supplying schools with a high number of computers alone does not automatically translate to its utilisation; the administrators should see the importance of using the ICT. If ICT is used they can reduce the burden that administrators and teachers have in performing their tasks. For instance, administrators can keep their records, budget; communicate with the staff members, learners, as well as parents/guardians on any recent developments occurring at the institution (Smaldind, Russell,Heinich&Molenda, 2000). Teachers felt their workload was lessened because of ICT. They cited that lesson planning, report writing, assessment and timetables are easily done using the ICT (Cox et al., 1999). The teachers of Geography can keep their lesson plans, learners' marks, exercises and schemes of work among others in the data base where they can easily retrieve for updating or for further use in this way it can save valuable time in processing these things (Condie, Munro, Seagraves &Kenesson ,2007; Reid,2002).

2.2.2 Pedagogical Tool Role

The ICT can also be used for pedagogical tool role to ensure that learners are well equipped to enter the work force and fit in the complex world, the teacher has to make sure that the knowledge that he/she imparts to the learners is relevant to the needs of the society at the time. Thus, ICT can be used to do this. The teacher can collect information on topics that he/she would like to teach from the web page and use them in the teaching process (Hepp et al., 2006; Mikre, 2011; Reid, 2002). Recent years have seen the development of many web sites that are geared in providing information on various disciplines. Teachers of Geography would therefore benefit much from using websites, for example, Google Earth in order to come up with important up-to-date information to use in their teaching. According to BECTA (2004), the use of ICT in teaching of Geography helps to improve learners' reasoning, decision making and enquiry skills hence it has changed the role of the teacher and the learner by increasing interactions between the teacher and learner as well as between the learners themselves in the classroom. Mwalongo (2011) in his study observed that teachers usually used ICT for preparation of notes and teaching and learning resources and preparation of examinations.

2.2.3 Professional, Social and Cultural Role

The use of ICT would ensure that teachers, administrators, learners and parents in the community can interact through the internet. The school can post important bulletins through the internet which can be accessed by the community wherever they are.

Furthermore, teachers can communicate with their peers from other schools in other countries on the various challenges that they are encountering in their work and find out

how those problems are being solved (Hepp et al., 2006). A study done by Light (2009) revealed that parents of learners interviewed said that the use of ICT developed the children as a whole because they learned how to operate in teams and they developed self-confidence. In a study conducted by Reid (2002), where he wanted to explore the experiences that teachers at a high school had when integrating ICT into classroom teaching. He conducted unstructured interviews which were transcribed verbatim. Most of the teachers explained that ICT had assisted them to communicate with their peers and parents through the e-mails on issues concerning the learners. They were also able to socialise through the e-mails by meeting people of similar interests in Arts and Music. Professionally, the teachers explained that they learnt so many things from their learners on how to use the technology as there was a reversal of roles and when they interacted with fellow teachers through e-mails.

2.3Trends of ICT in education

In education, although the traditional classroom tools of blackboards and books have shaped how learning takes place, they have changed little over the past century. However, the demands by the present day society have rendered it necessary to find other sources of information (Roschelle, Pea, Hoadley, Gordin& Means, 2000; Parkay, 2006). Thus, the school, teacher, textbooks and other teaching aids are not the only sources of information. Learners are able to get information from other channels, for example, the radio, the television, magazines, and newspapers and so on (Mikre, 2011; Dermirci, 2009; Parkay, 2006).

A study conducted by Light (2009) further reveals that the influx of ICT would mean many changes in the way teaching and learning process will be handled. Traditionally, the availability or presence of a teacher, textbooks, chalk and the chalkboard played a central role in the passing knowledge with the learners taking a passive role in the teaching/learning interaction (Dermirci, 2009). Although these traditional teaching and learning aids have their advantages, they are increasingly losing their importance in the information era. For instance, textbooks might be good for organising learning activities or self-study and assist learners in reading skills so as to develop language comprehension (Mtunda & Safuli, 1985;Wright, 2000;Norton &Wilburg,2003) but in a context where new information is generated at a fast pace, textbooks quickly become obsolete. Many subjects therefore would benefit from the introduction of ICT in the teaching and learning environment.

The use of technology in education is not a new phenomenon; over the centuries technology has moved from use of spoken language only during Socrates and Aristotle times to print, and now electronic technologies. New technologies have an important place in contemporary educational practice. Thus, these technologies will not replace print any more than print replaced spoken language (Norton &Wilburg, 2003). Studies that were conducted in various countries where ICT has been integrated into education show that learners are apt to grasp concepts in Geography much better when ICT is used (OFSTED, 2004; BECTA, 2004; Moore, 2005). However, some studies have also shown that assessing the impact on ICT is much more complex because there are many factors that interplay. Rudd (2000) observes that although a study may be able to demonstrate an

improvement in pupil attainment over time; it is difficult and sometimes impossible to determine whether the use of ICT was critical or played a role in improved attainment because ICT use is closely related to teaching and learning, pupil characteristics and school leadership. Therefore, narrowing it down to integration of ICT only is not appropriate.

2.4 ICT policies in education

Governments have realised the importance of integrating ICT in education with the developed countries leading while developing countries lag behind. According to studies, this integration has come about because of the positive outcomes of using technology in education which has led several governments to initiate programs for the integration of technology into schools (Dermirci, 2009; Mikre, 2011).This has resulted in the digital divide because the rates at which countries are adopting the use of ICT are so different both internationally and within the countries themselves-between rural and urban areas. Furthermore, the digital divide also manifests itself in gender disparity. Literature shows that this digital divide is perpetuated by barriers that each country experiences.

In the developed countries for example, the United Kingdom (UK) and United States of America (USA) ICT use has been fully integrated with almost each student having access to a computer and the internet (Wheeler, 2000). In Turkey, although policies were developed and projects were conducted since 1993, the integration of ICT is going at a slow pace because the physical conditions at schools and in classrooms are not adequate. In addition, lack of training, lack of time to develop materials and inadequate

infrastructure hinder full integration (Yalin, Karadeniz, and Sahin, 2007; Dermirci, 2009). In developing countries, integration of ICT in education is very underdeveloped. A study by Richardson (2011) revealed that in Cambodia, teachers could not fully adopt the use of ICT because they were unable to repair the outdated donated computers, there was lack of reliable electricity, inadequate number of computers, lack of internet access and it was also expensive to access internet and that teacher trainers failed to see how the use of the ICT skills would be more advantageous than the traditional way of doing things.

In Africa, the use of ICT in education is at different levels of advancement. Some countries have well formulated policies on ICT and its integration in the education sector and ICT use has been implemented, while others do have policies on ICT but there is no clear ICT policy in education. The Algerian government managed to reform its education process and inclusion of ICT in 2002 and the Ministry of Education had built infrastructures in the schools and equipped them with computers (Hamdy, 2007). Botswana boasts of a well implemented integration of ICT in education. It has the Vision 2016 which aims at an informed and educated nation with ICT as the key component as well as the Revised National Policy on Education of 1994 which highlights the need for all learners to be taught computer skills that can be applied to all subjects at all levels of education. Despite challenges such as high cost of computers, lack of electricity in rural areas and high cost of Internet usage, it has the highest PC penetration in Africa (Isaacs, 2007). It is a totally different case in Cameroon which has no policy in ICT use in education although private schools have integrated it informally. The government with

the aid of external funding is trying to implement the use of ICT in the public schools and it is holding meetings with its partners to develop a policy in ICT use in education. However, one of the constraints is that majority of the people prefer the traditional way of teaching and learning (Jousè, 2007).

According to Wallet (2015) in many countries in the Sub- Saharan Africa, the integration of ICT is a low priority when compared to other objectives including increasing enrolment rates, decreasing the proportion of out of school children and ensuring an adequate number of trained teachers. For example, in South Africa, there is a policy on the integration of ICT which emphasises the use of ICT to improve the quality of teaching and learning. According to a study done by Wells and Wells (as cited in Assan & Thomas ,2012,p.5), ICT in South African public schools is still not the norm due to several logistical and developmental challenges and that evaluation on actual impact is rare. In Malawi, despite the establishment of the National ICT for Development policy as well as Vision 2020 which recognise education as the driving force in economic development, deployment and utilisation of ICT devices is minimal. There is no clear policy of ICT specifically for education (Malawi Government, 2006). The National ICT for Development policy was formulated as a response to the following; Malawi Communication Sector Policy Statement, Science and Technology Policy, Vision 2020, Malawi Growth Development Strategy(MGDS), Millennium Development Goals, Decentralisation, establishment of SchoolNet Malawi and the introduction of computer studies in the secondary school curriculum. The National ICT policy for development states that its goal is ‘To attain innovative development and maximum integration of

ICTs in the socio-economic development process' (Malawi Government, 2006). For education, the government intends 'to facilitate the deployment, utilisation and exploitation of ICT in the educational system so as to improve access, quality, relevance and delivery at all levels…. and achieve universal basic ICT literacy and improve level of ICT literacy in the country' (p.11). Briefly, the policy stipulates that in order to achieve this, the government intended to ensure that primary and secondary schools and colleges had adequate and reliable computers, built facilities to promote ICT training at all levels of education and intensify the training and promote awareness on available opportunities to enable learners, teachers and educational institutions to purchase ICTs. It also intended to ensure that there was collaboration between the Ministry of Education and various accreditation agencies and examination bodies for ICT education and training among others. However, the government was also aware of the challenges that this endeavour would encounter for example, inadequate resources (human, financial, material, technical and capacity to train personnel), overdependence on donor aid, high cost structures in the economy, tax burden on ICT products and services, poor allocation and utilisation of available resources, unreliable commercial power and high illiterate levels especially among women and the youth (Malawi Government, 2006).

This is a tall order for a country where the illiteracy levels especially among women are very high at 67% (World Bank, 2009). Strides are being made towards the integration of ICT in education, in the curriculum, there has been the introduction of computer studies as a subject, non-governmental organisations like Computers for African Schools Malawi (CFAS), SchoolNet Malawi among others which distributes computers to

schools(Isaacs,2007) and the government through the partnership with the World Bank has established Telecentres which are located at teacher development centres (TDC) in various districts where teachers and the entire community access ICT tools so as to accelerate ICT growth in Malawi (Khanje, 2012). MoEST also revamped the use of radio programmes in teaching in the primary schools only through a programme known as 'Tikwere'. The lessons are aired on the public radios and for lower classes only. Furthermore, a study carried out Hollow and Masperi(2008) under the authority of the MoEST, wanted to explore the possibility of using the Interactive Learning Programme which was linked to the current Primary Curriculum Assessment Reform (PCAR). They used handheld interactive learning gadgets in selected primary schools across Malawi. In the study, the learning aids had 25 lessons in Chichewa and 40 in English which were pre-installed. Although, the study revealed that there was positive impact on school attendance and increased levels of enthusiasm to learn and increased value placed on teachers in the communities. There is little or no knowledge that this was applied to all the primary schools across the country. Furthermore, a study conducted by Wallet (2015) revealed that in Malawi, ICT were least common with just 14%,1% and 2% of the schools had radio, television and computers respectively and it was among the countries with no information or policy on ICT in education.

In addition, the government also understood the importance of considering gender when integrating ICT in education. Gender disparity can be attributed to complex and deeply embedded cultural values that tend to discourage women from participating in personal and professional development in addition to the curricula and textbooks that often

reinforce gender stereotypes (InfoDev, 2010). Studies have shown that women in general also have additional obstacles such as restricted access to technology, high costs and lack of skills and information, cultural and social attitudes that are unfavourable to women's participation in scientific and technological fields, their dependence on men or lack of control over economic resources, domestic responsibilities and allocation of resources for education and training which often favours boys/men resulting in lower literacy (InfoDev, 2010; Gurumurthy,2004; Khan et al., 2012). Therefore, the government of Malawi has put in place policies that encourage girls to be in school. However, the literacy level among girls/women remains at the lower side. In addition, there is no evidence that studies have been done on how females use ICT in education.

Furthermore, a study carried out by Gombachika and Kanjo (n.d.) revealed that attaining the objective of ensuring that 'basic training in ICT skills in all schools and tertiary institutions' in the National ICT for Development policy (Malawi Government, p.7) has some challenges as well. The study explored the use of ICT in science and engineering in the University of Malawi. It revealed that the use of ICT was low due to lack of policy in ICT, limited bandwidth which affected internet connectivity, limited number of work stations to meet the high demand, lack of awareness of potentiality of ICT, and lack of integrated education management information system and high costs.

ICT can help the learners to acquire the necessary relevant information in Geography and other disciplines. Ham and Cha (2009) observed that the advent of ICT curriculum in many countries is understood as a result of utility of ICT in countries that are immersed

in the global economy since greater national integration into the global economy necessitates more flow of information. It can therefore be argued that for Malawi to develop economically, it has to open up its doors to ICT. Malawi should be exposed as much as possible so that it can effectively compete on the global market.

Dooley (1999) observes that advanced technological development must occur in schools and educational institutions if the learners are to be prepared for competitive global market place. The Vision 2020 policy 'seeks to improve the operations and efficiency of all economic sectors by deploying and utilising ICT as a facilitator to attain sustainable economic growth and development and to develop ICT as a sector that will facilitate the development of ICT products, ICT knowledge transfer and related information between the ICT sector and other sectors of the economy' (National Economic Council, 2000). Thus the government has established the School Net Malawi, removed duty on pre-assembled computers and printers, and introduced computer studies in the secondary school curriculum (Malawi Government, 2006).

However, the government acknowledges that the main challenge is to promote the use of ICT by introducing computers and their accessories early in education and examining the possibility of allowing duty free importation of IT equipment for private and public schools and colleges (National Economic Council, 2000, p. 74). This is indeed a challenge because even though Malawi has introduced computer studies in the curriculum, it is only taught as a separate subject in secondary school and in the senior level only. In addition, the trend is that only the basic skills on computer use are taught

for instance, there is a topic on introduction to computers, components, word processing and spreadsheets (Chisamba, 2008; Nasalangwa, Chemwa&Mburu, 2012). Furthermore, it is offered as an optional subject hence not every learner at a school studies it. Another challenge is that of resources, financial (cost of purchasing and maintenance), educational hardware and software and infrastructure. Although the MoEST introduced computer studies as a subject only a few schools offer it as practical subject while others just teach it theoretically; an impossible task in itself because it is supposed to be a hands-on subject.

2.5 ICT and the teaching of Geography

Geography is one of the oldest subjects ever taught to humankind. It was first systematically studied by the Greeks and the first person to use the word 'Geography' is said to be Eratosthenes (276-194 BC). The word 'Geography' originates from the Greek word 'geographia' from 'geo' meaning 'earth' and graphia 'describe or write about' so literally Geography can be defined as earth description. Although the philosophy of Geography was developed during the Renaissance when people developed a passion to know through exploration it was only in the 18th Century when Geography was taught as a discipline at university level (Wikipedia, 2012; Infoplease, 2012). However, modern Geography is more than just describing about the earth that is naming mountains, listing facts or features on the earth's surface only; it encompasses many aspects. Apart from describing the physical features of the earth, Geography also describes human relations on earth that is how they are interdependent on each other.

Geographical education must be “the integral part of the process of education since it makes the learner understand life on earth” (Pinchemel, 1982, p.4).This is because Geography looks at how humankind interacts with the physical environment, for example, the physical environment will determine the type of climate that will be experienced in that particular region and in turn, this influences the type of agricultural activities that will be practised in the area. In addition, the climate will determine to some extent the type of natural resources in the region hence determine the type of economic activities in the area. Furthermore, Geography also studies how the environment of an area affects the health of the people in the area. Such is the extent to which Geography reaches. Therefore, it is only proper for people to learn Geography so that they can solve the problems that fall on them from time to time. Stoltman (2006) says although initially geographical education was only concentrated with the study of the earth, this perspective changed because of wars where people interacted with people from other faraway areas hence Geography had to provide new scholarly interpretations of information.

Recently, there are problems of overpopulation or under-population in some areas, pollution, climate change or even wars as people fight over natural resources among others which are one way or the other interrelated. According to Pinchemel (1982), it is geographical education that “makes learners aware of how complex the causes of events really are and it may show them that in the search for explanation of phenomenon, interaction of various factors is the norm, human factors, for example, political, historical, economical, sociological and psychological”(p.11). Thus, if learners understand these factors they would be able to make meaningful decisions.

According to BECTA (2004), Geography in its very nature makes it imperative to use ICT. This is because Geography as a subject cuts across many aspects in life which makes the use of ICT in its teaching very crucial. The teaching of Geography aim at making an individual understand the interdependence of the physical environment and the human society so that the knowledge in Geography can make both live in perfect equilibrium, thus, the aim of teaching of Geography falls into three broad categories and these are practical aim, cultural aim and socio-economic aim (Pinchemel, 1982). Pinchemel observes that practical aim seeks to help the individual to appreciate the physical environment in its entirety. On the other hand, the cultural aim seeks to provide opportunities for the learners to appreciate how different cultures contribute to the world culture thereby encouraging tolerance. Thirdly, the socio-economic aim seeks to make the learners understand how different geographical factors (i.e. terrain, climatic condition, availability of raw materials) will influence the economy and the way of life in that particular nation. For instance, these geographical factors will influence the type of agriculture practised, the industry, trade, navigation as well as other socio-economic aspects of life.

The aims of teaching Geography in Malawi also fall in these categories just as Ministry of Education, Science and Technology (2001) declares:

> *"that Geography will help an individual acquire knowledge, develop appropriate, skills, attitudes and values in order to manage the earth's resources wisely…and to provide learners with opportunities to understand the world which they live in and the interdependence of societies at local, regional and global levels (p. vi)."*

These aims reflect that the learners will be able to manipulate the physical environment to make it economically and socially viable, hence, the need for the use of ICT so that both teachers and the learners can immediately access to new information as it emerges. Studies have been done on various forms of the use of ICT in the teaching of Geography and there were various advantages that were observed. These benefitted both teachers and learners.

Firstly, according to Heathcote (2000), the use of interactive teaching packages available in CDs assist the teacher in preparing his/her lessons which makes it easier for the teacher to deliver lessons. However, a study conducted by Moore (2005) reveals that most teachers used ICT just to replicate traditional methods (writing, drawing or getting information from a textbook) and failed to exploit the power of ICT in a creative or imaginative way. Another study conducted in Netherlands by Volman et al (2005) revealed that teachers use the computers for drill and practice and word processing only. This is because of the time schedules that they have. According to Light (2009), ICT alone cannot create this kind of teaching and learning environment. Teachers must know how to structure lessons, select resources, guide activities, and support this learning process; many traditionally-trained teachers are not prepared to take on these tasks since use of ICT requires that the teacher moves towards student centred strategies.

Secondly, access to the internet and other online data bases ensures that the teacher and the learners have up to date information (BECTA, 2004; Mikre, 2011; Heathcote 2000). According to Tinio (2002), this makes it possible for both teachers and learners not to

rely solely on printed books and other materials that are housed in a physical library rather they can access on information on the World Wide Web and the internet. A study conducted by Kolnik (2012), using of interactive whiteboards in Geography lessons, showed that most teachers preferred to use the interactive whiteboards because they felt that they had quick access to various media and it helped in manipulation of information and it helped them save time. In addition, they were able to update teaching materials; they had access to the Web; they could easily manipulate maps and they were able to use audio and video clips. Despite that, they also noticed that there was fast flow of information which some learners could not keep up with.

Thirdly, studies have also shown that ICT increased motivation among the learners because it tends to create great enthusiasm for learning in the learners (Moore, 2005; Mikre 2011; BECTA, 2004; Lepicnik-Vodopivec & Samec, 2012). According to Tinio (2002), use of videos, televisions and computer software that combine text, sound and colourful images provides authentic materials while interactive radio makes sound effects, dramatisations that engage the learners' interest. Since education intends to make the learners enjoy the lessons as much as possible so that they can grasp whatever is taught easily, the use of ICT enhances enjoyment and their interest in the learning as well as the subject thus learners are motivated to learn (Cox, 1997; Moore, 2005; BECTA, 2004).While it might be argued that textbooks also provides motivation through the illustrations, it is different because the pictures in ICT are usually animated making them more life-like. In Kolnik's (2012) study, the teachers also said that they observed that it

increased the learners' motivation as well as varied clearness of teaching material, better educational records.

Furthermore, ICT makes it easy for teachers and learners to interact with peers from other schools and/or universities. ICT provides greater opportunity for teachers and learners alike to communicate with their peers so that they can exchange information on issues through emails web conferencing (Mikre, 2011; Heathcote 2000; BECTA 2004; Storey, 2002). In his study, Storey (2002) ensured that the participants (pupils) had e-pals whom they communicated with through emails throughout the academic year; later on the pupils visited their e-pals. The pupils revealed that they grasped the concept of what they learnt earlier better after they communicated through the emails and later visited their friends. The teachers too had e-pals however; their responses were not as frequent as those between the pupils and their counterparts. Thus, the use of ICT can help the learners to interact with their peers from different regions all over the world and contrast localities through use of emails, webcams and video conferencing (BECTA, 2004). For instance, in Malawi, in Geography, there is a topic where learners learn the types of agriculture that occur in different parts of the world through video conferencing or webcam or emails the learners can have a clear picture on what it is really like.

In addition, ICT enables teachers to use simulations and modeling tools which leads to enhanced understanding of geographical topics that would otherwise be abstract, remote or too difficult to grasp. Animations and simulations help learners grasp more complex and abstract concepts (Condie et al., 2007; BECTA, 2004). A teacher may use

simulations to illustrate different concepts for example, the Continental Drift theory which is too abstract for the learners to understand how large continents moved about or the formation of volcanic mountain which would be too dangerous to observe at close range.

The use of ICT enables learners to explore the world through maps which help them to recall, reflect and assess themselves (BECTA, 2004; Storey, 2002). Thus, the learners will not only see the representation of an area on a piece of paper or a photograph rather they might be able to manipulate it to different scales thereby it is more interactive. Storey (2002) observed that when he studied children of mixed age class throughout an academic year using ICT to support learning, the children approached their geographical skills with increased skill and confidence in the classroom as well as through fieldwork. There was increased geographical curiosity and language and issues were freely used in class discussions by the pupils.

Furthermore, the use of ICT ensures that the learners produce higher quality output hence it enhances learners' performance than if it is using traditional methods as well as more work is produced (Moore, 2005; Mikre, 2011; BECTA, 2004). Moore (2005) observed that in a Geography lesson where ICT is used to produce an animation of how volcanoes erupt on PowerPoint, learners produced high quality work of sequence of a volcanic eruption. This is because the learners are motivated to learn, they tend to be more committed to what they are doing, and therefore they produce better quality work. In addition, the use of ICT helps to develop graphical, statistical and spatial analysis skills (BECTA, 2004). Different data can be manipulated easily using different packages by

using the computer unlike when the calculations have to be done manually. Thus, ICT enables the learners to do more quality work at a speed that cannot be matched using traditional methods and resources (Moore, 2005). In addition, Patterson (2007) observed that when the Google Earth was used as a tool for Geography education with a broad based South Carolina-oriented lesson plan for seventh graders, the pupils were able to apply deductive logic to reach conclusions which helped promote development of analytical skills by providing written explanation of observation. It also empowered the pupils by giving them the means to complete complex tasks and it provided them with considerable latitude in the design of projects.

The use of ICT also helps learners with special needs and behavioral problems as well as disabilities since ICT devices like Interactive whiteboards, computers especially adapted for the blind can be used since they involve all the senses (Heathcote, 2000; Lepicnik-Vodopivec & Samec, 2012).

Finally, ICT use in education prepares learners for the real world (Mikre, 2011; Lepicnik-Vodopivec & Samec, 2012). Since ICT use has penetrated in most aspects of our lives, integrating ICT in education will prepare the learners to fit in the global village when they become adults. However, despite these advantages in adopting ICT in education, in most developing countries for instance, Malawi, the teachers depend on textbooks for preparing lessons and teaching even though there are many advances in information. Wright (2000) argues that this is a worst case of wasted time and opportunities because the teachers have to copy notes from textbooks onto the chalkboard for the learners to

copy into their exercise books… which reduces efficiency, one of the fundamentals of quality in education (others being relevance and effectiveness).

However, integration of ICT can only be successful if the key players in education are involved. According to Zhao and Cziko (as cited in Noor-Ul-Amin,n.d.,p. 3), integration of ICT in education will only be successful if three conditions are met viz; teachers should believe in the effectiveness of technology; teachers should believe that the use of technology will not cause disturbances and teachers should believe that they can control the technology. Thus, teachers would only embrace technology if they feel that it will not interfere with their routines, that is, it should not threaten to take over their role in the classroom. In spite of the many advantages of the use of ICT, it has disadvantages as well for instance, effect on health, accidents, and virus attack, hacking, pressure.

2.6Disadvantages of ICT

The use of ICT especially the computer has an effect on health of the users through eye strain when the user spends a lot of time looking at the monitor. In addition, there is back and neck ache as well as repetitive strain injury in the wrists and hands due to working for long hours on the computer (Heathcote, 2000; Lepicnik-Vodopivec & Samec, 2012; Copley, n.d.).Accidents can also occur when using ICT due to trailing cables and people can trip on them, split food or drink on the keyboard and overloading of the power source. Hacking is also another disadvantage of using ICT. People can get through the computers defenses to steal files or just for the sake of intruding into people's personal file (Copley, n.d).

In addition, the computers are prone to virus attacks so that a lot of information can be lost if the computer is affected by virus. This can lead to loss of information if the files are not backed up somewhere else like a printed copy. Furthermore, other people have criticised the use of ICT as putting too much pressure on the users since they are easily connected to the world, they are pressurised to keep abreast thereby stressing them up (Parkay,2006; Heathcote, 2000).

2.7 Barriers to integration of ICT in education

Despite many studies showing that the use of ICT contributes to teaching and learning in Geography as well as in education in general it has several barriers. Ertmer (1999) categorized the barriers into first order and second order barriers. The first order barriers are extrinsic (beyond the teachers' control) and these are access, time, support, resources and training. While the second order barriers are intrinsic are within the teachers and these include; attitudes, beliefs, practices and resistance. The barriers (challenges) can be categorised into teacher related, student related, technology related and structure related factors.

2.7.1 Teacher Related Factors

The teacher related factors include the teachers' attitude towards use of ICT, lack of confidence in their skill to use ICT and lack of necessary skills which may lead to low self efficacy (Mikre, 2011; Moore, 2005; Dermirci, 2009; Salehi & Salehi, 2012). These

interrelated factors play a very important role in whether the teacher will adopt use of ICT in her/his teaching. For instance, a teacher who resists change, any change for that matter will not be enthusiastic to use ICT. The negative attitude may come about because the teacher does not have confidence in using the ICT hence she/he may shun it. Ertmer (2000) observes that:

> *"Teachers' belief in their ability to use computers in instruction is key given that self-efficacy is proposed to play in determining behaviour. Thus, teachers who have high levels of efficacy for teaching with technology are more likely to participate more eagerly, expend more effort and persist longer in technology related tasks than teachers with low efficacy"(p. 1).*

2.7.2 Student Related Factors

On the other hand, the use of ICT more especially the internet may be a barrier to learning itself because the learners may go to sites that cannot enhance learning, for instance, learners might visit pornographic websites, chat rooms, online gaming, Facebook at the expense of their study time (Moore,2005; Mikre, 2011). Furthermore, the learners are faced with information overload. There is a lot of information being posted on the internet and the student may come across information that is unreliable or biased or even untrue (Mikre, 2011; Moore, 2005). Hence, the teacher should be diligent to guide the student on what to read or download. OFSTED (2004) recommends that the teacher should refine the content for a project to make it geographically appropriate if objectives are to be achieved. This illustrates how the role of a teacher is not totally discarded because of the use of ICT.

The use of ICT tends to limit learners' critical thinking and analytical skills because everything is done for them which leave little room for them to think on their own. For instance, the learners may just accumulate a lot of information which they may not even need or analyse to check authenticity of the 'facts' (Moore, 2005). In addition, the use of ICT tends to limit the learners imagination because they are able to see what comes next through simulations and animations. However, other scholars argue that the use of ICT enhances critical thinking in the learners. According to Patterson (2007), Google Earth can help learners develop spatial thinking as well as critical technology and thinking skills.

2.7.3 Technology Related Factors

This is a major problem in developing countries where they have low economies to sustain the use of ICT. Many studies have shown that despite various countries having a clear policy on the use of ICT, the greatest limitation is the sustainability of the utilisation of ICT. The factors that hinder the successful integration of ICT include high cost of purchasing and maintenance of the technology, access to the internet, insufficient quantities of computers, virus attack on software and lack of expertise to repair the computers when they are broken down.(Isaacs, 2007;Richardson, 2011; Fall, 2007; Mikre, 2011; Khan et. al., 2012). Most of the times the computers are donated and second hand, hence prone to being damaged; and since most of the teachers are not experts in repairing the computers, they are just abandoned as a result teachers resort to using the traditional materials.

2.7.4 Structural Related Factors

The use of ICT is further hampered by the structural related factors. These structural related factors include the following; timetabling difficulties, change in pedagogy, availability of infrastructure and financing (Mikre, 2011; Moore, 2005; Hawkins, 2002; Salehi & Salehi, 2012).

Integrating ICT use in education has an effect on the timetable. A study conducted by Khan et al.(2012) showed that teachers may be overloaded with teaching periods due to shortage of teachers as such they may not find time to develop and integrate ICT in their teaching. In Malawi, strict adherence to the time table is required by administrators since the education system is examination oriented. Thus, completion of the syllabi is paramount such that the time table has to be well coordinated before integration of ICT to take into consideration the time as well as the type of ICT available at the institution.

The use of ICT in education also affects pedagogy. According to Anderson (2008), teachers need to restructure teaching philosophy in order to incorporate a more constructive approach which lends itself better to the benefits that technology offers. Since using ICT requires that the learner interacts with the multimedia as much as possible, the role of the teacher changes from the traditional role as the main transmitter of knowledge to that of a facilitator. Technology has now changed how teachers and learners access, gather, analyse, present and transmit information by giving them more power in the classroom (Dooley, 1999). Initially, the teacher of Geography would use traditional methods, for example, lecture method, to explain certain concepts which were

so abstract or remote. For instance, on topic of the formation of mountains, this concept is so abstract and students could not identify the types of mountains and how they were formed even when the features could be found in their localities. Hence, the use of ICT would enable the learners to identify the features.

Furthermore, teachers need to recognise that the traditional designated educational spaces—the textbook, the classroom, the curriculum and the school need no longer be viewed as enclosed institutional domains. Instead the digital text, used skilfully, can create the conditions where time and energy are released, enabling more creative teaching to be brought to the processes of learning and understanding of the concepts taught.

Thirdly, in most developing countries, integration of ICT is hindered by the unavailability of computer laboratories where learners can be taught. However, the mere presence of computer laboratories does not guarantee the use of computers or other ICT devices in teaching and learning. Studies have shown that in most developing countries in Africa and Latin America, the use of ICT was hindered by the lack of adequate hardware and software as well as unreliable Internet access which posed as significant barriers to using computers in instruction (Hawkins, 2002; Mwalongo, 2011; Vrasidas et al., 2010). The countries also have to contend with large classes which cannot fit in the computer laboratories.

Financial constraints would also limit the use of computers as well as the internet. Administrators who are working with a tight budget would not support the use of the internet in instruction. Since in most of the developing countries, the services are charged

per minute a principal would restrict the use of internet to cut costs and the acquisition of computers is mostly from donations and sustained by the donors (Hawkins, 2002; Isaacs, 2007; Fall, 2007).

Finally, other researchers include other barriers like political factors; socio-cultural factors (women are usually sidelined in access to ICT); corruption that is the resources that could be used to purchase ICT devices are diverted for other use (Khan et al., 2012),costly internet access, failure of training institutions to produce ICT technicians and professionals, lack of policy framework, inadequate in-service training on ICT integration in education, cost of bandwidth (Mwalongo, 2011, Isaacs,2007). A study by Gombachika and Kanjo (n.d.) found out that the challenges faced by University of Malawi in Use of ICT include: cost of bandwidth, inadequate hardware and software, lack of policies to guide development and exploitation of ICT and limited ICT awareness and skills. Furthermore, Hollow and Masperi (2008) observed that the challenges included negative impact on the teachers' workload, lack of classroom integration, infrastructural constraints and lack of teacher training.

2.8Theoretical Framework

2.8.1 Social Construction of Technology (SCOT)

The proponents of social construction of technology argue that technology and human action are interdependent. Thus, they influence each another in such a way that they can only be understood when they are in the same social context. It is also known as technological constructivism (Forlano, 2004; Keel, 2011). According to Prell (2009),

there is no right or wrong technology because the technology emerges from social interactions among social groups or actors. Thus, in order for a community to accept or reject a technology one has to understand what norms are accepted in that society. The use of ICT in education would therefore be shaped by how the stakeholders view the utilisation of the ICT. If the administrators, teachers or learners find that teaching and learning using ICT is cumbersome or irrelevant to their needs they will definitely reject it. Social construction of technology has about five central concepts viz; interpretative flexibility, relevant social groups, design flexibility, problems and conflicts and closure and stabilisation (Klein &Kleinman, 2002; Brey, 1997; Forlano, 2004).

Interpretative flexibility means that each technology means different things and it is interpreted differently by various groups. Therefore, technology does not have objective, fixed properties but it can accept different interpretations (Brey, 1997; Klein &Kleinman, 2002). In this study, a teacher might see a computer as a device to be used in class for instruction while the learners might not view it as such they may instead view it as a source of entertainment; thus, they would go to other sites on the internet whilst a lesson is in progress. Furthermore, the administrator may also have a different interpretation of the ICT.

Relevant social groups stand for the people that use the technology and the producers of that particular technology. It might also mean people of different socioeconomic statuses, different genders or competing producers. In this study, the relevant social groups are teachers, learners, administrators, parents, the government and non-governmental

organisations who are the stakeholders in education. The use of ICT will be affected by the socio-economic backgrounds of the users. For instance, if the learners or teachers can only access a computer at school, the skill and confidence to use it frequently will be minimal (BECTA, 2004). In addition, administrators who are not keen in use of ICT will not be interested in the purchase and maintenance of ICTs. The government is the key to the integration of ICT in education. If the government has no policy on ICT and a leadership that does not prioritise the use of ICT, it can rarely spearhead the use of ICT in education. Non-governmental organizations too, have a role to play in the integration of ICT through provision of services and funding. In this study, the relevant social groups are the teachers of Geography themselves, headteachers and the other stakeholders. It also includes the way female and male teachers use ICT.

Design flexibility means that the technology can be changed to suit the needs of society at that particular period. It can be influenced by the culture of the society. Whilst teachers may not have any problem with using a desktop computer, most learners would prefer to use hand-held or laptop computers. In addition, technology should be made in such a way that it fits with the needs of all genders. Forlano (2010) said that in the study done on early bicycles by Pinch and Bijker, women could not ride bicycles due to the social norms of the women's skirts. However, when the design of the bicycles was changed, the women were able to use them. Likewise, if women are to use ICT, the devices should be designed in such a way that it fits the needs of the women. Heemskerk, Brink, Volman and ten Dam (2005) observed that computer games as well as educational materials that did not appeal to girls were those that did not include the girls in leading roles.

Furthermore, the languages used in most ICT devices are English and French. It therefore sidelines those who can speak neither of the languages. Thus, the design of the technology would affect the utilisation of the ICT tool. This study sought to explore if the way the ICT is designed, where it is placed (that is in a classroom for teaching Geography or the computer laboratory) and its accessibility can influence its use in teaching for the teachers of Geography.

The fourth concept, problems and conflicts is closely related to interpretative flexibility since people have different interpretations of the same technology, there will be conflicts between relevant social groups. Teachers might view the ICT as a media of instruction while the learners might view it as a source of entertainment. In addition, the way the administrator views ICT will determine whether or not the ICT will be purchased, let alone maintain the ICT tool if it is broken down. Thus, in this study, the researcher explored how the different interpretations held by the teachers and administrators (headteachers) had any effect on the adoption and use of ICT in teaching.

Finally, when different groups resolve the problems and conflicts arising from different interpretations they reach a consensus, this is called closure and stabilisation. Hence, if the teachers, learners, parents and administrators agree that the ICT is an important tool in instruction then the conflict will be resolved. Therefore, the integration of ICT is a complex issue that needs to be thought of thoroughly. According to Dooley (1999), diffusion of new technology does not take place abruptly but it follows stages where firstly society learns about the new technology, then favourable or unfavourable attitudes

towards the new technology develops and then a decision is made as to whether to adopt it or not. The technology is then implemented and its use, reinforced. Hence, the researcher sought to find out how the problems and the conflicts that arose to different interpretations of ICT were resolved.

However, the Social Construction of Technology theory is criticized for ignoring consequences brought about by the technology after it has been invented. For instance, the computer is praised for making tasks that were once laborious, simple but usually the producers do not inform people on the health hazards that may inflict the users like stress since people are easily accessed to (through the emails),eye problems due over exposure to the bright light from the computer (Heathcote, 2000).

Secondly, it is so elitist because it ignores the voiceless. It concentrates on social groups that contribute to the construction of the technology only, leaving out usually the poor who cannot afford the technology. The cost of ICT restricts the number of people who own them in their homes. Thus, its use is only limited to people whose socio-economic status is better thus, wealthy people have better access to ICT. Likewise gender will determine how frequent the people can access to ICT (BECTA, 2004). Furthermore, according to Klein and Kleinman (2002), it is also elitist because it is usually only the management of the manufacturing company that input how a technology should be designed. This brings about digital divide. In the study, it was explored if the use of ICT was restricted to a particular group of users.

Thirdly, SCOT neglects the cultural, intellectual and economic origins of the technology itself. It just focuses on immediate needs, interests, and problems of the chosen people. Thus, it does not go deeper into other influences that affect the society.

2.8.2Adoption and use of ICT and SCOT

The education sector is one of the important sectors in the economic development of a country as such Malawi has taken strides towards the integration of ICT in education through policies for instance, National ICT for Development Policy and Vision 2020. Studies have shown that attempts to integrate technology in education have provoked a variety of responses from teachers that range from enthusiasm and skepticism to fear and uncertainty (Shelly et al., 2006). These responses affect whether teachers will adopt and use technology even if they are trained in the use of the technology. Proponents of SCOT argue that technology and human action are dependent on each other. Thus, technology can only be understood within a social context. Some studies have shown that teachers adopted the use of ICT in their teaching enthusiastically with some saying that integration of ICT in their teaching has improved motivation and the performance of learners (Kolnik, 2012; Light, 2009).

Furthermore, Norton and Wilburg (2003) said that “teachers are like designers so they recognise the centrality of planning, structuring, provisioning and orchestrating learning” (p.43). Thus, teachers are constantly making decisions about how they teach, the teaching materials that they are going to use for a particular lesson, and the teaching strategy they will use for that lesson because they know the kind of learners that they have. Therefore,

they prepare the lesson based on their experience and classroom situation. Hence, their experience and knowledge would influence their decisions on whether they implement any new innovation. Thus, the attitudes, skills and knowledge will play a great role in whether a teacher will use ICT in his or her teaching even if there are ICT devices at school. Anderson (2008) also observes that educators confront a number of challenges when striving to use technology in the classroom in a manner that meaningfully affect learners which usually arise as a result of the changes required to accompany technology into the classroom. Therefore, the adoption and use of technology in the classroom is not only a result of availability of ICT devices but also various factors that come into play for example, the school setting, learners, teachers' knowledge, competing demands, instructional goals and expectations. In a study carried out by Hollow and Masperi (2008), although teachers were asked to conduct the lessons as they would normally without altering classroom arrangements, some teachers showed less interest in the program and were fearful of using the technology, other teachers were reluctant to allow the children to use the gadgets independently and stopped using them citing additional workload to be a burden.

2.9 Summary of Reviewed Literature

This chapter has discussed that ICT is an umbrella word that encompasses any communication device or application. There have been tremendous advancements in ICT and with them; there has been fast flow of information. This has necessitated the integration of ICT in the contemporary education system because relying on traditional sources of information only would be retrogressive because today's learners are 'tech-

savvy', that is, they use different technologies to access information and they are not confined to the classroom only for their learning. ICT in education is referred in the context of provision of ICT devices; the teacher factors that would make the teachers use ICT in their lessons and the policy in the use of ICT.

Currently, there is no ICT policy specific for education in Malawi as such the researcher explored on the use of ICT in teaching across the disciplines. In Malawi, despite acknowledging that ICT has the potential to enhance socio-economic development of the country, few studies have been done on ICT in education as one aspect of socio-economic development. Hence, the need for a study to explore the challenges that teachers encounter when using ICT. Various educational researchers have done studies on use of ICT in education from different angles and yet it appears that most of the teachers still shun full integration of ICT in education in preference to the traditional ways.

CHAPTER THREE

RESEARCH DESIGN ANDMETHODOLOGY

3.0 Chapter Overview

This chapter describes the approaches that were used in this study, the methods for data generation and analysis, the sampling technique and the sample that was studied. Self completion questionnaires were distributed to all teachers of Geography purposively selected sample in the Zomba Urban district. Semi structured interviews were done with four headteachers from the same purposively selected schools. Non-participant observations were conducted through observing the teachers work in the staffroom and the ICT devices found in the headteachers' offices, the reception area and the staffroom. The study focused on schools in the urban district only because they had similar characteristics and it was carried out in May to June 2012.

3.1 Research Design

The research design for this study was a concurrent mixed methodology approach (Creswell, 1994; Berg, 1998). When using concurrent mixed methodology, the data is analysed qualitatively and quantitatively at the same time. This helps to give a stereoscopic view of the topic's structure and process so that the deficiencies of each approach are avoided (Sarantakos, 2005).

Qualitative research methodology involves the researchers to go into the natural setting in which they want to study because they are interested in the context. It also involves use of words or pictures and not numbers and the data is analysed inductively (Bogdan &

Biklen, 1992; Fraenkel &Wallen, 2000). According to Sarantakos (2005), in qualitative research the reality resides in the minds of the people who construct it and not senses only as such patterns and regularities of behaviour emerge as a result of social convections established through interactions (p.41). Qualitative approach was used in this study to explore how respondents perceived the use of ICT in the teaching and learning environment, their attitudes and challenges experienced when using ICT. Thus, qualitative research provided access to the unquantifiable facts. These included the opportunities and challenges that the teachers experienced in their teaching using ICT. The opportunities, challenges and nature of ICT were obtained through use of questionnaires and qualitatively through interviews and observation.

The quantitative approach simplified some of the concepts through descriptive analysis by using frequencies and percentages. However, they do not allow us to make conclusions beyond the data we have analysed to reach a conclusion. Interviews are important in qualitative research (Fraenkel &Wallen, 2000; Bogdan & Biklen, 1992) .They are used to find out what the interviewees think and how they feel about something. There are several types of interviews with different levels of intensity of formality, at one end there is the structured interview and at the other unstructured interview. Other types, for example, the semi structured interview lie in between. The semi structured interview is a verbal questionnaire which consists of a series of questions designed to elicit specific answers from the interviews which can be compared and contrasted later on (Fraenkel &Wallen, 2000, p.509). Four headteachers were purposively sampled for the interviews. Purposive sampling involves choosing participants based on

previous knowledge of population and specific purpose of the research that is the population is chosen because of certain characteristics (Bryman, 2008; Fraenkel&Wallen, 2000; Dooley, 1990). Teachers of Geography and selected headteachers participated in this study. The headteachers were chosen from schools that had ICT devices.

Observations sometimes go hand in hand with interviewing in qualitative research because there are certain things that can be best studied by just observing. The type of observation technique depends on what the researcher would like to study. Thus, a researcher can be a complete participant (where the identity of the researcher is unknown to the other participants) to a complete observer (researcher observes without participating in any of the activities). The complete observer is also known as a non-participant observer (Cohen & Manion, 1994). The intermediate is the observer as participant. In this case, the researcher identifies himself or herself as a researcher and does not necessarily take part in the activities of the participants.

In this study, the researcher was a complete observer or a non-participant observer. Observation was used to generate data on physical characteristics namely; the availability of classrooms; a separate Geography room and computer laboratories; presence of ICT devices in the headteachers' offices and the use of ICT devices by the teacher of Geography in preparing and teaching of the subject.

Quantitative research methodology involves the researcher to find the reality out there through performing experiments in the laboratory or in the natural setting and the data is

presented in numbers. The researchers have the view that the world is governed by laws and therefore it is objective and it does not depend on the researcher. The language is used is very formal unlike in qualitative research. It is deductive because therein theories and hypotheses are tested in a cause and effect order (Creswell, 1994; Fraenkel &Wallen, 2000).

Researchers in a quantitative study subscribe to the positive philosophy which seeks to understand the general principles or laws that apply to any set of specific events and experiences (Cohen &Manion, 1994; Bryman, 2008). It advocates the use of application of the methods of the natural sciences where reality is perceived through senses and experiment and not on the perceptions of the people. The reality is thought to be objective. Hypotheses are generated and tested to come up with laws (Bryman, 2008; Dooley, 1994; Cohen & Manion, 1994). However, according to Cohen and Manion (1994), the application of this principle is less successful in the study of social phenomenon. This is more apparent in the context of classroom and school where the problem of teaching and learning and human interaction present the researcher with a big challenge. The process of teaching and learning involves interaction which is not required when conducting a quantitative study. Hence, this study has leaned more to the anti-positivism or interpretivism. This is the opposite of positivism. Bryman (2008) says "interpretivism or anti-positivism respects the difference between people and the objects of the natural sciences…it requires that the social scientists to grasp the subjective meaning to social action…because social reality has a meaning for human beings therefore, human action is meaningful" (p.16). The advocates of anti-positivism argue

that natural scientists put into their experimentation in the laboratory by restricting, simplifying and controlling variables resulting in a very synthetic version of the whole, hence it makes the findings banal and trivial and they have little meaning on the intended people for instance, teachers if the study is done in educational contexts (Cohen & Manion, 1994).

3.2 Population of the Study

There were eighteen schools in Zomba Urban District but the population of this study there were 31 informants that is, twenty-nine teachers of Geography and four headteachers from ten (10) secondary schools from Zomba district of Malawi in the South Eastern Education Division (SEED) whose schools were purposively selected. The four headteachers were chosen because of the presence of ICT devices observed at the schools and each headteacher was chosen purposively from each type of schools in Malawi that is government aided, conventional, CDSS and private schools. Zomba urban district was chosen because of the schools and the teachers of Geography have similar characteristics. The schools were both public (these are grant aided, conventional and community day secondary schools) and private schools.

3.3 Sample and Sampling

The sample was purposively chosen because the researcher wanted to get information from teachers of Geography to determine how they had incorporated ICT in their teaching (Dooley, 1990; Sarantakos, 2005; Bryman, 2008). A sample of twenty nine teachers of Geography was obtained because they are the implementers of the curriculum

so that the use of ICT affects them directly. They were administered with self completion questionnaires to save time, twenty seven (27) responded to the questionnaires.

The sample also comprised of headteachers of the four secondary schools. They were chosen because they are administrators hence decision makers in the institutions. These four headteachers were purposively chosen to represent each of the schools in Malawi that is grant aided school, conventional school, CDSS and private schools. Thus, only four interviews were conducted because they are time consuming. Each of the interviews took only twenty minutes.

3.4 Data Generation Methods and Instrumentation

The data was generated from primary and secondary sources. The primary data were collected through face to face interviews, questionnaires and observation. The secondary source data were generated through review of journals, studies done by other researchers as well as books both from published and online resources.

3.4.1 Data Generation Methods

Data for this study was generated through In-depth Interviews (IDI), use of questionnaires and Observation methods. The in-depth interviews were semi-structured to allow for in-depth interpretations since everyone has his/her own perspective of the same situation (Dawson, 2002; Cohen &Manion, 1994).Although conducting interviews is expensive, they assist the researcher to obtain background information and help him or her to see and evaluate the respondents' nonverbal behaviour and habitat' (Dooley,

1990). The researcher was also aware that interviews are affected by both interviewer's and interviewee's characteristics such as personal bias, anger, anxiety, politics, lack of awareness and that the interview data can be affected by the emotional state of the interviewee at the time of the interview takes place which introduces bias into the study (Cohen & Manion, 1989; Patton, 1990), the researcher triangulated the methods to reduce this. There were four headteachers who were purposively chosen because of the presence of ICT devices present at their schools. They were interviewed because they were fewer. Field notes were taken during the interviews. On the part of the headteacher's interview guide, an item on age was included because these are the main decision makers in the institutions hence their age might influence the purchase and perception on relevance of ICT and later the adoption and implementation of ICT use because the need to use ICT is new.

Secondly, data was also collected through a self completion questionnaire. The teachers were given self completion questionnaires so that they can answer the questions on their own. These were analysed as soon as they were collected using the different predetermined themes that is knowledge of ICT use, skills, attitudes, availability of resources and challenges. There were both open ended and closed questions. The open ended questions were intended to allow the teachers to express themselves while the closed questions were used to collect specific information.

Thirdly, data was collected through structured observation so as to experience firsthand what went on in the schools and find out if ICT is used (Cohen, Manion & Morrison,

2000). Structured observation employs formal and strictly organised procedures with a set of well defined observation categories. It is also subjected to high levels of control and standardisation (Sarantakos, 2005).This was used even though the respondent will be affected due to the researcher's presence. However, since the information to be gathered through this method was used just to compare what the respondent initially answered in the questionnaire to what is actually done, the researcher felt that would not introduce bias into the study. All the participants were exposed to the same set of procedures, the researcher is sure this did not bring any bias. The researcher observed the following; availability of classroom blocks, availability of a separate room for teaching Geography, availability and use of the computer laboratory, presence of ICT devices in the schools, how the teachers of Geography used ICT for preparing lessons and teaching and ICT use in administrative work.

3.4.2 Instrumentation

Data were generated using interview guides, questionnaires and observation checklists. These instruments were constructed by the researcher but they were presented to the academic supervisors for evaluation and approval. The tools were also validated through a pilot study undertaken before the study. The schools that were used for the pilot study were also purposively selected in the Zomba urban district. These schools were not included in the actual study. The interview guide had questions on what kinds of ICT they had at the institutions while the questionnaires explored if the teachers used ICT, what kind, how often they used them as well as their knowledge, skills and attitudes towards the ICTs. The first part of the questionnaire had questions that were used to

generate general statistics while the rest explored the attitudes of the teachers of Geography towards ICT.

A self completion questionnaire with both open and closed questions was used in the study. It was accompanied by a consent form. The closed questions had predefined questions which the researcher would like to know. The open ended questions were used to help the researcher to find in-depth information regarding the attitudes of the respondents. The purpose of the questions were to obtain information about all the teachers of Geography who participated in the study that is the number of years that they had taught, their technical background, attitudes towards ICT and the challenges that they encountered when they tried to integrate ICT in their teaching. The combination of the two would therefore work in the advantage of the study since the disadvantages cancelled each other out.

The observation checklist was used to note the following; physical availability of classroom blocks, since a headteacher would hesitate to dedicate a separate room for any subject if there are few classrooms (Dermirci, 2009); Geography room; computer laboratory; ICT devices and how they were used.

3.5 Data Analysis

Both qualitative and quantitative data was generated in this study. Hence, the data was analysed quantitatively and qualitatively. The quantitative data was generated through questionnaires, coded and entered under the Statistical Package for Social Scientists (SPSS). Descriptive statistics were used. Descriptive analysis refers to the analysis of

data that helps to describe, show or summarise data in a meaningful way (Sarantakos, 2005). However, they do not allow us make conclusions beyond the data we have analysed. Thus, since the sample was small, the descriptive analysis was used. The qualitative data was analysed by clustering it according to themes namely; knowledge, skills, attitudes, usage of ICT in teaching and perceived challenges.

The data was analysed as soon as it was generated and it was ongoing until the end of the study. Comparative analysis and thematic analysis were used. The comparative analysis was used to compare if data from different people from different schools faced the same challenges or attitudes (Dawson, 2002). The SPSS was used to analyse some frequency distribution, percentages and other information that cannot be explained using words and other descriptive statistics.

3.6 Ethical Considerations

The researcher sought the respondents' approval before interviewing or giving them the questionnaires. It was emphasised to them that they were free to discontinue their participation and no harm would come to them. Secondly, anonymity and confidentiality were ensured since the researcher did not use the names of the respondents or the names of the schools that participated in the study (Dooley, 1990; Sarantakos, 2005). There was clear communication on the aim of the study. Permission was obtained from the Education Division Manager so as to conduct the study in his division.

3.7 Limitations and Delimitations

The researcher encountered limitations and delimitations as discussed in the next few paragraphs. The study was conducted in the South Eastern Education Division (SEED) in selected schools in Zomba urban district and as such the results are not generalisable to the whole country. The urban district was chosen because the schools would have similar characteristics. In addition, due to financial constraints the study would not be extended to all the schools in Malawi despite the researcher's desire to do so. The study was limited by the time frame in which it should be done. The researcher had a limited number of teachers studied to enable her collect as much rich information as possible. These teachers were given a self completion questionnaire while only four headteachers were interviewed to save time. In addition, the data generation method of using a self completion questionnaire presented some limitations in that some of the teachers did not return the questionnaires and observation was only limited to observation of availability of physical structures at the schools and not lesson observations since most teachers claimed that they had finished covering the topics for the final term and they were revising. Furthermore, data analysis is based on the responses of the administrators and the teachers of Geography themselves which may make response bias possible, however nothing much was done to reduce this biasness hence caution must be taken before generalising the results. However, it is hoped that this study has provided useful insights into the challenges faced when teachers want to use ICT in their teaching. The study was only done in secondary schools in Zomba Urban district because the researcher wanted to ensure that all the schools had similar characteristics. Firstly, it was the researcher's assumption that all the schools in Zomba Urban district had electricity. Secondly, it was

assumed that the schools are in the urban district; therefore, they had access to ICT. Furthermore, the study focused on the knowledge, skills and their attitude towards ICT and the challenges that teachers faced in using the ICTs in their Geography lessons.

3.8 Chapter summary

This chapter has discussed the research design which is mixed concurrent methodology where both the quantitative and qualitative approaches were used simultaneously to analyse the data generated. It also discussed the sample and the population used which was purposively selected. It was drawn from teachers of Geography in Zomba urban district.

The next chapter discusses and interprets the results and the findings of the study.

CHAPTER FOUR

PRESENTATION OF RESULTS AND DISCUSSION

4.0 Chapter overview

This chapter presents and discusses the results and the findings from the study and the interpretation of the results. The results have been presented based on research questions.

4.1 Introduction

Since in the 21st century it has become trendy to use ICT in various sectors of life that is in the working environment, when conducting businesses, banking, communication , in leisure just to mention a few, it is important to explore how it has affected education sector. The study sought to investigate the challenges of using ICT in the teaching of Geography in the selected secondary schools in Zomba Urban District. It was guided by the following research questions:

- Do teachers of Geography possess knowledge, skills and attitudes needed to integrate ICT into their lessons?
- Are there conducive physical conditions in the schools and classroom for teachers of Geography to use ICT in their lessons?
- How do the teachers of Geography use ICT in their teaching and
- What are the challenges that they encounter when using these ICTs?

Self completion questionnaires were distributed to teachers of Geography in ten different schools in Zomba urban that were purposively selected. Although the schools are in the

urban area, 20% of them had no electricity. There were both public and private schools. The public schools comprised one grant aided school, four conventional schools and two community day secondary schools. From the 29 questionnaires that were distributed 27 were returned, representing 93% response rate. Although the number of responses to the study do not represent the whole country, the results were still helpful in giving answers to the research questions of the study. Four headteachers were interviewed. These headteachers were purposively selected because they had ICT facilities at the schools. This was done after the researcher observed that is in the reception office (general office), the staffroom and/or the headteacher's office that the schools had ICT devices.

4.2 Characteristics of the Respondents

The study involved both male and female teachers of different academic qualifications and ages who had varying teaching experiences.

Table 1: Proportion of male teachers and female teachers

Gender	**Frequency**	**Per cent (%)**
Male	17	63
Female	10	37
Total	27	100

The majority of the respondents 17 were men representing 63%, the rest (10) were women representing 37%. The teachers of Geography who participated in the study were quite experienced, 16 teachers (59%) had taught for more than five years; while 7

teachers (26%) of the teachers had teaching experience of between two years and four years. The rest about 4 teachers representing 15% of the teachers had taught for less than two years. The majority of the teachers (63%) had a bachelor's degree (17); 26% had diploma (7) while 2 teachers (7%) had obtained master's degree, and 1 teacher representing 4% was undergraduate. The undergraduate teacher was found at a private school. They taught on a part time basis. The teaching load ranged from 6 to 24 periods. Each period was 40 minutes long while for two conventional schools which have double shifts have a 30 minute long period. The average number of learners per class ranged from 40 to 60 for all the respondents. The majority of the teachers (18) representing 67% had two teaching subjects, 4 teachers had three teaching subjects representing 15%, only 5 teachers (19%) had one teaching subject. However, the questionnaire did not include an item on age because the researcher understands that teachers can be and are trained at any age in Malawi and she felt that this would not matter significantly in the study.

Studies have shown that leadership plays an integral role in the successful integration of ICT in education (Pelgrum, 2001; Seyal, 2012; Mwalongo, 2011).The headteachers were chosen because as administrators, they knew the amount of resources available to the schools better than the teachers. In addition, Cox et al. (1999) even if a teacher were to undergo training in use of ICT, his or her adoption and integration in his/her classroom practice will depend on whether the school and in particular the headteacher supports him/her. The ages of 3 of the headteachers (75%) were between 40 and 50 years, the rest (25%) were above 50 years. All of the respondents were men. A question on the number of learners was included to determine if the resources that they have in the school will be

enough, in all the schools, the number of learners that they have, ranged between 300 and 400.

4.2.1 Teachers' Knowledge, Skills and Attitudes towards ICT

The study had six questions which aimed at exploring if the teachers had any knowledge and skill of ICT. They were asked if they knew what ICT was and how it was used in general; if they had ever received training in ICT and the duration of the training to determine how much knowledge they had acquired and what kind of training they had received. Thereafter, they were asked what kind of training they would have liked to undergo. These items were included because one of the most frequently cited factors affecting technology use in schools is associated with the teacher. A teacher is likely to use technology if he/she has positive attitude towards it. In this study, the majority (96%) of the teachers had a positive attitude towards the use of ICT in teaching. They felt that it was necessary to use ICT in teaching because it would make geographical concepts clearer at the same time supplement information available in the textbooks. They further said ICT would help add more updated knowledge to the teacher as well as make teaching easier. For instance, as some of the teachers responded that:

> *"It gives a clear picture on the recent findings in Geography which are not documented in textbooks" (School B, Respondent 1)*

> *"ICT simplifies things; Geography lessons would be well understood and precise" (School A, Respondent 2)*

> *"Yes, most Geography topics are very difficult to explain theoretically without visual aids and animations" (School J, Respondent 3)*

"Yes, you (the teacher) will be able to get and analyse information before passing it on to the learners" (School I, Respondent 5)

"I think it is necessary to use ICT because this will add knowledge to the teacher" (School F, Respondent 7)

The responses that the teachers have given agree with studies done by different scholars on the advantages of using ICT in the teaching of Geography. For example, teachers can obtain information from the ICT and use it to prepare lessons (Heathcote, 2000; Moore. 2005; Volman, 2005). In addition, according to Tinio (2002) some ICT combine text, sound effects, colourful images and dramatisation, it provides authentic materials to the learners hence it helps the teacher to explain some topics in Geography which are abstract thereby simplifying them. Furthermore, ICT provides up-to date information to the teacher which may not be documented in the textbooks (BECTA, 2004; Mikre, 2011;Tinio, 2002) as Respondent 1 of School B replied.

ICT will also arouse interest in the learners since the geographical concepts that were once abstract will be made more real. Upon being asked if the teachers would use ICT devices in future, 24 teachers (87%) of the teachers said they would do that because the world is changing hence learners must have updated information apart from it being an effective tool for teaching. They further reported that they would use ICT if they were trained and exposed to in-service training on how to effectively use ICT in teaching because they would cover a lot of subject matter as well as reach many learners. Only 3 teachers (13%) said they were not sure that they would use ICT in their teaching.

However, they did not give any reason. Another item on how they felt that ICT would contribute to student centred teaching (instructional) methods, 10 teachers(37%) said that the learners could access knowledge by themselves while 26% said that ICT would motivate the learners since all the senses are involved hence they are motivated. Eleven per cent (11%) of the teachers said that the learners can easily understand the information when ICT is used, the rest (26%) had no idea how ICT would contribute to student centred teaching methods.

The study revealed that 14 teachers (52%) did not receive any training (both basic and in-service training) in ICT use while the remainder (13) representing 48% received training through individual effort, through orientation at the college they attended; or during a course on Instructional technology. They were however looking forward to attending a refresher course or in-service training on ICT use. Upon being asked whether they thought that all teachers regardless of whether they taught computer studies should be trained in ICT use, 23 teachers (85%) said that it was very necessary because it would lessen the burden from the teacher of relying on traditional materials such as chalk and chalkboard which is also toxic. It would also help in the effective delivery of the subject matter because the teachers will be updating their knowledge since the world is changing every day. Two teachers (7.4%) said it was not good for all teachers to be trained but training should be given to only those who are willing. The other two (7.4%) did not respond to the question.

This finding correlates with what Ertmer (2000) found out in her study, that integration of ICT is slow in the education sector because even among the newest teachers instructional use of ICT is not as high as might be expected.

Despite that the teachers report that they want to use ICT; they find that most of their time is consumed by routine tasks of teaching and managing their classrooms hence use of ICT is seen as an extra task. A question on how ICT could be used in teaching of formation of mountains in a Geography lesson was included to find out if the teachers could use ICT in their lessons. Only 13(48%)of the teachers were able to describe how they could access information from the Internet and then use it for teaching using ICT devices like the computer, LCD and overhead projectors as well as video recording of the formation of mountains. The rest indicated that they did not know how nor they did not attempt to answer the question at all or just explained how they could teach the topic without the use of ICT. There could be different explanations for that.

Firstly, the teachers were reluctant to respond to the question because they feared that they will give a 'wrong' answer since according to Scheffler (as cited by Dermirci, 2009, p.49) teachers' lack of confidence in their computer skills and their ability to integrate computers into the classroom hampers effective computer implementation.

In addition, the reason could be the teachers never opted to acquire ICT skills individually since they think it is not a prerequisite to teaching. Cox, Preston and Cox (1999) found that once teachers have finished with their initial training they do not expect to need much further training because they were satisfied with the way they were

teaching therefore they do not take the initiative to improve their practice and learn new skills. In the study, twelve of the teachers (44%) who indicated that they had received some sort of training in the use of ICT during orientation at the training institution reported never using it, even for accessing information. Cox et al. (1999) observed that even when ICT professional development courses are done, teachers are often not taught how to revise their pedagogical practices, how to replace other traditional lessons without depleting the curriculum coverage: rather they are taught how to run software packages. For example, one respondent indicated that he had received training during orientation in his first year in college. However, on the item where they were asked what sort of skills of ICT training he would like to acquire, he replied;

> *"I would like to learn how to effectively use computer and other ICT devices (School A, Respondent 10)*

This begs the question of whether they were effectively trained at the college to use ICT, as theory only or it was practical as well since in order to master ICT one has to have enough practice because the same teacher upon being asked how he could use ICT to teach the formation of mountains in a lesson, responded that;

> *"Unless if am (sic) taught how to use it, then I will be capable of teaching formation of mountains in Geography lessons" (School A, Respondent 10)*

In this study, interpretative flexibility brought in problems and conflict between relevant social groups that is between the teachers and the headteachers, some teachers bemoaned that the headteachers did not allow other teachers to use the ICT devices as captured in the following extracts:

"There is a general feeling by 'the powers that be' that the computer room is for computer lessons only." (School B, Respondent 7)

"The computers are meant for computer studies learners and the other learners are not allowed" (School D, Respondent 8)

Mwalongo (2011) observed in his study, that in some schools, there is a culture of looking at ICT resources as 'sacred objects' and that he would not understand why that although in some schools have ICT resources, they are not used at all despite their availability, the availability of users and the need to use them, and thus only a visionary leadership would have promoted the usage of such resources.

4.2.2 Physical Characteristics and Teachers' Experiences in Teaching

There were five questions to explore if the physical conditions at the schools and classrooms were conducive for the teachers of Geography to use ICT in their teaching that is, the presence of ICT devices, availability of a computer laboratory and a separate room for teaching Geography. The questions aimed at finding out if the schools had the facilities which could influence their use. According to Dermirci (2009), lack of classrooms can prevent school managers (headteachers) from dedicating a separate room to every discipline taught at a school. Hence, an item on the availability of a Geography room and computer laboratory was included. There were also differences in the socio-economic statuses among the relevant social groups. Majority of the teachers (24) representing 89% reported that they do not have a separate room solely for the teaching of Geography and that they shared with the same classroom with teachers who taught

other subjects like English, Mathematics, Biology and so on, only 3 teachers(11%) reported that they had a room solely for teaching Geography.

Seventeen teachers (63%) who said that they had computer laboratories at the schools, the rest (37%) did not have a computer laboratory at their schools. However, those who said that they had a computer laboratory, 8 teachers (47%) reported that they did not use the laboratories for teaching Geography because only teachers who taught computer studies were allowed to use them while 4 teachers (24%) reported that they never used ICT because there were few computers in the laboratory while the other ICT devices were meant for administrative work only. Three teachers (18%) reported that they did not have time and 1 teacher (5%) reported that lack of knowledge while 1 teacher (5%) did not give any reason.

In Malawi, this discrepancy is so visible among the grant aided schools, CSS, CDSS, and the private secondary schools where the availability of resources is quite different. In the study, the headteacher of the grant aided school that participated responded that computer studies was offered to both levels despite that the curriculum provides a syllabus for senior level only because the school had purchased computers and they had two computer laboratories. Four teachers responded to the questionnaire. The teachers of Geography reported that they never used it for teaching despite the availability of a computer laboratory in the school. Three of the respondents (75%) reported that it was not accessible to them because the administrator restricted its use to teaching of computer studies only. There was also a difference among the convention secondary schools.

In the study, 4 CSS were chosen; two of them were boarding (residential) schools while the other two were day or non residential schools. All the respondents in the CSS reported that they had computer laboratories with old donated but usable hardware (computers). However, the teachers reported that they never used them for teaching of Geography as only the teachers of Computer studies were allowed to use the laboratories. Eleven of the respondents (79%) reported that they were familiar with some ICT devices especially the computer and Internet. The teachers commented on the same upon being asked if they had any obstacles or barriers to use the computer laboratory. For example

> *"The computers are meant for computer studies learners only and teachers who teach other subjects are not allowed" (School C, Respondent 1)*

Four teachers (29%) reported that they never used ICT in their teaching because of inadequate computers in comparison with the number of learners at their institutions. Most teachers reported that the computer laboratories were strictly for computer studies lessons only. This could be one of the factors that may have minimised the usage despite that some of the teachers received basic ICT training.

Meanwhile, one participant blamed it on the administrators for his lack of use of ICT in his teaching;

> *"There is a general feeling by the 'powers that be' that the computer room is computer lessons only" (School J, Respondent 3)*

This revealed interpretative flexibility because even if the government or other stakeholders had donated the computers in the schools to facilitate their integration in teaching, it is hindered by the views of the administrators who in their quest to minimise

the cost of maintaining the available computers tend to limit the use of ICT to a few people in the schools (teachers who teach computer studies and their learners only and for administrative work). However, the administrators cannot be wholly to blame because as 3 teachers cited lack of time (21%) and few computers (29%) in the laboratories as reasons for not using the laboratories. In addition, one headteacher bemoaned that despite a training course that teachers underwent in use of a television with educational software, the teachers never used it in their teaching. He said;

> *"Multichoice provided us with a television set so that teachers can view educational programmes record them then use them in teaching but they are not being used. I believe that it is because of lack of commitment by the teachers" (School A, Respondent 4)*

This is particularly strange considering that a good number of the teachers had positive attitudes towards the use of ICT. The teachers reported that despite having positive attitudes towards ICT and that they were trained, they might be hesitant to integrate ICT in their teaching because they did not have time to prepare lessons using the television sets at the school.

In the study, two CDSS were chosen and 5 teachers responded to the questionnaire. All the teachers reported that neither did they have a separate room for teaching Geography nor did they have a computer laboratory. The researcher also noted that these schools only had four classrooms only which housed all the four classes (Form 1 to 4).In one of the CDSS, the three respondents reported that the school only had an old computer and a photocopier which were not accessible for teaching. They reported that the devices were used for administrative work and processing of examinations. The teachers in the other

school reported that they did not have any ICT device in the school and they did not even have knowledge of and any skill in ICT use.

The study revealed that private schools were also disadvantaged. Three schools were chosen. There were 5 respondents. They reported that they did not have a separate room for teaching Geography nor a computer laboratory at their schools. The researcher only observed that at one school, there were some ICT devices in the deputy headteacher's office, the general/reception office but not in the staffroom. The respondents reported that they never used ICT in their lesson preparation or teaching except for one who reported that he once used his laptop computer to teach;

> *"I once used my laptop computer to download pictures of a lesson I wanted to teach but since we don't have a projector I had to move around showing the pictures to the learners .It took a lot of time; my time was up before I could do much. But I know it is an effective way of teaching, learners were interested" (School A, Respondent 10)*

According to Brannigan (2010), leadership is one of the several critical components in the successful integration in schools. The leadership influences the degree to which ICT integration can be viable among schools as well as championing it. Furthermore, Seyal (2012) adds that the success of ICT integration in education relies on the administrators themselves being competent in the use of technology and they should have a broad understanding of technical curricular and administrative dimensions of ICT use in education. In this study, two out of four headteachers' offices did not have any ICT device but they were in control of the ICT devices at the school as observed by the researcher.

The administrators reported that their major challenges were insufficient financial resources to purchase and maintain the hardware, lack of training (both basic and in-service training) among teachers and lack of technical support to repair the ICT devices when they are broken down. Since ICT is not necessarily used to replace the other methods of instruction, for example, textbooks, charts so that they are not even purchased because teaching and learning still takes place in their schools even without the use of ICT but ICT should be used to supplement these resources to enhance the teaching and learning process. For instance, upon being asked what he thought of the future of ICT in education, a headteacher of one school replied:

"There is no future because of large classes; few schools in Zomba urban have the ICT"

Therefore, with such an attitude it would be unlikely that a headteacher would make an effort to purchase ICT. Since the study has revealed that majority of the teachers do not use ICT in preparing lessons as well as teaching but in processing examinations only, it means that their interpretation of the use of ICT was administrative work and processing examinations only and not as a tool for teaching per se.

The researcher observed that for all the schools, there were only enough classrooms to accommodate the classes from Forms 1 to 4. In some schools, especially the community day secondary schools which have four classes only, had some school blocks under construction. Only one school had a separate room for teaching Geography which had some of the teaching aids found in Geography rooms for example, globes, charts, world

maps but not computers. Most community day secondary schools are not funded by the government hence they rely on the fees collected from the learners to run the schools. Therefore, building a classroom solely for allocating computers does not rate highly as a priority. This is in contrast with conventional and grant aided schools which are funded and they have enough classrooms for teaching. Thus, it is the responsibility of the headteacher to create the right environment for ICT integration because they have the administrative authority to do so. This will only be possible if the headteachers themselves develop a technology culture by using ICT and provide support to the teachers that have ICT skills.

In addition, a question aimed at finding out the familiarity of teachers with ICT that is if they could identify various ICTs and how often they used them to explore their knowledge of ICT use. This was meant to determine how comfortable they would be in using them in their lessons. This is because according to Scheffler, 1999(as cited by Dermirci, 2009, p.49), teachers' lack of confidence in their computer skills and their ability to integrate computers into classroom hampers effective computer implementation. Thus, the more the teachers used a particular ICT device reveals the level of their self efficacy in using the device hence their ease in using it in their teaching. According to Bandura (1977), self efficacy is the belief in one's ability to perform certain things which is influenced by personal factors (attitudes and beliefs), environmental factors (others and consequences) and behavioral factors (responses and actions). Thus, if the teachers are confident in their ability to use ICT devices effectively and efficiently in their teaching (personal factors), this high level of self efficacy is likely going to

influence them to use ICT more frequently (behavioral factors) because they are assured of the benefits of ICT usage in their teaching (environmental factors) that is motivation of their learners, access to up to date information, improved quality of work output from the learners, improved performance among others. It was in five point Likert Scale of agreement, where one stated whether one never used, limited user, neutral, frequent user or a confident user. It examined how the teachers judged themselves in using ICT devices, and these included the computer, internet, overhead projector, LCD projector, television-video system and printer. This was illustrated in Table 2 below:

Table 2: Teachers' Familiarity with ICTs

ICT	**Computer**		**Internet**		**LCD projector**		**Overhead projector**		**TV-video**		**Printer**	
Response	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**	**F**	**%**
Never used	**7**	**29**	**9**	**38**	**19**	**79**	**16**	**67**	**16**	**67**	**8**	**33**
Limited user	**7**	**29**	**4**	**17**	**1**	**4**	**2**	**8**	**2**	**8**	**4**	**17**
Neutral	**1**	**4**	**2**	**8**	**1**	**4**	**2**	**8**	**1**	**4**	**2**	**8**
Frequent user	**5**	**21**	**7**	**29**	**2**	**8**	**3**	**13**	**3**	**13**	**5**	**21**
Confident user	**4**	**17**	**2**	**8**	**1**	**4**	**1**	**4**	**1**	**4**	**4**	**17**

F=Frequency %= per cent

As shown in Table 2, the study revealed that most of the teachers (17) representing 67%were very familiar with the computer unlike the other ICT devices. Fifteen teachers

(56%) were users of the internet; another15 also 56% had ever used the printer while the rest of the ICT devices were rarely used. The teachers were unfamiliar with the other ICT devices because they do not have access to these devices for example, printers, which are only used for administrative work and preparing and processing of examinations and their results. Most educational innovations like the integration of ICT do not usually succeed because the teachers lack skills and knowledge needed to carry them out.

4.2.3 How the teachers of Geography use ICT

In the study, there was a question on how the teachers used ICT for preparing and/or teaching Geography lessons; only 13 teachers (48%) said that they used it for searching information only and not teaching. The same teachers upon being asked in what way they thought that ICT would be the most effective tool in teaching, they said that it would be effective in making illustrations especially on maps, flow diagrams of processes and graphical diagrams as well as getting information from the internet. The remainder 14 teachers representing 52% did not use ICT.

Another item required the teachers to state how they could use ICT in the teaching a topic on the formation of mountains, this question was included so as to measure if at all the teachers would ably state how they would use ICT in the preparation and delivery of the lesson. About 44% of the teachers (12) said that they would download simulations on the topic on the formation of mountains from the internet and then use the projectors when teaching. Fourteen teachers (52%) reported that they never used ICT for preparing and teaching Geography, they relied on textbooks as observed by the researcher as well.

The reasons that were cited for non-use ranged from lack of training in ICT skills, lack or inadequate hardware and software, lack of time to prepare lessons using ICT, lack of technical support, lack of support from administrators among others.

At another school, a teacher complained that although he was aware of the importance of using ICT in teaching he is limited by resources.

> *"I once used my laptop computer to download pictures of a lesson I wanted to teach but since we don't have a projector I had to move around showing the pictures to the learners. It took a lot of time; my time was up before I could do much. But I know it is an effective way of teaching, learners were interested" (School A, Respondent 10)*

The headteacher at this school revealed during the interview that he did not have one in his office because he did not know how to use it.

> *"I feel that using ICT is important in teaching since things are changing and we have to change as well as we are going (sic) into the new world but I cannot operate the ICT devices myself" (School I, Respondent 1)*

However, he said that there was a room assigned for a computer laboratory although they did not have computers. Thus, despite that the school's administrators and teachers know how essential ICT is to teaching and learning they might have been hindered by the resources that they have. This is not conclusive because different factors that influence whether a teacher uses ICT or not. The obstacles range from inadequate hardware and educational software to limited or no resources leaving them with no choices but to rely on the usual traditional tools for teaching. There was a question where they were asked if they had ever used ICT in preparing or teaching of Geography lessons before, only 13

teachers out of the 27 sampled representing 48%, responded that they have ever used it but mostly it was to access information for teaching.

The study also revealed that 60% of the female teachers (6) had never any ICT device although they responded that it was necessary to use ICT since it will improve their knowledge. Studies have shown that most females tend to be less interested in technology since most of them are less confident in their abilities to use technology. In addition, the females have a stereotypical perception that technology is a domain of males only, unfortunately a view which is shared by both sexes (Fiore, 1999; Weber and Custer, 2005; Sanders, 2005; AAUW, 2000). In this study, one of female teachers(10%) despite undergoing training in the use of ICT on how to access geographical channels and use them to teach Geography by Multichoice Malawi, she was quick to say she did not use the devices except when she used her laptop computer citing her age as the main problem;

> *"Lack of knowledge using the facility in spite of the training I had. I think my age contributes to this since I always forget things related to ICT….I would want to develop competency in using ICT devices. I easily forget how to use such devices" (School E, Respondent9)*

This may show that training in ICT only, is inadequate to make a teacher to use ICT in her or his teaching. According to studies, there is a gender disparity on how the males and females perceive and use ICT. Therefore, the study explore in this disparity. It revealed that there was a difference in the way males and females wanted to use ICTs. Thus, there was a difference in interpretation of the technology which led to the

difference in use among these relevant social groups (that is among the male and female teachers). Below is Table 3 shows the responses that female and male teachers made on their desired ICT skill.

Table 3: Responses by Female and Male Teachers on their desired ICT skill

Female Teachers' Responses	Male Teachers' Responses
1. how to operate and application skills and accessing information 2. Use of LCD and overhead projector 3. Competency in using ICT devices 4. Searching for supplementary information 5. All ICT skills 6. Use of computer in teaching of Geography 7. Excel, assembling and maintenance 8. Use of Internet	1. Use of all ICT devices 2. Use of LCD and overhead projector 3. Microsoft publisher 4. Graphical skills 5. Use of ICT for teaching 6. Graphics and designing 7. Drawing maps on the computer 8. Competency in ICT use 9. Knowledge of modern ICT devices and how to use them

There could be several explanations to this phenomenon apart from stereotypical biases. According to studies, there are several psychological, social, attitudinal and environmental factors that contribute to these conditions which need to be addressed before females could embrace ICT use like males. These factors include low frustration levels, societal influences (parents, media, and male culture of ICT), and lack of female role models in the technology industry, competitiveness (females like collaboration and not competition like males do) among others (Sanders, 2005; Fiore, 1999; Weber & Custer, 2005; Redmond, 2005). Fiore (1999) claims that females are frustrated with

computers that freeze and trying to find programs which tends to frustrate the females hence they give up easily.

In addition, Sanders (2005) attributes this to the violent language of technology which may be invisible to males but may be a problem to females, for example, hard disk, hard drive, reboot, cold boot, and virus attack among others. Redmond (2005) points that whilst females ask “what can ICTs do”, males on the other hand ask “what can ICTs do for me”. In this study, the female teachers they are just interested in the abilities of the ICT in general and they do desire to learn beyond the simple tasks that the ICTs has to offer unlike the males who want the ICTs to bend to their will. Table 3 shows that whilst the female teachers that participated in the study, mostly responded that the skill that they desired to learn should they be given an opportunity to undergo ICT training were very simple and aimed at social skills for instance, use of internet. Those who responded that they wanted to learn how to use the internet intended to use that skill specifically for communication that is to connect and converse. Unlike those that specifically responded that they wanted to search for supplementary information from both the Information infrastructure that is both the Internet and the WWW. On other hand, the male teachers in the study wanted more complex skills like graphics and designing, drawing maps on the computer and the Microsoft publisher which is used for designing, drawing and so on.

4.2.4 Challenges that teachers experience in using ICT

In the study, the teachers were given eleven statements about the challenges that the teachers experienced in using ICT and they were asked to indicate their level of agreement on a five point Likert Scale, they strongly disagree, disagree, undecided, agree or strongly agree. Table 4 shows how the teachers responded.

Table 4: Challenges experienced by Teachers of Geography in using ICT

Strongly disagree and disagree			**Undecided**		**Strongly agree and agree**	
Statements	**Frequency**	**Percent (%)**	**Frequency**	**Percent (%)**	**Frequency**	**Percent (%)**
Teacher training in ICT skills	3	11	0	0	24	89
Lack of hardware and software discourage me from using ICT.	7	26	4	15	16	59
Old and insufficient hardware hinder me from using ICT.	10	37	4	15	13	48
The timetable cannot allow integration of ICT in preparing and teaching lessons.	18	67	2	7	7	26
Little access to ICT prevents me to use ICT.	5	19	2	7	20	74
Unreliable electricity discourages me from using ICT.	16	59	4	15	7	26
Administrators do not support me to use ICT.	14	52	6	22	7	26
Lack of confidence to use ICT in the classroom prevents me.	23	85	3	11	1	4
Lack of technical support when the ICT devices break down	13	48	3	11	11	41
Presence of computer labs would have made me use ICT in my lessons	8	30	7	26	12	44
Large classes make it impossible to use ICT	15	56	1	4	11	41

Eighteen teachers (67%) said that they disagreed that the timetable did not allow them to integrate ICT in their teaching and learning, 2 teachers (7%) were undecided while the rest agreed that the timetable did not allow ICT integration. The reason for this could be the nature of the curriculum in Malawi which demands that a lot of content be covered in two years before national examinations at both the junior and senior levels so that the learners can graduate to the next academic level. Although majority, 20 teachers representing 74% indicated that little access to ICT hampered them from using it in their teaching, 12 teachers of Geography (44%) said that presence of computer laboratories would have made them use ICT despite the fact that in an earlier question most indicated that although a computer laboratory was available at the school, they never used it because of either time or that it was inaccessible since it was deemed to be meant for computer studies only. In spite of this, only 7 teachers (26%) indicated that administrators do not support them as a challenge. While some teachers did not respond to this question because the schools had no computer laboratory and they felt that the question was irrelevant to them. However, for those who had computer laboratories the responses varied. For instance, the item which inquired on the obstacles or barriers that they encounter when they want to use the computer laboratory, the responses ranged from being very vocal on how the teachers felt about being excluded from using the computer laboratory by the administrators to those that attributed the non-use to themselves:

> *"There is a general feeling by the 'powers that be' that the computer room is for computer lessons only." (Respondent 1)*
> *"Accessible to computer lessons or classes. But if to use (sic) the obstacle is time factor."(School E, Respondent 4)*

"Time i.e. [it is] mostly engaged and there is limited access to teachers" (School D, Respondent 7)

"[The] number is small or limited compared to the large number [of learners]that school has." (School B, Respondent 8)

"[There are] few and archaic computers and most of them have broken down." (School J, Respondent 9)

From these responses, the researcher found out that 7 teachers (26%) attributed their not using the computer laboratory because of the leadership at the school. The general underlying feeling was that the headteachers favoured the learners on the use of computers at the schools over the teachers since only the teachers who taught computer studies and their learners have access to the facility. According to Kirkland and Sutch (2009) the school leadership should strive to establish a culture that enables innovation as well as a shared sense of responsibility for innovation for it to be successfully integrated.

Only 16 teachers of Geography (59%) attributed inadequate resources as well as time to use the laboratories as obstacles to using ICT in their teaching. The study revealed that teacher training and in-service training in ICT skills, access to computers and other ICT devices and lack of hardware and software seem to be the most outstanding barriers. Teacher training was the most cited obstacle as 24 teachers (89%) responded that all teachers should be trained in ICT skills. They suggested that if they were trained at the teacher training institutions that they attended to and if they were given professional development courses in ICT skills then they would have been encouraged to integrate ICT in their teaching. Thus, despite the teachers acknowledging that ICT can bring with it a lot of benefits, lack of training and resources pose a big challenge.

However, the 24 teachers (89%) needed to be trained in use of ICT and how it can be used in Geography lessons. The researcher believes that this is the most important challenge in determining whether the teachers used ICT or not since earlier most of the teachers indicated that they have just being taught the basics of ICT during orientation in their first year of college whilst did not receive any training at all. This could be a result of lack of confidence in use of ICT. This is in tandem with what literature says that even if the teachers had received training in technology use and have positive attitudes towards it, they would only use it in teaching if they have high self efficacy and if they change their view on how to teach from them being the main source of information to being constructivist as such training alone is not enough (Dexter, Anderson & Becker, 1999; Mikre, 2011). Consequently, their beliefs can hinder integration of ICT use in their teaching. According to Hew and Brush (as cited by Dermirci, 2009, p. 49) teachers' attitudes and beliefs towards technology are among the factors that affect whether the technology will be integrated successfully in the classroom. These beliefs can range from the fact that they feel that they are the arbitrators of information to the stereotypical belief that technology is a predominantly male domain (Fiore, 1999; Bravo et al., 2003; Weber and Custer, 2005). The study revealed that more male teachers indicated that they were familiar with most of the ICT devices and that they usually used it for accessing information unlike the female teachers

In addition, although those who had taught for less than two years indicated that they were trained on ICT use during their orientation at college, they too never integrated ICT use in their teaching. The finding was perplexing given that the use of technology is booming in every sector and its impact in the social issues; it seems to lag behind in

education. This finding is quite disturbing because it seems there is a still a long way to go before ICT is integrated in education despite the country having a policy in integrating ICT use in education through the Vision 2020 and the National ICT for Development of 2006 and that the policies were formulated over seven years

Although technology use is deemed to be gender neutral it does not seem that way. Although there is little evidence on studies done in Malawi on use of ICT and gender, the results are consistent with the results from other studies that there is gender segregation in access and use of ICT among men and women (Khan et al., 2012; Gurumurthy, 2004; InfoDev, 2010). According to Gurumurthy (2004), the barriers that pose greater problems for women are more likely to be illiteracy, no knowledge in English and they lack opportunities for training in computer skills, domestic responsibilities, cultural restrictions, lack of content to their lives and infrastructure. She argued that public ICT facilities have a greater tendency to be men-only spaces effectively inhibiting women's access. This could explain why men responded that they had knowledge of ICT than the women.

4.3 Chapter summary

The results from this study show that the majority (89%) of the teachers of Geography felt that training was the most important challenge that they had for their non-use of ICT in teaching. This was followed by accessibility, lack of or inadequate hardware and software in Geography, timetable, lack of computer laboratories, large classes, lack of technical support, unreliable electricity and lack of support from administrators in

addition to lack of the teachers' confidence in using ICT. The study also revealed that the male teachers were more likely to use ICT in their teaching if they could access the devices and they were interested to acquire more skills in ICT unlike the female teachers who reported that they could mostly use ICT to access information.

In addition, this study showed that the qualification of the teachers and the number of years that they had taught; did not have any effect on the usage of ICT in their teaching. SCOT manifested itself in the study. The way teachers of Geography interpreted the ICT devices available at their schools deterred them from using them in their teaching. The way and the frequency of using the ICT devices also differed between male teachers and female teachers. In addition, schools that were funded by the government that is grant aided and convention schools were better equipped with ICT than the rest of the schools which were not. The views among the headteachers on the future of ICT use in education drew different reactions which also revealed whether they would use their own initiative to purchase and maintain the ICT devices.

CHAPTER FIVE

CONCLUSIONS, IMPLICATIONS AND RECOMMENDATIONS

5.0 Chapter Overview

This chapter presents the summary of results, conclusions and implications drawn from the results of the study, and finally the author makes some recommendations.

5.1 Conclusions

The study aimed at investigating the challenges of using of ICT in the teaching of Geography in Malawi and it concentrated on Zomba urban district because the schools had similar characteristics. The study sought to find out if the teachers of Geography possessed the knowledge, skills and attitudes needed to implement ICT into their lessons; whether the physical conditions were conducive in the schools and classrooms for the teachers of Geography to use ICT in their lessons, how the teachers used ICT and finally what were the challenges that the teachers of Geography encountered when using these ICTs.

The study has revealed that despite the government of Malawi taking strides in integration of ICT in education through the introduction of computer studies in the curriculum, projects such as School Net Malawi, formulating policies such as Vision 2020 and National ICT for Development Policy, the progress has been very slow.

Although the majority (96%) of the teachers of Geography had positive attitudes towards the use of ICT in their lessons, the efforts have been affected by several challenges inter alia teachers' lack of training in ICT and how to effectively use ICT in teaching of Geography, lack of and/or inadequate resources (hardware and software as well as financial resources). Although some of the teachers had got some basic knowledge of ICT use, they did not know how it was used in the teaching, thus they only use it for accessing some information for their lessons. The teachers (relevant social group) are unable to use ICT because of the different interpretations (Interpretative flexibility) among the teachers themselves and the headteachers who are also a relevant social group. For instance, whilst the headteachers viewed ICT as tools used for printing examinations and other administrative work, some teachers wanted to use them for accessing information and others for teaching. In addition, the headteachers of some schools did not take as the purchase of ICT as a priority due to inadequate financial resources. This brings conflicts and problems. Unless the teachers and the headteachers agree on the interpretation of use of ICT (closure and stabilisation), the implementation of ICT in education will continue being problematic.

The teachers also reported that old hardware, lack of access to ICT devices, inadequate time to use and prepare lessons using ICT, lack of technical support since when the ICT devices break down they cannot repair them, lack of support from administrators as most of them only allowed access of computer laboratories to teachers that teach computer studies only.

The most disadvantaged school type is the community day secondary schools. These schools do not receive any funding from the government. There was inadequate infrastructure-hardly enough classrooms for all the classes and there was no electricity. At one of the schools, they used makeshift classrooms. In this particular school, ICTs were hardly a priority. The administrators reported in all the schools that participated cited their major challenges as insufficient financial resources to purchase and maintain the hardware, lack of training (both basic and in-service training) among teachers and lack of technical support to repair the ICT devices when they are broken down.

Thirdly, there is a general lack of leadership support in the schools. The headteachers are aware of the benefits of using ICT in education; however, they themselves are not tech-savvy. There is a gap in the leadership training in ICT hence the headteachers do not actively use ICT devices. Two of the headteachers interviewed did not even have an ICT device in their offices. The headteachers may not be compelled to use ICTs because it is not emphasised by the authorities at the MoEST. However, as Wright (2000) points out decisions about investing technology for education are not entirely a matter of the Ministry of Education because such decisions depend on broad national development policies and involve other ministries including Finance, Economic Planning just to mention but a few. ICT integration in education would be successful if the authorities would go beyond preaching the importance of ICT integration to making sure that there is a clear ICT policy specific for education so that headteachers will be compelled to implement.

Although the government of Malawi has a policy in the integration of ICT in all sectors including education, the pace at which it is implementing is very slow since there are a lot of challenges that have to be solved so that the teachers can adopt the use of ICT in their teaching. Teacher training institutions should have enough resources in order to train teachers in ICT skills and this pre-service training should be followed up by in-service training sessions that should done frequently because ICTs are advancing rapidly.

Literature have shown that if the teachers share the vision in the importance of ICT and if they are included in the decision making related to any innovation as well as that leadership is distributed among them they are likely to be motivated to embrace the new innovation (Kirkland and Sutch, 2009). Headteachers should therefore delegate some of the responsibility at the school by appointing an ICT coordinator who will be responsible for in-service training for fellow teachers as well as soliciting funds for the school to purchase and maintain the hardware and software since the government alone cannot manage to provide everything.

5.2 Implications

The world is advancing rapidly into a knowledge society as such ICT use is inevitable. The use of ICT can benefit many subjects and not only computer studies. However, seven years after the bold step that the Government of Malawi had taken by formulating the National ICT for Development Policy where it was stipulated that under education-'to facilitate the deployment, utilisation and exploitation of ICT within the educational system in order to improve access, quality, relevance and delivery at all levels', little has

been done to accomplish this. One of the reasons might be lack of an ICT policy specific for education. The study does not argue that ICT is a panacea to all the problems encountered in education but they form part of the tools that can be used for teaching and learning in this Information Age. Today's learners are digital oriented and it would be retrogressive if ICT do not form part of their learning. Therefore, the use of ICT in the teaching of Geography would have benefitted the learners because they would have been able to access up-to-date information on different topics. This is crucial because one of the aims in education is to train individuals so that they can fulfill the needs of the society and this society does not operate in a vacuum because its needs are highly influenced by the needs of other societies globally.

The implication is that most of the teachers had no training in ICT use at the teacher training institutions. The few teachers that had basic training at their institutions were during orientation which was only for a short period of time.

Another implication is that access to the ICTs is also important. If the teachers have access to ICT devices, they would be frequent users hence that would develop their competency and in so doing increase their self efficacy since they would be comfortable to use ICT in their lessons without feeling inadequate before their learners. Different types of schools get their resources in different ways. Thus, some schools are more affluent than others. For instance, while they may both have computers or other ICT devices, the kinds that they have, the condition they are in and the uses that are made of those technologies are also vastly different.

Furthermore, in affluent schools, they would have the latest models than in poorly resourced or disadvantaged outdated schools. In affluent schools, they may have budgets and staff devoted to maintaining the technologies, while disadvantaged schools do not, thus if the outdated devices breakdown they are no longer usable, in addition, in-service training opportunities are provided for teachers, while that is unheard of in disadvantaged schools (Schwartz & Beichner, 1999).

5.5 Recommendations

From the results that were obtained from this study, the researcher therefore recommends the following:

Resources should be deployed to schools by the MoEST and other stakeholders for teaching in general if ICT is to be adopted. These resources include financial and the hardware and software. Lack of resources within the educational institutions is a challenge in implementation of ICT in a developing country like Malawi. Lack of/inadequate computers and other ICT devices in the school and the classroom can limit their use by the teacher. The hardware and software should be modern since the study revealed that the hardware that the schools had been just reconditioned hence outdated. In addition, insufficient funds at the school made the administrators to purchase other teaching and learning materials other than ICT devices which were expensive.

Furthermore, the government should ensure that ICT devices and funds to be used for the maintenance of the ICTs are provided to the schools so that headteachers whose schools have ICTs can allow teachers of other disciplines to use them apart from those teaching

computer studies. If the resources were adequate the headteachers would have allowed teachers to use because as it is, the headteachers responded that they limited the access due to insufficient resources to purchase and maintain the hardware to limit wear and tear should the ICTs be used by all the teachers in the institutions. Moreover, the public facilities are usually expensive thereby further limiting accessibility. Teachers should feel that they too are part of the set up in order for them to be motivated to use ICT.

Effective implementation of ICT based education requires commitment from all the stakeholders that is the administrators, teachers, parents, learners and the community especially the leaders. The leaders in the community are the ones that allocate funds to each sector of the government. According to Khan et al. (2012), the integration of ICT in education is hindered by political factors, if there is no political will to integrate ICT in education it can ever be achieved. Most of the times the allocation of sufficient funds to the educational sector and ICT does not seem to be very attractive to the leaders but if they favour technology, it will boom. The stakeholders should also be aware of how important technology is in enhancing learners' learning and they should work hard to overcome the challenges.

Furthermore, training should be provided to teachers at the teacher training institutions (pre-service), for example; Chancellor College, Mzuzu University, Livingstonia University and all the primary teacher training colleges by lecturers across the board and in the schools so as to train those who already started teaching (in-service training). The in-service training should be done regularly so as to keep the teachers updated on the

latest advances in ICT. This will ensure that the teachers are equipped with knowledge and skills in ICT use in teaching. Thus, if the teachers have the knowledge and skills they will be more confident to use ICT in their teaching. Furthermore, the headteachers themselves should also be trained and that teachers are sufficiently trained in accordance to their local context since they are the implementers of any innovation in the classroom. According to Kirkland and Sutch (2009) innovations fail to succeed in education because of the top-down management where the teachers are hardly consulted on the new innovation that they supposedly required to implement. Hence, it is quite usual for the teachers to initially resist any new innovation.

Lastly, gender disparity should be reduced through changing the mentality of the society as a whole because it is deeply embedded in both the males and females. The females have resigned to the stereotypical prejudice that technology is a male domain. According to AAUW (2000), "technology has increasingly being constructed as a predominantly male domain where entering women find they must choose between the cultural associations of femininity and those of computers" (p.7). Therefore, by educating the society that technology can be a domain for both genders that would help change the mindset of the society through presenting role models were females are also seen in technologically related professions.

In addition, although the Government of Malawi has taken steps to increase the enrolment and retention of girls in schools, strategies should be employed to encourage and motivate the girls and women to use ICT. The Malawi Communications Regulatory

Authority (Macra) chairperson, Martha Kwataine bemoaned the gap that exists in access to information and communication technology among girls and women in the country at a function celebrating International Girls in ICT. She further said that girls need to be encouraged to pursue courses that lead to professions in the ICT sector (Khakona, 2013, May 1).

5.6 Areas for further research

Firstly, future studies should be done on the impact of using ICT in education in the context of Malawi at all levels (primary, secondary and tertiary) so that the stakeholders can have knowledge as to whether it can assist in improving quality of education or not. Khan et al. (2012) say that teachers need to be given evidence that ICT can make their lessons effective for them and their learners. And the research should be done based on classroom observation to ascertain the actual use of ICT in teaching and learning as this study depended on solely on self reported data.

Secondly, a study should be done on the perceptions that the teachers themselves have on the use of ICT in education since although attitudes of teachers were sought, the analysis was not in depth since the thrust of the study was on challenges that the teachers of Geography faced. In addition, challenges that teachers in all disciplines (not only Geography) face in the integration of ICT should be explored including those who are privileged to teach computer studies.

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APPENDIX A

CHALLENGES USING INFORMATION AND COMMUNICATION TECHNOLOGIES (ICT) IN TEACHING OF GEOGRAPHY IN MALAWI: A CASE OF SECONDARY SCHOOLS IN ZOMBA

QUESTIONNAIRE FOR TEACHERS OF GEOGRAPHY

QUESTIONNAIRE NUMBER:

SECTION A: Personal Characteristics and Teaching Experiences of Teachers

1**. Gender of respondent** (*tick where appropriate*)

Male_____ Female_____

2. **School type (grant aided, conventional, community day, private):**_____

4. **Number of years that you have taught: (*Tick where appropriate)***

1-2 years_____

Above 2 years_____

Above 5 years_____

5. Number of teaching subjects_____

6. Teaching load number of periods per week _____

7. Number of learners in Geography class_____

8. What is your academic qualification? (*Tick where appropriate*)

(a) Bachelor's degree_____

(b) Diploma_____

(c) Other (specify) _____

SECTION B: Physical Characteristics of School and Classrooms

9. Do you have a classroom solely for teaching Geography? (*Tick where appropriate*)

Yes_____ No_____

10. (a) How do you judge yourself in using the following ICT devices in the classroom or for use in preparation and teaching of Geography? (*Tick where appropriate*).

Table 1: Teachers' Familiarity with ICT

Device	Never used	Limited user	Neutral	Frequent user	Confident user
Computer					
Internet connection					
LCD projector					
Overhead projector					
Television-video system					
Printer					

(b).In what state are these ICT devices? _____

11. (a). Is there a functional computer laboratory at your school? (*Tick where appropriate*)

Yes_____ No_____

(b). If yes, obstacles or barriers do you encounter when you want to use the computer laboratory?

_____

_____

_____

SECTION C: **ICT Knowledge and Skills of Teachers**

12. Do you know what ICT is and how it is used in general? _____

_____

13. (a) Have you ever received any training in ICT use? For how long? _____

_____

(b) If yes, explain what kind of training did you receive?
_____

_____

14. Suppose you are given an opportunity to attend an ICT training what skills would you like to acquire?_____

15. (a) Have you ever used ICT in preparing or teaching of Geography lessons before?
_____

(b) How would you use ICT to teach 'formation of mountains' in a Geography lesson?

_____

SECTION D: Teachers of Geography' Attitudes towards ICT

16. (a) In your opinion, is it necessary to use ICT when teaching Geography? Why?
_____

_____

(b) Suppose you were to use ICT in Geography lessons, in what way would it be the most effective tool for teaching the subject?

_____

17. (a) Would you use ICT in Geography lessons in future? Why?

_____

(b).To what extent do you think using ICT would contribute to student centred instruction methods?

_____

_____

18. In your opinion, do you think it is important for all teachers to be trained in ICT use? Why would it be important?

_____

SECTION D: Challenges That Teachers' Experience in Using Of ICT

19.In this section, there are statements that you should respond to what you think that is strongly disagree, disagree, undecided, agree, and strongly agree. ***Choose the most appropriate***.

Table 2: Challenges experienced by Teachers of Geography in using ICT.

Statements	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
All teachers should be trained in ICT use for them to use it in Geography lessons.					
Lack of hardware and software discourage me from using ICT.					
Old and insufficient hardware hinder me from using ICT.					
The timetable cannot allow integration of ICT in preparing and teaching lessons.					
Little access to ICT prevents me to use ICT.					
Unreliable electricity discourages me from using ICT.					
Administrators do not support me to use ICT.					
Lack of confidence to use ICT in the classroom prevents me.					
Lack of technical support when the ICT devices break down					
Presence of computer labs would have made me use ICT in my lessons					
Large classes make it impossible to use ICT					

Thank you!

APPENDIX B

INTERVIEW GUIDE FOR HEADTEACHERS

INTERVIEW GUIDE NUMBER

1. DEMOGRAPHIC DATA

1. Sex of respondent_____

2. Age of respondent
   Below 30_____

   Between 30 and 40_____

   Between 40 and 50_____

   Above 50_____

4. School type (grant aided, conventional, community day, private):_____

5. Total number of learners_____

2. CHALLENGES OF INTEGRATION OF ICT IN EDUCATION

6.What ICT devices (computers, printer, photocopier, television-video system, LCD projector, overhead projector) are available at your school? _____
_____

7. What would you say are the main challenges of using these ICT devices in the school?

Statement	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Lack/insufficient of hardware and software.					
Old and insufficient hardware.					
There is no technical support to repair the hardware when it is broken down.					
Time needed to teach and learn using ICT is limited.					
Requirement of qualification discourage me from using ICT					
Teachers' insufficient knowledge and skills of using the computer.					
Purchasing and maintenance of ICT is costly					
Insufficient infrastructure to separate room for ICT use					

10. Is there a special fund for the purchase and maintenance of the ICT tools?

_____

11. How do teachers use these ICT tools?_____

_____

12. Is there a widespread need for these ICT tools? Why?_____

_____

13. Have teachers at your school ever received training in ICT use?

_____

14. If yes, how long was it?

_____

15. In your opinion, did the teachers benefit from the training? _____

_____

16. What do you think of the future of ICT in the education sector?

_____

17. What in your opinion are the two most important considerations when planning and deploying ICT for education?_____

_____

18. What are the challenges to implement the considerations?

_____

_____

Thank you!

APPENDIX C

OBSERVATION CHECKLIST FOR USE OF ICT TOOLS

No.	WHAT TO OBSERVE	YES	NO
1.	Availability of classroom blocks		
2.	Availability of geography room		
3.	Availability and use of the computer laboratory		
4.	Presence of ICT devices(computers, printers, internet connection, projector) in the school		
5.	Teachers of Geography use of ICT tool in lesson preparation(teaching and learning aids, preparation of learning activities that involve learners)		
6.	Teachers of Geography use of ICT tool in class when teaching (strategies that involve the learners)		
7.	Use of ICT tools for administrative work		

APPENDIX D

CONSENT FORM

Dear Teacher,

I am Grace Chaika, a student at Chancellor College, University of Malawi studying for a Masters degree in Education, Curriculum and Teaching Studies (CATS). My research study for the degree is to investigate the challenges of adopting use of information and communication technologies (ICT) in the teaching of geography in secondary schools in Zomba district. The results of this study will assist in teacher trainers to equip teacher trainees with necessary ICT skills so that they can fit in the ICT environment, and it will assist educators on how best to implement the policy on the integration of ICT in education as stipulated in the Vision 2020 and the National Policy for Development in Malawi.

Right to privacy and confidentiality

To ensure that confidentiality and other ethical considerations are achieved, your name shall not be attached to the questionnaire. The information you give will be completely confidential and private. The consent forms will be kept separate from the questionnaires. No names will appear on the final report. Furthermore, the information thus given shall not be used against any person or institution but for academic purposes only. As such the results may be published and presented in conferences and other academic avenues.

Benefits and compensation

The research study does not provide any direct individual benefits. However, for participating in the study that will assist in improving the quality of teaching using the information that you provide, I believe will bring satisfaction. This questionnaire will take less than half an hour to complete. I hope that you will give me open and honest opinions.

Kind regards,

GRACE C.CHAIKA (MS)

APPENDIX E

VOLUNTARY PARTICIPATION DECLARATION

I have read and understood this consent form. I understand the purpose of the study and I understand that there are no direct benefits for me and that should I feel like withdrawing, I am free to do so. However, I feel that my participation in the study has been motivated by my will and zeal to help in improving the quality of geography teaching in Malawi.

Please write your signature:

…… ……

Signature date

Thank you for taking time to respond to this questionnaire.

APPENDIX F

UNIVERSITY OF MALAWI

Chancellor College

FACULTY OF EDUCATION

DEPARTMENT OF CURRICULUM AND TEACHING STUDIES

To: Whom It May Concern

From: Head of Curriculum and Teaching Studies Department, Chancellor College, University of Malawi.

Date: 13th May, 2013

Letter of Introduction for Grace Chaika

This is a letter of introduction for Grace Chaika as our Master of Education student in the Department of Curriculum and Teaching Studies, Faculty of Education, Chancellor College. She is doing research for her thesis as part of the requirements for an award of an M.Ed. She will need assistance to access and collect information for her study. Please assist her accordingly.

For further information, please contact the undersigned.

UNIVERSITY OF MALAWI * CHANCELLOR COLLEGE * 13 MAY 2013 CATS DEPARTMENT P.O. BOX 280, ZOMBA

Many thanks

Macloud Frank Salanjira (PhD)
Head of Curriculum and Teaching Studies Department
Chancellor College
BOX 280 Zomba
Email: or s.lanjira@cc.ac.mw.
Tel: 0881030096