INVESTIGATION INTO THE INTEGRATION OF ICT IN THE TEACHING AND LEARNING OF GEOGRAPHY IN SECONDARY SCHOOLS IN NKHOTAKOTA DISTRICT, MALAWI.

By

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A thesis submitted to the faculty of Education in partial fulfilment of the requirements for the degree of Master of Education in Teacher Education

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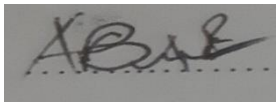
Declaration

I, **Aulaya James Banda**, do hereby declare that this dissertation represents my own work under the supervision of Associate Professor Victor Mgomezulu of Mzuzu University. It has never been previously submitted nor is it being concurrently submitted for any other degree than the degree of Master of Education (Teacher Education) of Mzuzu University.

All reference material contained in here have been duly acknowledged.

Signed: 
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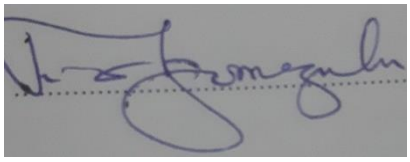
Signed: 

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Date: 30th August, 2023

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Dedication

I dedicate this work to my guardians Mr. Chimululu Banda and my brother Wilfred, I always thank God for giving me encouraging, loving and caring parents like you. In your support, I have always found inspiration to work extra hard. I owe this achievement to your prayers. May God bless you.

Abstract

Technology has become essential in education world over. Integration of ICT in education has improved the quality of education and academic performance. Consequently, this study sought to investigate the extent of ICT integration in the teaching and learning of Geography in secondary schools of Nkhotakota district, Malawi. The objectives of the study were: to assess the adequacy of ICT resources for teaching and learning Geography in secondary schools; to examine the attitude of teachers in the integration of ICT in the teaching and learning of Geography in secondary schools; and to investigate the extent to which ICT is integrated in the teaching and learning of Geography. The study was guided by Roger's Theory of Diffusion of Innovations model and was carried out in secondary schools in Nkhotakota, Malawi.

A descriptive survey research design was used, and the study targeted 12 secondary schools. Through, Purposive and simple random sampling technique, a sample of 12 secondary schools from Nkhotakota district. 12 school Head teachers, 36 Geography teachers, the DEM and 240 forms 1 to 4 students were sampled for the study. Questionnaires, interview and observation schedules were used as instruments for data collection. The quantitative data for the study were analyzed using Statistical Package for Social Sciences (SPSS) and Microsoft Word. The qualitative data obtained from the open-ended questions were analyzed thematically based on research objectives. This study has established that ICT resources are inadequate in the school; schools lack power supply; internet connectivity; schools lack ICT policy. However, the study has established that teachers have positive attitude towards ICT integration in education despite a number of them lacking training in ICT. Consequently, the study recommends for provision of ICT resources and training of Geography teachers in ICT.

Abbreviations and Acronyms

ACE	Accelerating Century Education
CoP	Community of Practice
DEM	District Education Manager
DESD	Decade of Education for Sustainable Development
EFA	Education for All
GIS	Geographical Information System
ICT	Information Communication Technology
IRI	Interactive Radio Instructions
ISTE	International Society for Technology in Education
LDCs	Less Developed Countries
MHEST	Ministry of Higher Education, Science and Technology
MIE	Malawi Institute of Education
MOE	Ministry of Education
MOEST	Ministry of Education, Science and Technology
PoD	Person on Demand
SDGs	Sustainable Development Goals
TPD	Teacher Professional Development

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CHAPTER 1: ORIENTATION OF THE STUDY

1.1 Introduction

Information Communication Technology (ICT) has shown to be vital in both developed and Less Developed Countries (LDCs). Regardless of the indispensability of ICT resources in LDCs, drawbacks are visible in its application in secondary schools. However, for proper educational transformation, there is a need for teachers to shift from the old way of teaching and focus on the integration of conventional modern methods through the use of ICT in teaching and learning. This chapter presents the background of the study, statement of the problem, general and specific objectives, the significance of the study, assumptions, theoretical and conceptual framework used and operational definition of terms concerning the Integration of ICT in the teaching and learning of Geography.

1.2 Background of the Study

It has become convention that teaching is an art, such that the success of a teacher lies in his or her ability to make the subject well-spoken and intelligible to students (UNESCO, 2008). The Malawi secondary school Geography teaching syllabus contains general objectives, specific objectives, and goals of education which are driven by prevailing social, political, and economic factors. Bloom's taxonomy classifies these instructional objectives into the cognitive, affective, and psychomotor domains (Afshari et al., 2009). The Geography syllabus's cognitive domain objectives include knowledge, understanding, application, analysis, synthesis, and evaluation whereas the affective domain objectives include appreciation, values, attitudes, interests, as well as feelings, and finally, the psychomotor

domain objectives encompass skills. Nonetheless, realization of these objectives falls under the aims of teaching Geography.

Malawi Institute of Education (MIE) and the Ministry of Education Science and Technology MoEST (2016) assert that choosing methods of teaching depends upon the availability of resources, the psychological requirement of pupils, the environment, and above all, feasibility of implementing it. Thus, teaching methods such as Socratic or question-answer, descriptive, observation, regional, and lecture are more frequently used whereas teaching methods like the project, Dalton plan, laboratory, and excursion among others are neglected, and their practices are not known in schools (Mtika & Gates, 2010).

However, such types of teaching approaches are gaining much importance nowadays, such that, the National Curriculum Framework of 2013 stressed upon learner-centered learning. Thus, paying careful attention to the knowledge, resources, skills, attitude and beliefs that students bring with them into classrooms help in choosing effective teaching and learning strategies to implement and achieve curriculum objectives. Dwyer (2016) argues that, the digital age concept of the global village has been established and this has seen its place in the teaching and learning in secondary schools. As a result, access to information is no longer the personal property of individuals or organizations; rather, everyone is flooded with it. To cope with this situation, the implementation of new technologies is essential in education and its integration into teaching and learning in schools especially in Geography is paramount to achieving educational objectives.

ICT is the umbrella term that is used to define all the communication devices used by learning institutions to pass information and materials and may include: the internet, projectors, video, television, cellular phones, and computer networks among others (UNESCO, 2008). This technology is widely used in computer lessons; however, debates emerge whether other subjects like Geography enjoy their share in lesson delivery. According to Banele (2019) the use of ICT in teaching promotes effective teaching and good findings. Moreover, the European Commission on education, emphasizes the importance of technology itself and its ability to create greater access to information and communication (MoEST, 2018). Furthermore, when given the opportunity, ICT promotes effective teaching all over the world. However, there exists an economic gap that challenges LDCs over developed countries in the integration of ICT in teaching and learning (Islam et al., 2012). As ICT learning resources are mainly accessed through the internet, developed countries have a higher upper hand in ICT usage. Nonetheless, this has been so due to earlier diffusion of ICT in developed countries which dates back to the 1980s (MHES, 2020)

Malawi as one of the LDCs is not left in pursuit of ICT as it is slowly adopting the 2016 ICT policy, and the Ministry of Education and Culture Policy (2018) emphasizes that technology has a large-scale impact on the way people learn. As students use modern ICT equipment in their learning, they see more of the subject through the practical approach and see the real-life situations, letting them have practical work creating an indelible mark in their lives. ICT does not only help students but also teachers as they use different learning methods and can help boost students' performance (Khan & Sasili, 2015).

Odera (2011) put forward a proposal for the management and teaching using ICT in all aspects which improve performance. The introduction of the World Wide Web (www) from 1990 to 2001 promised the capacity for information services in schools and other learning institutions globally. There are many services provided that make internet E-learning a hub for students, which include Google, Wikipedia, space, Facebook, Bing, and Twitter among others, where people get information regarding the teaching and learning materials. The www moved towards a read-and-write platform where users engage with others, contribute, and publish information in several formats including text, graphics, animations, audio, and video. Kumar (2020) asserts that, ICT brings effectiveness and efficiency to the delivery of lessons.

Furthermore, Kozma (2009) states that ICT in teaching plays a pivotal role in passing concepts, principles, examinations, and site support. According to Teaching Times (2022), integration of ICT in subjects like Geography helps students have access to large quantities of information on people, places, and environments as well as providing them with a framework for analyzing data to investigate patterns and relationships in a geographical context, making it easy for editing by students on their own hence make the subject interesting. Thus, ICT would remain critical as far as learning is concerned as it may likely lead to creating vision, plans, norms, and values that are shared by the school's management. Kumar (2020) observed that schools making use of ICT resources in teaching and learning tend to be more advanced in education compared to those schools which face challenges in the use and availability of ICT resources. Nonetheless, MHEST (2020) emphasized that,

effective ICT integration mainly depends on school leaders' perceptions and vision than it being of teachers' ICT skills. Hence, a school's ICT action plan play a big role in influencing teachers' actions, beliefs, and attitudes. The role that schools leaders play is very critical for technology to be integrated successfully since where there is provision of ICT resources there is coordination in the school activities as all stallholders are involved.

Peralta and Costa (2007) reiterate that there is a need for teachers to have a feeling of confidence in their ability to facilitate the learning of students through the aid of technology in their classrooms. For this goal to be achieved, there should be more professional development in the area of Integrating ICT resources to increase teachers' skills to be in a position of overcoming apprehensive associations with the overall use of technology. This would also help in coming up with new teaching methods and approaches, as well as support to be offered to help retain control as they facilitate learning through the use of computer-related resources. For ICT to be successfully integrated and implemented in learning and teaching, it requires that teachers should be equipped fully with ICT knowledge as it is outlined in the school's action plan (Sokku & Anwar, 2019). Therefore, it is against this background that the study wished to find out the integration of ICT resources in the teaching and learning of Geography in secondary schools.

1.3 Problem Statement

Information Communication Technology has been widely embraced in many countries as a tool for economic, political, and social development, as well as facilitating good quality education (MHEST, 2020; MoEST, 2013; UNESCO, 2008). Malawi through the Ministry of Education Science Technology developed an ICT policy which, among others, aims at facilitating the integration of ICT in the teaching and learning even in special needs classrooms to attain Sustainable Development Goals (SDGs) and the vision 2063. However, Malawi as a country in the developing world, is challenged by the integration of ICT in the teaching and learning process such that, ICT has been dominantly used to teach science compared to other subjects like Geography. Studies on ICT use dwelling on the Science, Technology, Language, and Mathematics subjects (Kozma, 2009; Muslem & Juliana, 2018; Ochudhot & Matunga, 2004;) are universal but little seems to have been done on the integration of ICT in social science subjects like Geography which of late incorporated ICT phenomenon like Geographical Information System and Remote Sensing. Hence it is against this background the study wished to investigate the extent of ICT integration in the teaching and learning of Geography in secondary schools in Nkhotakota District, Malawi.

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1.4 The General Objective

- Investigate the integration of ICT in the teaching and learning of Geography in secondary schools in Nkhotakota district.

1.5 Specific Objectives

The study sought to**:**

i. Assess the adequacy of ICT resources in secondary schools in Nkhotakota District.

ii. Examine the attitude of teachers in the integration of ICT in the teaching and learning of Geography in secondary schools in Nkhotakota District.

iii. Investigate the extent to which ICT is integrated in the teaching and learning of Geography in secondary schools in Nkhotakota District.

1.6 Purpose of the Study

The purpose of the study was to investigate the extent teachers are Integrating ICT in the teaching and learning of Geography in secondary schools.

1.7 Significance of the Study

The findings of the study would help education stakeholders to understand the factors that affect the use of ICT in the education system as a whole and Geography in particular. The MoEST would use the findings to amend the appropriate ICT policies towards its integration in schools. The findings would also help the school administration in decision-making on the availability and use of ICT in schools. The curriculum developers would also be provided with feedback on the need to maximize the potential of ICT in education delivery. Similarly, the findings would help the teacher training colleges in developing teacher education courses

that enhance pre-service ICT training. Likewise, the teachers would understand how technology affects their instructional delivery in classrooms and hence, find it necessary to adopt the available ICT in their vicinity. Lastly, the community would understand their role in education hence, become more supportive of the development of ICT infrastructure in schools, especially in rural areas.

1.8 Assumptions of the study

The study was based on the following assumptions:

i. Secondary school teachers and students are computer-literate and are conversant with various computer packages in teaching and learning in secondary schools.
ii. The study assumed that secondary schools in Nkhotakota District utilize ICT in the teaching and learning process.

1.9 Theoretical Framework

The study used Roger's Theory of Diffusion of Innovations to investigate the integration of ICT in the teaching and learning of Geography in secondary schools. The Theory explains how, why, and at what rate new ideas and technology spread through cultures. The original Diffusion research was done as early as 1903 by the French sociologist Gabriel Tarde. Diffusion research centers on the conditions which increase or decrease the likelihood that a new idea, product, or practice is adopted by members of a given culture or social system, this was extended by Rogers (2003) hence, called Roger's Theory of Diffusion of Innovation.

Factors Influencing Adoption of Innovation

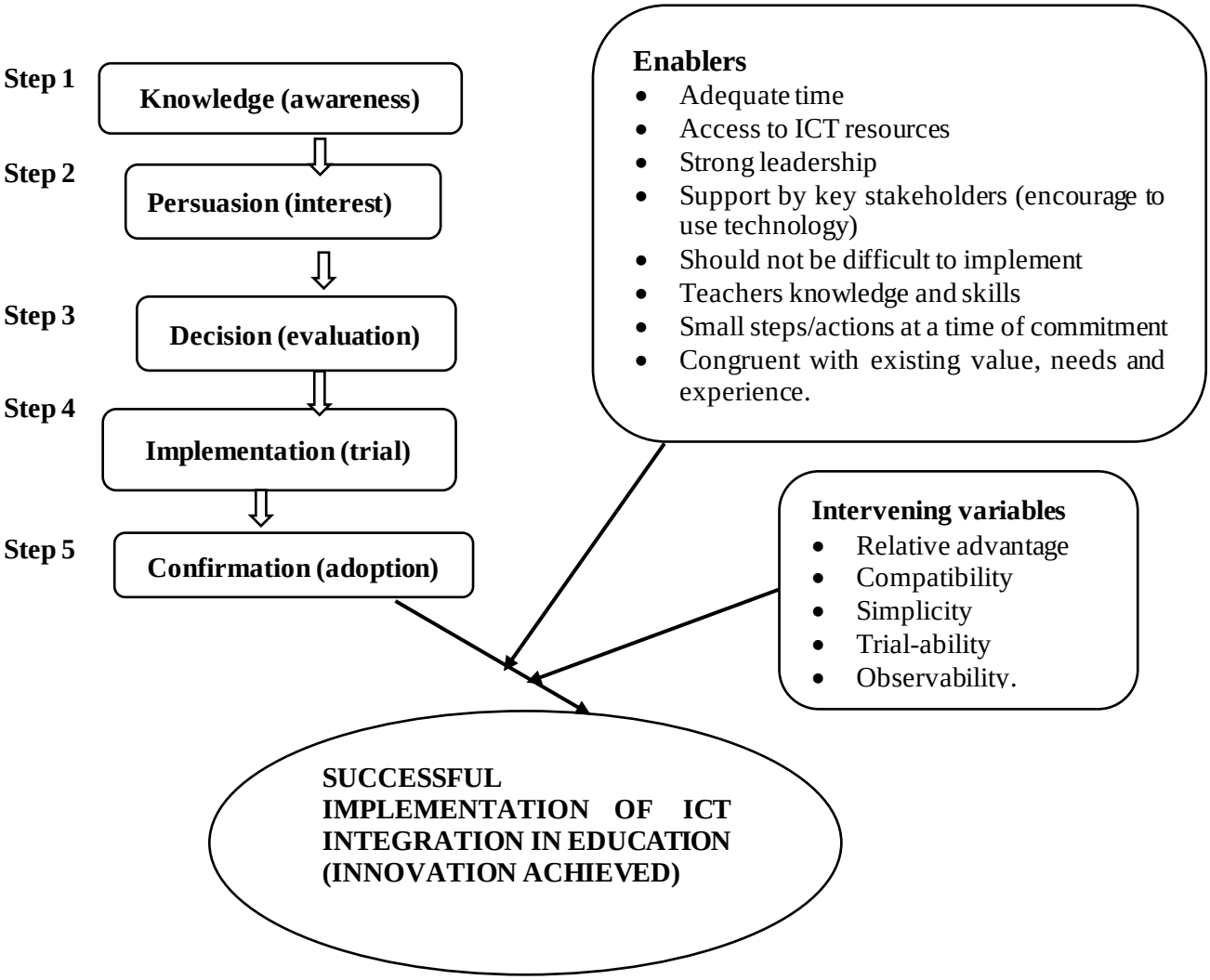

Figure 1.9; Adapted model of Diffusion of Innovation from Kotler (2015) and Sandlots (1987).

Diffusion innovation model has attempts to explain the factors that influence how and why users adopt new information medium, such as the internet or ICT in education. The main focus of this process is the stages through which teachers pass before arriving at a decision to try or not to try to continue using or discontinue using an innovation. This is called Adoption. However, there is a wrong perception that because an innovation sounds popular or widely marketed, then the targeted users will automatically adopt and use it. Thus, the

process of accepting an innovation takes several steps in the mind of students and teachers in schools.

Firstly, the teacher's knowledge (awareness) should expose students to the innovation's existence (ICT in our case) and gain some understanding of how it functions. At this stage, students are made aware of the ICT as they have no judgment concerning the relevance of the innovation to the process of learning. This helps students develop persuasion (Interest) as they form favourable or unfavourable attitudes towards ICT. Students mentally imagine how satisfactory the use of the innovation (ICT) might be used. It is also considered as the evaluation of consequences of using the ICT, as students weigh the potential gains from adopting the technology against the potential losses of old practices. The process of attitude formation includes reading documents about the ICT or asking some people in the know or reading and listening from the electronic media.

Having interest in ICT allows students to make decision (evaluation). This is key as students engage in activities that lead to a choice to adopt or reject the technology (i.e., adoption or rejection). Adoption can be defined as a decision to make full use of the technology as the best course of action. This means continued use of the product unless situational variables (lack of resources, lack of skills, etc.) prevent usage. Rejection means not to adopt an innovation. There may be some people who first consider adopting the ICT or at least give a trial, but then deciding not to adopt it. This is called an active rejection. Others never consider the use of the innovation, known as passive rejection. This promotes students to

implement (Trial), which means the students, put the technology into use. Until this stage, the process is a mental exercise, but in this stage behavioural change is required. For this stage to be achieved it requires a good communication channel that will provide adequate information about ICT to the students and this can be arguably engineered by the Ministry of education, school management and the teachers.

Under confirmation (Adoption) students seek approval/reinforcement for the decision of using ICT from teachers. However, students reverse this decision if their experiences of using the technology are not pleasant or helpful. Their continued use of the technology depends upon how the education system supports their using ICT in the process of learning. In addition, teachers and managers must continue communicating with them and encouraging and guiding/supporting them, knowing that ICT will be helpful for them.

The five factors influencing adoption of innovation sound straight forward, but they cannot achieve much on their own without requiring the support of certain prerequisites which would act as enablers. It must also be recognized that in an imperfect world, there will always be challenges in trying to help schools adopt innovation, such as ICT. Such challenges in this study are called intervening variables, and they include, relative advantages, compatibility, simplicity, trial-ability, and observability (see figure 1.9). In other words, a variable such as simplicity entails that if the innovation is too difficult for the students, they will not be willing to adopt it. The innovation should take cognizance of the skills and abilities of the students.

1.10 Conceptual Framework

The interaction of variables in this study was conceptualized as visualized in Figure 1.10 below.

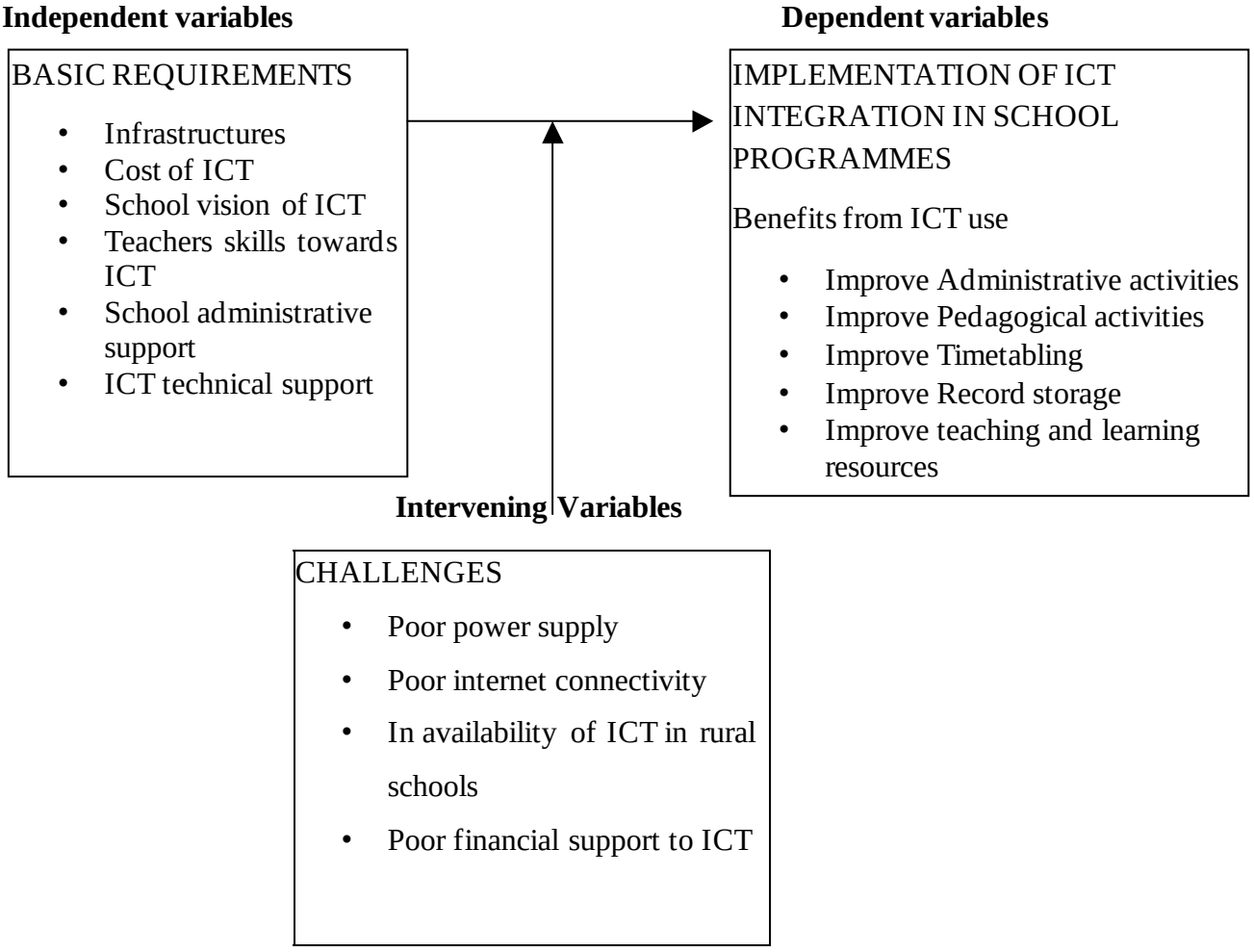

Figure 1.10 Integration of ICT in Teaching and Learning

The independent variables of the study were availability of ICT Infrastructure in secondary schools for teaching and learning of Geography, school's ICT policy for ICT integration in teaching and learning, teachers' attitude towards Integrating ICT in classroom instruction and administrative support towards ICT integration. At the same time, the dependent

variables in this study were improvement in administrative activities, pedagogical activities, timetabling, record storage, teaching and learning resources, as the actual integration of ICT in teaching and learning, which ultimately led to improved learning and students' performance in Geography.

Having adequate ICT infrastructure, ICT competent teachers, and positive attitude of teachers towards ICT does not mean ICT would be well integrated into classroom instruction. Intervening variables also influence the integration of ICT in the teaching and learning. The intervening variables of the study were the poor power supply, poor internet connectivity, unavailability of ICT in rural schools and poor financial support to ICT. These intervening variables were not used in this study. Availability of ICT infrastructure variable describes various ICT tools, internet, and digital content availability and accessibility by Geography teachers for teaching and learning in secondary schools of Nkhotakota district. Schools ICT policy is concerned with school's usage and the training received by teachers on ICT literacy and on how to integrate ICT in their Geography instruction.

Teachers' skills and attitudes variable explain how Geography teachers think and feel on the importance of ICT integration in the teaching and learning. Pedagogical activities cover the teaching methods used in Geography lessons and their implication to the integration of ICT in instruction. The use of learner-centered teaching methods increases the level of learner activation and attention in their learning (Mykrä, 2015). Learner-centered approach allows students to be active in their lessons, and this enhances the integration of ICT in instruction.

1.11 Operational Definitions

Investigation: The act or process of examining a possible cause, problem, statement, among others (Afshari, 2009).

Access: The means, opportunity or right to obtain something such as services, computer data or files. ICT access is usually determined by the number of ICT equipment available over the number of students (Bednarz & Wilfred, 2008).

Design: Ways used to get information from many educational designs within a given curriculum design (Kumar, 2020).

Hardware: Tools, machinery, and other durable equipment. For purpose of this research, the term hardware will be operationalized to imply only the machines, wiring, and other physical components of a computer or other electronic system or the physical or tangible components of a computer including the computer motherboard and its accessories (Hong, 2016)).

ICT: The infrastructure and components that enable modern computing. For purpose of this research, the term ICT will be operationalized to imply only any product that will store, retrieve, manipulate, transmit and analyze information electronically in digital form including the internet, broadcasting technologies, and mobile phones or computers and

related peripheral devices for instance projectors, printers, and scanners (Muslem & Juliana, 2018).

Integration: The action or process of combining two or more things effectively**.** For the purpose of this research, the term integration will be operationalized to imply only in corporate in teaching and learning which assists in getting more (Msila, 2015)

ICT Integration: Use of any product that will store, retrieve, manipulate, transmit and analyze information electronically to introduce, reinforce, supplement and extend learning or acquisition of skills. For the purpose of this research, ICT integration, will be operationalized to imply only a process of using any ICT multimedia programs in CD-ROMs, learning objects, or other tools to enhance student's learning or the process of determining where and how technology fits in the teaching and learning. (Kozma, 2009).

Multimedia: It's a combination of various digital means of communication in computers. The use of a variety of artistic or communicative media. For the purpose of this research, multimedia, will be operationalized to imply only a Form of communication that uses a combination of different content forms such as text, audio, images, animation, or video into a single system (Afshari, 2009).

Pedagogy: The method and practice of teaching, especially as an academic subject or theoretical concept. The art, science, or profession of teaching. For the purpose of this research, pedagogy, will be operationalized to imply only a Strategy of instruction or style of instruction (Teaching times, 2022).

Software: The programs and other operating information used by a computer. For the purpose of this research, software, will be operationalized to imply only a program that instructs a computer to process data. The Software can be categorized into open-source and proprietary (Kozma, 2009).

1.12 Chapter Summary

This work was organized in five chapters, chapter one was an introductory chapter, where the background to the study is presented. Here, the reasons for carrying out this study were discussed. Purpose, objectives of the study and research significance were also discussed here. Finally, the chapter operationalized the terms after outlining what constitute the study through theoretical and conceptual framework. The subsequent chapter presents literature review on the effectiveness of ICT in teaching and learning, adequacy of ICT in schools and the overall situations surrounding teachers' attitude towards ICT integration in schools. Furthermore, it discusses the extent of ICT integration in the teaching and learning in school.

CHAPTER 2: LITERATURE REVIEW

2.1 Introduction

This chapter presents a review of the literature concerning the integration of ICT in the teaching and learning in schools. It presents the effectiveness of ICT on the teaching and learning, adequacy of the ICT resources, the attitude of Geography teachers towards the need for ICT integration in teaching and learning as well as the extent of ICT integration in the teaching and learning of Geography.

2.2. Effectiveness of ICT in Teaching and Learning

As far as learning is concerned, teachers are at the centre of curriculum change as they control the teaching and learning process (MoEST, 2013). Therefore, they must be able to prepare young people for a society in which the competency to use ICT to acquire and process information is very important. The use of ICT in classroom teaching and learning is paramount today because it provides opportunities for teachers and students to operate, store, manipulate, and retrieve information, encourage independent and active learning as well as self-responsibility for learning such as distance learning. It motivates teachers and students to continue using learning outside school hours, plan and prepare lessons and design materials such as course content delivery and facilitate sharing of resources, expertise and advice (Msila, 2015). Hence, this versatile instrument has the capability not only of engaging students in instructional activities to increase their learning but also to help them to solve complex problems that enhance their cognitive skills

Several studies have argued that the use of new technologies in the classroom is essential for providing opportunities for students to learn to operate in an information age. Ayere et al., (2009) argued that traditional educational environments do not seem to be suitable for preparing students to function or be productive in the workplaces of today's society. The claim is that, organizations that do not incorporate the use of new technologies in institutions cannot seriously claim to prepare their students for life in the 21st century. This argument is supported by Afshari et al., (2009) who pointed out that, "by teaching ICT skills in educational institutions, students are prepared to face future developments based on proper understanding". Therefore, limited ICT resources in schools originally affect effective teaching and learning in schools.

Furthermore, it has been shown that the use of ICT in education can help improve memory retention, increase motivation and generally deepens understanding (Benele, 2019). ICT can also be used to promote collaborative learning, including role-playing, group problem-solving activities and articulated projects (Baya'a, 2012). ICT allows the establishment of rich networks of interconnections and relations between individuals. Some authors maintain that technology has the power to change the ways students learn and professors teach (Mtika & Gates, 2010). Therefore, the effectiveness of ICT despite all the accumulated benefits needs proper studies, especially in developing countries where a lot of challenges are still affecting the use of ICT.

2.3 ADEQUACY OF ICT RESOURCES IN SECONDARY SCHOOLS THAT OFFER GEOGRAPHY

Adequate and appropriate use of instructional materials is critical in the teaching and learning of all subjects taught in secondary schools. According to Baskin et al., (2006), teaching and learning resources support educators in making decisions on what and how to teach. As observed by Mangazi (2018), the use of instructional resources specifically enhances Geographers' creative thinking concerning problems, giving them models for "thinking Geographically" and creating chances for them to exercise this form of thinking. However, the lack of adequate resources has greatly affected teaching and learning in developing countries.

Msila (2015) carried out a study on teachers' views on the adequacy of ICT resources in schools for integration using open-ended, semi-structured interviews with 278 teachers from different parts of Nairobi, Kenya. The study revealed that lack of funds to obtain the necessary hardware and software is one of the reasons teachers do not use technology in their classes. Efficient and effective use of technology depends on the availability of hardware and software and the equity of access to resources by teachers, students and administrative staff.

Grabe (2007) conducted a study on the availability and use of ICT tools in Grade 12 science classes in selected schools from the Northern Province of South Africa. The three objectives of the study were aimed at identifying representative schools in the Northern Province with grade 12 science classes and selecting 10 schools with a range of performance pass rates (0-

100%) in the Geography examination; surveying ICT tools and materials checklist and to infer the role of ICT integration in student achievement in Geography. Among the findings were that, in general, in all the sampled ten schools in their Grade 12 classes, great variations in availability existed in the ICT tools for the teaching and learning of Geography. Secondly, the availability and quality of the ICT tools varied according to the school's performance category. High-performing schools had adequate availability of ICT tools while low-performing schools had poor ICT tools. This shows that adequate ICT resources are vital for high performance in schools.

On the other hand, Minishi-Majanja (2012) conducted a study on ICT tools used for teaching humanities in secondary schools in South Africa. The objectives of the study sought to find out the types of ICT tools available, their adequacy and the effects of their use in teaching. To carry out the research, a field survey design was used. Questionnaires, interview schedules and observation checklists were utilized in data collection. The respondents included the personnel in charge of the learning resource Centre, 1,920 history and Geography students in forms three and four classes, 120 history teachers and 80 heads of the humanities department. Descriptive statistics were used to analyze data. The findings of the study showed that the types of ICT tools available in schools included: audiovisual aids like television, audio aids like radio, and computers.

On adequacy, the study established that learning resources in the learning centres were adequate. Literature on the adequacy of ICT in schools was reviewed through the importance of computer resources, PowerPoint, instant message, computer email, mobile online,

television and radio. This therefore shows that adequate ICT resources in schools promote easy adoption of instructional content which helps to improve performance. Literature on the adequacy of ICT was reviewed through the importance of the following ICT resources found in schools:

2.3.1 Importance of Computer Resources in Teaching and Learning

A computer is an electronic device that works under a special set of instructions called programs to transform user input through processing into desired output for the computer user (UNESCO, 2008). Computers are often used as tools to get diverse educational content similar to the way textbooks, laboratory equipment, curricula, or other educational technologies are used to enhance education. Since the dawn of technology, computers are proving to be the most multi-faceted teaching aids available in schools.

In a study conducted in Turkey, Murphy et al., (2007) argued that adequate ICT materials such as computers, audiovisual, audio, tape recorders, videos, slide projectors, filmstrips, maps, charts, graphs and others are vital in the teaching and learning process. The researcher showed that in schools where the administration provided adequate teaching and learning materials, learning was enhanced and students' academic performance improved. Therefore, mobilization and use of resources not only enhance teachers' preparation to guide students but also leads the students to a better understanding of Geographical features or concepts, develop interest and motivate students to go the extra mile in their quest for knowledge and skills.

Hong (2016) carried out a study on teachers' views on the importance of adequate computers in schools using open-ended, semi-structured interviews with 23 teachers from different parts of Colorado, USA. The study revealed that with technology teachers are now able to quickly and accurately teach with several visual aids which allows them to create and edit information easily and technology provides the students with information in a faster and more comprehensive way. With computers, teachers readily prepare their teaching materials without wasting a lot of valuable time. This is because, once lesson materials are prepared on a computer; it can store these materials for as long as the teacher wants them. Even where provision and change of materials are necessary for teaching and learning, resources help teachers to consider individual differences in the students, as it is much easier to edit, prepare and create different teaching materials.

Therefore, use of computers also allows the teachers and students to interact amongst themselves as they work. The learning of Geography requires a lot of interaction. Where students are exposed to computers. Also, the drills and debates help them acquire fluency in their everyday life. The talking dictionaries found in computers help the students to correct pronunciation and understand Geographical terms.

2.3.2 Importance of Internet Resource in Teaching and Learning

The Internet is an international network of computers through which information is shared between computer users (UNESCO, 2007). It is an information carrier medium which connects information users to providers. The internet is perhaps the most transformative

technology in the history of schools today It is just at the peak of being tapped to transform education. There is a lot of educational material on the internet, as many scholars, researchers and publishing companies have posted their materials online even though these resources are not enough in developing countries. It is now common practice to access valuable information from the internet.

In a study conducted in Pakistan, Ghavifekr et al., (2015) argued that adequate ICT materials such as internet resources are vital in the teaching and learning process. The researcher showed that in schools where the administration provided adequate teaching and learning materials, learning was enhanced and students' academic performance improved. Therefore, Mobilization and the use of adequate ICT resources not only enhance teachers' preparation to guide students but also leads the students to a better understanding of geographical features or concepts, develop interest and motivate students to go the extra mile in their quest for knowledge and skills.

Teaching with technology requires adequate resources so that teachers and students expand their knowledge of pedagogical practices across multiple aspects of planning, implementation and evaluation processes (UNESCO, 2008). Thus, a lack of these technology-related management skills can hinder technology integration. If properly integrated, ICT has the potential to promote technology in education, but it should not be considered as a replacement for face-to-face instruction, but rather as a support to attain objectives that have not been attained efficiently.

2.3.3 Available Computer Software for Teaching and Learning

A computer is one of the ICT resources crucial for Geography lessons. This gadget is loaded with Microsoft Office PowerPoint, which helps the teacher to explain complex ideas in an interactive and digital presentation. Ghavifekr et al., (2015) carried out a study on the effectiveness of PowerPoint in teaching and learning, using semi-structured interviews with 46 teachers from different parts of Malaysia. The study revealed that software allows teachers to prepare texts, images, movie clips and sounds during lessons, making lessons interesting. Therefore, need for the provision of adequate ICT resources in schools to promote effective teaching and learning unlike chalkboards, digital presentations are flexible, allowing the teacher to let the students view what they desire and can be used by both teachers and students.

Also, it can be used by teachers to explain concepts that are abstract to students. Here, teachers also employ various teaching strategies to facilitate learning. It is a tool that motivates students to learn because of its uniqueness (Balanskat, 2007). PowerPoint, with its versatile use in education, has proved to be one of the best media provided by the computer. Geography teachers use PowerPoint to teach physical and human Geography, using slides which are saved and used during another lesson in a different class.

Agbatogun, (2012) carried out a study on the role of PowerPoint in the classroom using semi-structured interviews with 117 teachers from different parts of Nigeria. The study revealed that PowerPoint can be used to improve students' understanding, improve the

quality of education, and thereby increase the impact of education on the economy. This was in agreement with Afshari (2009) who discussed that PowerPoint presentations in a classroom help to reduce the student competition on few ICT resources in schools, this allows producing ICT-literate students and a versatile, adaptable workforce as it can also be used even in large classes. In agreement, Benele (2019) elaborate that, teachers must learn how to quickly acquire new skills on PowerPoint to effectively integrate ICT in schools.

Adding the skills of the workforce in this way has the potential to benefit the economy at large and also improve the individual student's earnings and chance of getting employed. ICT use in education also contributes to knowledge creation, technology and technological innovativeness, and knowledge sharing. All of these contribute to the transformation of the education system and sustain economic growth and social development (Kozma, 2005). The evidence therefore shows that the use of ICT and its increasing acceptance and adoption by society provide opportunities and is seen as potential for promoting education on a large scale if enough resources are provided in schools.

2.3.4 Availability of Email Facilities for Teaching and Learning

Email facilities promote learner centred approach to teaching and learning through E-learning. E-Learning is the application of a wide range of technologies involved in information processing and electronic communications, such as computers, the internet, e-mail, computer software, satellite, mobile communication gadgets, and other allied electronic devices for dissemination of knowledge and information (Teaching Times, 2022).

It involves the application of computer and information technology in teaching and learning. It is a store-and-forward method of writing, sending, receiving, and saving messages over electronic communication systems via a computer and/or mobile phone. This provision of adequate computers helps students in the practice of sending, accessing, and writing short messages and checking on the spelling of words in Geography within the school (Mndzebele, 2018). Thus, emails will greatly help facilitate communications as students may not bring hard copies of memos, letters, and even reports to their parents or guardians but through emails.

2.3.5 Importance of Mobile Phones Resources in Teaching and Learning

According to Bednarz (2008) searching for online information using mobile phone resources outside of the given materials in a classroom facilitates active learning. Activities or assignments involved in using online information in Geography content can promote student-centred learning (Kozma et al., 2005) and support the construction of meaningful knowledge (Dwyer, 2016). Various types of resources from mobile phones such as images, photos, maps and video clips that are available online also help students discover and understand geographical concepts and processes. For such reasons, several geographers have suggested using online information as classroom materials, and many Geography instructors have been using it in their classrooms.

Furthermore, Clark et al., (2016) stress the importance of training students to access quality online information for learning Geography, which includes considering factors such as

purpose, author or publisher, cited sources and other sources of information, and publication date due to adequacy of online material. For teaching such skills to students, various approaches have been suggested and implemented in higher education (Islam et al., 2012). Students are often asked to search for online information related to a topic to complete assignments or projects. Therefore, examining whether students can select useful online information is important for supporting students' understanding and acquisition of content knowledge.

In the field of Geography, Sokku (2019) investigated relationships between the adequacy of students' online information use patterns and their academic performance in two undergraduate Geography courses in the United Kingdom. The findings indicated that most students do not use relevant online information. Mostly only to complete assignments or prepare for examinations. Few students voluntarily used any online information as supplementary or recommended materials when given the option to do so. In other words, students considered materials as important and used them only when those materials were necessary for assignments or assessment purposes.

2.3.6 Importance of Instant Messaging (IM) Resources in Teaching and Learning

The emergence of affordable mobile phones is one of the most significant turning points in the history of education. These early devices had no internet, and their screen featured black letters and numbers, and green backlight. Even those simple phones could easily divert students' attention, with SMS, and simple games. Today, many teachers are facing the same

problem. Mobile phones got much smarter, and students use them for watching videos, listening to music, streaming events, browsing social media, and instant messaging (Teaching Times, 2020).

Phones are not the only thing that changed, teachers' attitudes towards cellular but technology have made a significant shift in the past few decades in improving the adequacy of teaching and learning resources in schools. Teachers went from banning and confiscating learner's phones to encouraging their use for educational purposes. There is a great deal of discussion regarding the popularity of instant messaging among schools (Bednarz, 2008). Some have suggested that the high level of engagement with instant messaging and other computer-mediated communication by schools has been detrimental to academic performance, particularly students (Kotler, 2015). Others suggest that adequate instant messaging should be integrated into classroom environments as a support mechanism (Albirin, 2006). Therefore, schools should provide enough resources to promote ICT integration for teaching and learning.

2.3.7 Importance of Television and Radio Resources in Teaching and Learning

Television and Radio Resources have been used widely. TV as a source and a tools of teaching and learning (Benele, 2019). The success stories of television and radio for education in many countries have negated the concept that television and radio are basically an entertainment oriented medium and are hostile to thoughts. Therefore, not suitable for education purposes. According to Hong (2016) for ICT integration to be successful these

resources need to be enough in schools. Television and radio are adaptable and follow different approaches when used in the different educational situations (UNESCO,2007). The mediums are used for formal, non-formal and informal education. To support formal education, television and radio usually function as supportive and reinforcement tools in schools. Adequate Television and radio can be attached with school curriculum and timetables. Once systematically organized, they take the form of school broadcast (UNESCO, 2007). In non-formal education, television and radio resources have a more specific role to play. As soon as they are used as a part of multimedia communication tool, television and radio directly or indirectly teach the school subjects.

Therefore, with the coming of adequate computers and the Internet, it is possible today to listen to live and recorded radio as well as watch TV programs on a particular geographic topic. Transmitting recorded radio and TV programs over the internet is referred to as personal on Demand (PoD) broadcasting. This technique has a unique feature in their programs as it saves and as well as let downloads for later listening (UNESCO, 2007). This media is an agent which boost cultural, economic and social development activity. Thus, adequate Radio and Television can benefit the masses by making them conscious of the environment, rights, duties and privilege. These are source of teaching etiquette, language skills, hobbies, social relations and religious beliefs. In order to be able to integrate ICT in schools, it is necessary therefore to be trained and know these tools that provide students needs and the curricular objectives in schools. Therefore, the focus of the study.

2.4 THE ATTITUDE OF GEOGRAPHY TEACHERS IN THE INTEGRATION OF ICT RESOURCES IN THE TEACHING AND LEARNING

Attitude is one of the teacher's factors that affect the use of ICT in the classroom. However, having a positive attitude is crucial in the adoption of ICT in education among teachers. Albirin, (2006) conducted a study on attitudes and barriers to ICT use among English teachers in Indonesia. The study used a questionnaire and interviews with 26 teachers through a purposive sampling technique. The findings of the study showed teachers had positive perceptions of the implementation of ICT in teaching and learning. Teachers believed that ICT support them in their lessons, as well as find information that enriches their lessons easily and quickly. This makes teaching and learning with ICT in class more interesting. Teachers with positive attitudes search for information to be used in the teaching and learning in schools.

Hong (2016) carried out a study on teachers' views of ICT integration using open-ended, semi-structured interviews with 23 teachers from different parts of Colorado, USA. The study revealed that teachers have positive attitudes towards ICT as an instructional tool. They liked ICT as a pedagogical tool as well as a resource bank for their teaching. Teachers were motivated to learn new ways of using ICT to deliver instructional materials to students effectively and show their willingness to incorporate ICT in their lessons frequently. They believed that ICT is a current trend, and hence has more benefits for students. This therefore, show that the low availability of ICT resources, especially computers and unreliable internet

connection, are major obstacles to the implementation of ICT in the classroom. A school with adequate ICT facilities effective teaching and learning.

According to the study carried out by Agbatogun (2012) examining high school teachers' attitudes towards ICT use in education, applying descriptive research design and questionnaire for 353 teachers working in different schools in Ankara, Turkey, teachers exhibited a high level of positive attitude towards the use of ICT in education with adequate resources and low level of anxiety towards ICT use in schools with no resources. School authorities therefore need to provide schools with adequate resources to promote adoption of ICT among teachers and learners in schools as ICT change the teaching and learning process.

Muslem eta al., (2014) reveals different attitudes of teachers towards ICT integration. while investigating the role of in-service training in promotion of secondary school ICT integration in classroom in Pretoria, South Africa. The findings of the study revealed that, teachers had positive attitudes towards computer use in their classrooms and teachers were willing to learn more about how to integrate computers into the teaching and learning processes. The study therefore shows that teachers with positive attitude have interest to integrate ICT resources unlike when they face difficulties in the implementation of ICT in classroom practices.

Similarly, Ndibalema (2014) study on teachers' views of ICT integration using open-ended semi-structured interviews with 223 teachers from different parts of Japan revealed that they have a positive attitude towards ICT as an instructional tool. They liked ICT as a pedagogical tool as well as a resource bank for their teaching. Teachers are motivated to learn new ways when using ICT to deliver instructional materials to students effectively and show their willingness to incorporate ICT in their lessons frequently. The teachers believe that ICT is a current trend, hence, has more benefits for students. Therefore, low availability of ICT resources, especially computers and intermittent internet connection, are major barriers to the implementation of ICT in the classroom as it promotes negative attitude towards ICT integration in schools.

Furthermore, a study by Baya'a (2012) on Geography Teacher's Readiness to Integrate ICT in the Classroom revealed that teachers have positive attitudes and beliefs towards ICT integration. Despite their positive feelings, teachers were reluctant to integrate technology into their lessons due to their little experience and the different obstacles they encountered in the integration of ICT in education. equally, a study conducted by Almekhlafi et al., (2010) found that one of the causes that influence negative perception towards ICT it's because the teachers do not feel trained enough or because they have no time or lack knowledge to create specific activities. This may be one of the reasons for not to use ICT in the classrooms, leading to a lack of use of the benefits that these ICT can bring both into their work and the students learning. Thus, the focus of the study.

2.5 EXTENT OF ICT INTEGRATION IN THE TEACHING AND LEARNING OF GEOGRAPHY

In as far as planning for implementing ICT integration for teaching and learning Geography in schools is concerned, necessary conditions to mitigate the challenges or possible challenges when Integrating ICT in the Geography classroom are a foundation for consideration (UNESCO 2008; World bank, 2003). The following section discusses the challenges that affect effective and successful integration of ICT in teaching and learning Geography in secondary schools.

2.5.1 Lack of Management and Leadership Skills

One of the most important conditions for the successful integration of ICT in Geography teaching and learning in schools is Good Leadership and Management. Management and Leadership must take the lead in school reforms to implement innovations and improve 21st-century education. Schools need a different kind of leadership, especially the Headteacher, who influences, leads, and motivates Geography teachers to encourage innovative teaching and learning in Geography (MHEST, 2020; Mtika, 2010). Islam et al., (2012) a recent study on ICT integration in secondary in Turkey concluded that without the Head teacher's extended commitment, it is impossible to integrate ICT effectively into schools as their involvement determines how ICT will be used by Geography teachers and students. Therefore, the Headteacher and management need to understand ICT integration to take appropriate action and strategies. This is because ICT integration is a comprehensive

teaching and learning process which require that Headteacher motivate their staff to integrate ICT in teaching and learning in schools.

It was reported in the literature that integrating ICT in Geography classroom forms an important component that inspires Geography teachers, assists them with the teaching profession's challenges, and promotes lifelong professional development (Dwyer, 2016). Therefore, as Orr (2003) suggested, management should develop a clear school Policy on ICT integration for effective adoption by all stakeholders in schools because this help to create direction and purpose for the future success of Geography teaching and learning. Some authors have also suggested that facilitating the integration of technology requires a change in policy or rules, and the decision-makers have to be willing to look at the situation, forge compromises when necessary, and ensure communication among all parties (Sahin, 2006; Hong, 2016). Thus, Management especially the Headteachers should motivate Geography teachers towards ICT integration in teaching and learning as it affects the successful integration of ICT. This change teacher's perspective and attitude towards the use of ICT in the Geography classroom.

Baya'a (2013) stated that ICT integration in schools is influenced by internal factors: perceptions and skills, and by external factors: adequate resources. Management needs to provide staff with adequate resources, and motivate them regularly while using different strategies to reduced challenges in ICT integration and keep teachers motivated because this will increase their ICT integration skills in schools (Msila, 2015). Intrinsic and extrinsic

incentives should be considered by management when designing teacher development programs for ICT integration in Geography classrooms. These resources and incentives reward teachers create favourable conditions to achieve specific ICT integration goals in Geography and support organizational development.

It was reported in literature that improved performance is a sufficient intrinsic incentive. Geography teachers will adopt an innovation when they see that it adds value, it is easy to use, and provides the time and support they need for learning and practice (Orr,2003; UNESCO, 2008). Like students, teachers need extrinsic incentives and motivation to persevere in pursuit to improve their teaching. Sokku (2019), suggest that extrinsic motivators may include: certification and access to new or additional educational resources. Thus, promoting effective teaching and learning.

Previous studies have also emphasized that school management needs to contribute to changing school policy that supports Integrating ICT in the classroom (Mtika et al., 2010). They must consider how policies affect the acquisition of and access to technology (UNESCO, 2006). For example, policies related to technical assistance support the use of technology in Geography classrooms, such as Internet or Wi-Fi access for teachers and students. Teachers cannot be expected to implement what they have learned about the effective use of ICTs without the presence of essential conditions in their work environment which among them include school management.

To fill this literature gap, this study identifies that educational leadership in schools should elaborate and develop ICT policy in schools that strengthen ICT integration in the teaching and learning of Geography. Geography teachers are the ones who execute policy in the classroom. They need to be proactive with the management of ICT, including taking part in the design of ICT policy in schools (Odera, 2011). Teachers need to be involved in how schools utilize ICT resources and when the school revise their existing ICT policy. Teachers need to share values expressed within a school-related policy and understand the implications as the policy influence Geographical practice. Thus, the focus of the study.

2.5.2 Lack of Teacher Professional Development

Several studies reveal that, teachers need to be skilled to integrate ICT in Geography classrooms (UNESCO,2008). This contribute to a meaningful classroom application of ICT in lesson presentations and administrative work. A closer look to the literature on ICT integration in Geography teaching is achieved through teacher's professional development programs. However, studies reveal a number of gaps and shortcoming in ICT integration. For instance, lack of adequate resources, skills, inadequate training and experience are some of the main reasons why teachers have negative attitudes toward ICT in schools (Nyambane et al., 2014). Therefore, teachers do not use ICT in their teaching and learning practices. According to Afshari (2009) when teachers believe they do not have the necessary skills or knowledge to use ICT effectively, they tend to feel uncomfortable in an ICT enabled environment. This therefore affect effective teaching and in a school setting.

Teachers in Geography need to be oriented on regular professional development opportunities because this is not a once-off event. Professional development programs should create excitement and curiosity for learning Geography and should leave teachers eager and prepared to help students develop a rich understanding of Geography. Professional development is extensive, and all deliverable mechanisms, like time, location, distance, and credit options, should be considered (UNESCO, 2008).

Professional development for integration of ICT in Geography can be at any level. According to MHEST (2020); as well as MIE, (2011) and MoEST, (2013), site-based TPD are useful when changing instructional practices is critical situations through action plans. Plans call for a significant enhancement of teachers' subject knowledge or of classroom teaching and learning. Generally, Professional development and a training strategy at school level needs to become part of the school culture. This allows teachers have their own predetermined goals and objectives to achieve. Teachers will realize the importance of the training and make an effort to make use of every possible training opportunity (Bednarz, 2008).

Teacher development for the integration of technology is a long-term investment; therefore, it requires more than what the traditional training approaches can offer and must be ongoing in providing support to teachers to enable them to take ownership of the process (Department of Education, 2013). Since teachers do not have enough time in the working day,

management can influence teachers' working patterns by ensuring optimal and effective utilization of available time for teacher development (Odera, 2011).

Learning new technologies and Integrating them into Geography takes time; therefore, teachers require time to practice their learned skills in day-to-day teaching practices. Teachers have different skill levels, perceptions, and attitudes towards ICT integration in Geography classrooms (Ghavifekr et al., 2016; Ndlovu, 2015). Therefore, training needs to be flexible to suit all teachers and be comprehensive enough to provide skills and knowledge for all levels and categories (Nyambane et al., 2014).

Teacher professional development for Integrating Geography teaching and learning using ICT in Geography needs to have a different focus for a broader skills acquisition for teachers. UNESCO (2008) and MoEST (2013) stated that Teacher Professional Development for the integration of Geography teaching and learning using ICT should focus on the following:

- Teacher-related barriers;
- The improvement of teacher confidence and attitudes;
- Enabling teachers to share their ideas;
- New approaches to Geography content delivery that it is a process of not only innovation but a process of social change in the transaction of pedagogy and content;
- Focus on the systematic change of technology integration;
- Training on the use of different technology software and basic computer skills;
- Different strategies to integrate ICT;

- Training in particular knowledge of what they teach, a broad sense of diverse methods of teaching, and, more specifically, ways of explaining and representing the specific content they teach
- Training in the development of their technological pedagogical knowledge and technological content knowledge.

2.5.3 Lack of Accessibility to resource for ICT Integration

The lack of accessibility to resources is another barrier that discourages teachers from Integrating ICT in the Geography classroom. Although schools do have ICT resources, some teachers do not have regular access to them because they need to share them with colleagues. According to Afshari, et al., (2009) this result from the poor organisation of resources and no standard policy on technology integration nor a well-structured procedure to be followed (MoEST, 2013). Therefore, schools need to develop their ICT policies based on the White Paper on Education to integrate Geography teaching and learning using ICT successfully. Furthermore, Geography teachers need to be included in the design of ICT policies because successful ICT integration becomes more likely when Geography teachers share the values expressed within the policy and understand their implications (Odera, 2011).

The lack of time also influences the use of ICT even though resources are available, there is no time for the teacher to use them for training or planning because they have several lessons in a day. UNESCO (2006) indicated that teachers could prepare themselves for self-training, and teachers should acquire self-organization skills, which will help them overcome the

barrier. This is affirmed by Department of Education (2013) who recommends for the ICT media to improve training by providing access to educational resources to teachers permanently, breaking the tradition of isolating teachers, and enabling individualized training opportunities.

Almekhlafi et al., (2010) suggests that teachers must be included in the decision process regarding the acquisition of Geography resources, improving ownership in developing technological skills. Schools find themselves in an environment where financial resources are not readily available, which will hamper the successful integration of ICT in Geography teaching and learning. School management needs to implement creative strategies to generate funding, for example, insufficient laptops or software (Harrison, 2005). Literature suggests that functional technological infrastructure and facilities, technology such as computer resource room (with video cameras, CD content packages, and computer resources) must be available before teachers can integrate ICT regularly (UNESCO, 2007). This will include laptops and internet access or Wi-Fi. Thus, having ICT resources for Geography teaching and learning means that proper maintenance is needed for user readiness equipment.

Therefore, schools need qualified personnel to manage ICT and maintain ICT software and hardware (Nyambane, 2014). However, these staff members with technical skills can be challenging for schools because of their availability and affordability (Teaching times, 2020). For schools that cannot afford these skilled staff members and resources Ndibalema

(2014) proposed that a division of labor with the school community to keep school ICT resources in shape is also important. Schools also need to budget adequately to maintain resources because these costs remain hidden and impact the school's financial resources (Clark et al., 2014).

2.5.4 Low Educational Assistance for ICT Integration

Continuous assistance in Education for improving ICT integration delivery is vital for school development and the working environment changes (Nyambane et al., 2014). Successful integration of ICT in the Geography classroom should be well-planned and supported by educational authorities, of which support, is one of the main challenges in ICT integration in schools today (Ndlovu, 2015). The support needs to be on various levels and must include technical assistance, which is one of the top barriers to the use of ICT in education. Ghavifekr et al., (2016) stated that technical barriers affect effective ICT integration and the smooth delivery of the lesson in classroom. Thus, schools need technical assistance to use and maintain technology.

On literature reviewed teacher's focus should be on teaching and learning, not maintaining and repairing the technology beyond basic troubleshooting procedures (Afshari et al, 2009; UNESCO, 2007). ICT integration in Geography teaching needs a technician, and if one is unavailable lack of technical support can be an obstacle hence, lower confidence levels to use technology in teaching and learning Geography.

Studies by Ghavifekr et al., (2016) suggest that, one way to obtain technical assistance and support might be to include in-serving training and inclusion of community members or student assistants to maintain a technical helpdesk in schools. Not only do teachers need technical assistance, but they also need assistance for the actual integration of ICT in the Geography classroom. The school can create an environment for peers to assist each other in Integrating Geography teaching and learning. One form of peer assistance is establishing a Community of Practices (CoP) to enhance teaching and learning at the school. The CoP structure needs to support the professional development effort and is crucial for teachers to be willing and enthusiastic to integrate ICT into their teaching and learning practices (Kumar, 2020).

CoPs enable teachers to collaborate with professionals, becoming a critical support element for Integrating ICT in the teaching and learning. Msila (2015) indicated that, supportive environments allow for collaborative practices that include planning and shared decision-making to assist teachers' ICT integration. Support and guidance from peers can influence teacher perspectives, and there are numerous benefits to taking part in collaborations like this, for example, they share expertise, and reflect on teaching and learning practices which in turn leads to cooperation, reduced workload, effective communication and increased teachers' efficiency and confidence (Afshari et al., 2009). Not only are there numerous benefits when working in a collaborative environment, but it will also lead to a sustainable use for effective integration of Geography teaching and learning using ICT in Geography (Mangazi, 2018).

2.6 SUMMARY

Various studies show that ICT resources play an integral part in improving the quality of education. Integrating ICT in education has been a popular topic worldwide. In developed countries, it is apparent, that there is a better use of ICT in education, but in developing countries like Malawi, the use of ICT needs consideration. Several studies have identified factors that influence ICT integration in education. The integration of ICT in Geography instruction is influenced by the availability of ICT resources in secondary schools; teachers' skills in the integration of ICT resources in classrooms; teachers' attitude to the use of ICT resources in their teaching and the instructional methods used by Geography teachers in the classroom instructions. If these factors are put in place, Integrating ICT resources in classroom would be practical. Based on the literature reviewed and anecdotal evidence, there is a commonality between experiences, resources, and challenges in other countries and Malawi. The issues of challenges in the availability of ICT resources, questionable teacher skills, and attitudes towards ICT are not new to Malawi.

CHAPTER 3: RESEARCH DESIGN AND METHODOLOGY

3.1 Introduction

The chapter present on the methodology that was used in the study. The area under focus include research design, study area, target population, sample size and sampling procedures, data collection tools, limitations and delimitations of the study, the data analysis and ethical considerations.

3.2 Research Design

Research design is a plan used to study a problem or question (Creswell, 2011). Along the same line, Orodho (2009) define a research design as the scheme, outline or plan that is used to generate answers to research problems. Meanwhile, Cohen (2006) points out that, a research design is a plan on how a study will be conducted or a detailed outline of how an investigation will take place. This research utilized a convergent mixed method research design. A mixed methods research design is a procedure for collecting, analyzing, and "mixing" both quantitative and qualitative research methods in a single study to understand a research problem (Creswell, 2018). The researcher utilized the convergent mixed methods design to collect quantitative and qualitative data concurrently, as both types of data had equal value for understanding the research problem by merging the findings during data collection, analysis and interpretation. Moreover, the purpose for the Convergent Design were to obtain a more complete understanding from two databases, confirm findings from different methods and compare multiple levels of data within the study. The secondary data was collected from a literature review from journals and relevant books, while

questionnaires, observation and interview schedules enabled the researcher to collect the primary data.

3.3 Research Site

The sample for the study came from the three geographical school zones in Nkhotakota district. It constituted the Northern Cluster Zone fond of fishing and industrial hubs, the Boma Cluster Zone which is associated with businesses and administration work, and the Southern Cluster zone which is associated with agricultural activities. The District was preferred for this study because:

- The researcher was very familiar with the District.

3.4 Target Population

Mugenda (1999) defines a target population as a particular entity of people, objects or units to which a researcher can reasonably generalize his or her research findings. The target population for the study included the District Education Manager, Head teachers, and teachers who had over three years teaching experience and these were thought to have knowledge of the school atmosphere as well as Geography students. The researcher selected students from forms 1, 2, 3 and 4 since they were the ones who directly participate in the various forms of Integrating ICT during Geography lessons. Geography teachers were involved since they propagated instruction to students and determines a form of ICT to be used. The DEM too formed part of the study since DEMs are the pillars of guidance and

counselling programs in schools. They were preferred because of the close contact they had with Headteachers and teachers. The Headteachers of the school were the custodians of ICT resources. This view is shared by Silsil (2010) who highlighted that, the Headteachers must ensure that proper methods of keeping and protecting school resources are maintained in the school.

3.5 Sample Size

Sample size is defined as the number of units, subjects, objects or items in the sample which determines the precision with which parameters are estimated, hence, the accuracy of the inferences made from the sample data to the population (Mugenda, 2012). The sample size used in this study constituted a total of 289 participants. Twelve secondary schools were randomly selected from the 39 secondary schools comprising more than 30% of the total population as recommended by Kothari (1991). The 12 Headteachers of the 12 schools selected constituted the total sample representative of the 39 school Headteachers. The 36 Geography teachers of the 12 schools were automatic representatives of teachers from the 39 secondary schools in Nkhotakota. Also, Geography students from classes 1 to 4 from the 12 school of about 240 participated in the study, 20 from each school. Finally, one Education Manager from Nkhotakota Central East Education Division participated in the study.

3.6 Sampling Technique

This study used a purposive sampling technique to sample the DEM, Headteachers, and Geography teachers in Nkhotakota Education Zones. According to Cohen (2006), as cited

in Mwale (2015), the purposive sampling technique is a careful choice of participants due to the qualities they possess. Consequently, The DEM and the Headteachers were purposefully sampled for the study as they form the top bureaucracy in education zones, hence, decision makers in the procurement and distribution of teaching and learning resources like ICT equipment and infrastructure. Teachers were also purposively sampled as they were the ones who teach Geography and only those with three or more years' experience were brought in to participate in the study. However, a simple random sampling technique was used to sample 240 Geography students. It was used to choose participants in quantitative research where an individual has an equal probability of being selected from the population, hence, making the sample representative of the whole of the population (Creswell, 2011). Thus, the sampling technique was chosen to ensure that each Geography student in the schools selected had an equal chance of being picked for the study.

3.7 Methods of Data Collection

The study collected data through Questionnaires, Semi-structured Interviews, and Lesson Observations.

3.7.1 Questionnaires

This is an instrument used to gather data which allows measurements for or against a viewpoint. The questionnaire was used to sample data from students and teachers with both closed and open-ended questions. Questionnaires were prepared for both teachers and students, and this ensured the study gets quick responses and opinions from participants

(Creswell, 2011). It is a very fast way of obtaining data and has the ability to collect a large amount of information in a reasonably quick space of time. With questionnaires, there is greater uniformity hence, greater compatibility in the responses (Orodho, 2009). A well-designed questionnaire makes the researcher's work easier and improves the quality of data obtained (Cohen, 2006).

For the study, the researcher used both unstructured open-ended and structured close-ended questions. Structured close–ended questions are questions which are accompanied by a list of possible alternative versions, from which the respondents are required to select the answers that best describe their opinions (Orodho, 2009). In developing the questionnaires, structured questions with a list of possible alternatives were used since they were easy to compute and analyze. Open-ended questions are the type of questions in which the respondents are given complete freedom to express their views about a particular phenomenon (Orodho, 2009). They enrich structured questions, thus adding quality to the data collected. They also permit greater responses, giving a respondent an opportunity to give an insight into their feelings, deeper motivations, interests and decisions. The level of literacy of the anticipated respondents was high, making it appropriate for the target population. The questionnaires sought the Geography class teachers' and students' views on the adequacy of ICT resources in secondary schools, the attitude of Geography teachers towards the integration of ICT in the teaching and learning of Geography and the extent to which ICT is integrated with the teaching and learning of Geography. They also responded

to the strategies that should be adopted to improve the integration of ICT in Geography classrooms in schools in Malawi.

3.7.2 Interviews

This is a set of questions an interviewer asks when interviewing respondents, (Orodho, 2009). Here, the researcher seeks answers to a set of pre-conceived questions through personal interviews. They usually yield high response rates. According to Creswell (2018) the interviews champion the value placed on individual participants and sanctions for in-depth analysis and pursuit of details geared to each participant. Similarly, Cohen (2006) points out that a great deal is provided by this personal contact, because the interviewee responds to the interviewer in bodily presence, unlike the way they would react to the questionnaire. This was administered to the head teachers to obtain their views on the adequacy of ICT resources in secondary schools, the attitude of Geography teachers toward the integration of ICT in the teaching and learning of Geography and the extent to which ICT is integrated with the teaching and learning of Geography. The interviews were done during the school hours for 2 hours to allow all the respondents enough time to participant in the study. Analysis of the interview data began with a set of transcriptions having taken exceptionally good notes and recorded the interviews.

3.7.3 Lesson Observation

An observation guide was used to collect data aimed at satisfying the set research questions and objectives. Thus, this research used the non-participatory approach to the unstructured observation. According to Orodho (2009) this observation technique enables the researcher to take up the role of an onlooker and focuses on describing the studied phenomena. The researcher used an observation guide to acquire further information on the available ICT devices and their usage amongst students and teachers of Geography in selected schools of Nkhotakota District.

3.8 Data analysis

Since the study used a convergent design, quantitative data from students and teachers were coded and assigned numerical values, whereas qualitative data from teachers were written down into understandable text. Using Excel spreadsheets, the study used tables and pie charts to generate figures projecting trends of distribution of the findings of the study. On the other hand, qualitative data from head teachers and the DEM were thematically analyzed to deduce the meaning behind the words used. This was accomplished by discovering repeating themes in text. These meaningful themes revealed key insights into data. The study also used content analysis to identify the themes that emerge from the questionnaire, by grouping content into words, concepts, and patterns. Content analysis was useful to quantify and analyze the presence, meanings and relationship of such certain words, themes or concepts in schools on ICT integration in teaching and learning through classroom observations. Finally, Narrative analysis, focusing on the stories people said and the language they use to make sense of them

during classroom observation. It was particularly useful for getting a deeper understanding of teachers' attitude on ICT issue.

3.9 Limitation of the Study

The study was limited by inadequacy of time since the secondary school curriculum is congested and the students would not fill in the questionnaires at the time the researcher wanted, hence, requiring rescheduling and visiting the schools time and again when the students were free. This slowed down the data collection process and made the research costly, as the researcher had to spend more time and money for transport visiting the same school before visiting another school.

3.10 Delimitations of the Study

This study exclusively focused on the utilization of ICT in teaching and learning Geography, but did not focus on ICT utilization in other aspects of education like administrative processes. Although Nkhotakota District is located in the Central East of Malawi, the findings of this research might be generalized to other regions with caution since some conditions in the District might be unique and different from other areas.

3.11 Ethical Considerations

Ethical consideration is part of the research work, and cannot be avoided. Observation of research ethics helps to protect the rights of the research participants, develop a sense of trust

with them, and promote the integrity of the research (Creswell & Creswell, 2018). The researcher made sure that the nature of the project, the procedure that was adopted, the methods of collecting data, the selection of participants, and the nature of the data collected were ethically sound. Furthermore, before any data was collected, permission for this study was taken from the Department of Education foundation of Mzuzu University and Mzuni Research Ethics Committee (MZUNI-REC) upon which the letter for data collection was granted. The researcher also, obtained consents from the District Education Manager (DEM) in Nkhotakota District for data collection. Likewise, before, data collection, permission was sought from the school authorities. In addition, consents from participants were taken and were assured of their anonymity throughout the process of the study. The study made sure that, participants fully understood the nature of the research project without being deceived, this helped the participants to choose whether to participate in an investigation or not. This meant that, participants' right to refuse to take part or withdraw once the research had begun was granted. An obligation to protect the anonymity of the participants and to keep the research data confidential was also adhered to by the study. Finally, confidentiality was observed throughout the course of the study to ensure that the participants are not subjected to any harm.

3.12 Chapter summary

Chapter three described in detail the procedures and methods that were used in collecting and analyzing data from the field. The aspects discussed in here include, research approach, the design of the study, methods of data collection like questionnaire, interviews and observation. Other aspects involved issues of sampling the research site, population, techniques used in sampling, characteristics and the size of the sample as well as data analysis. Furthermore, limitations and delimitations of the study were presented. Thereafter, issues of quality assurance and ethical considerations, and steps taken to achieve them were presented.

CHAPTER 4: PRESENTATION AND DISCUSSION OF FINDINGS

4.1. Introduction

This chapter presents an analysis and discussion of the findings of the study, which aimed at investigating the Integration of ICT in the teaching and learning of Geography in secondary schools in Nkhotakota District, Malawi. The study was conducted in 12 secondary schools in Nkhotakota District. The target population consisted of 300 respondents. Out of this, a sample of 289 respondents was taken. Questionnaires were distributed to 240 students, 36 class teachers, 12 head teachers and 1 District Education Manager were interviewed while the researcher observed the classrooms.

4.2 Demographic Characteristics of the Research Participants

First, an overview is given of the study population demographics, and then more detailed findings and discussions are presented within the chapter.

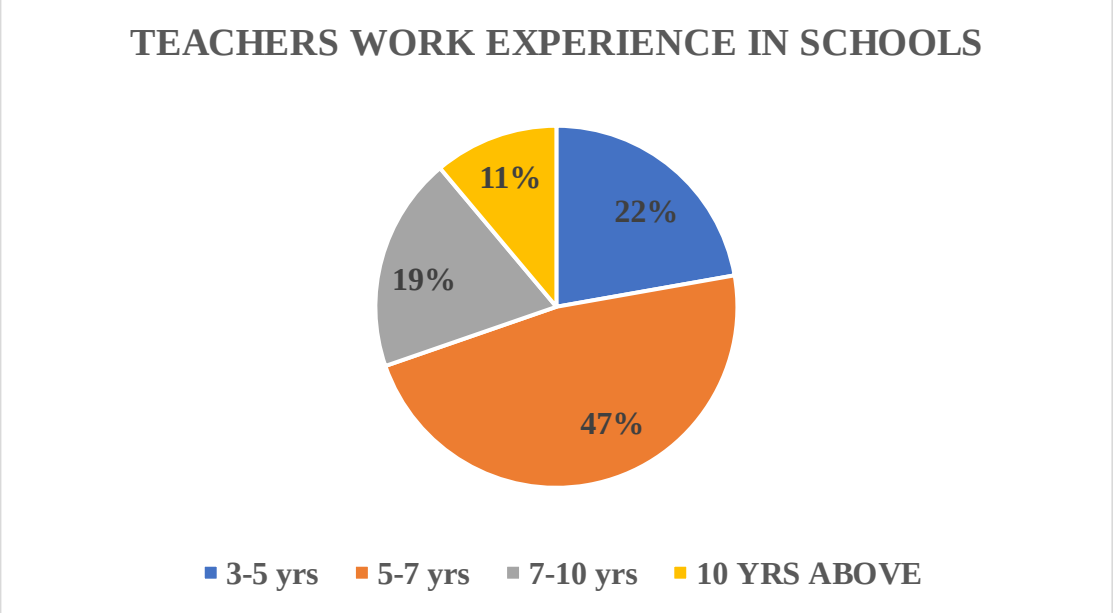

Figure 4.1: Work Experience of Geography Teachers

Findings on the work experience of teachers reveals that, 8 teachers representing 23 % had 3 to 5 years of work experience, 17 teachers representing 47% had 5 to 10 years of experience, 7 teachers representing 19% had 10 to 15 years of experience and 4 teachers representing 11% had 15 to 20 years' experience. This shows that, the majority of teachers and School were exposed to various ICT resources. Low experience of teachers compromises the effectiveness in handling ICT resources in schools (Orr, 2003). Sahin (2006) argues that experience is the best teacher. Thus, any lack of adequate ICT resources among teachers may be one of the reasons why they have not developed appropriate mechanisms of adequately Integrating ICT in Geography at the school.

4.3 Work Experience of head teachers

Findings on the head teachers' work experience revealed that 2 head teachers representing 17% had 5 to 10 years of experience, 3 head teachers representing 25 % had 3 to 5 years of experience, and 7 head teachers representing 58% had 10 to 15 years' experience. This shows that, the majority of head teachers in School had been for long been exposed to various ICT resources. The fairly low experience of head teachers compromises the effectiveness in handling ICT resources in schools. Montgomery (1989) argues that experience is the best teacher. Thus, any lack of experience by teachers may be one of the reasons why they have not developed appropriate mechanisms of adequately Integrating ICT in Geography at the school.

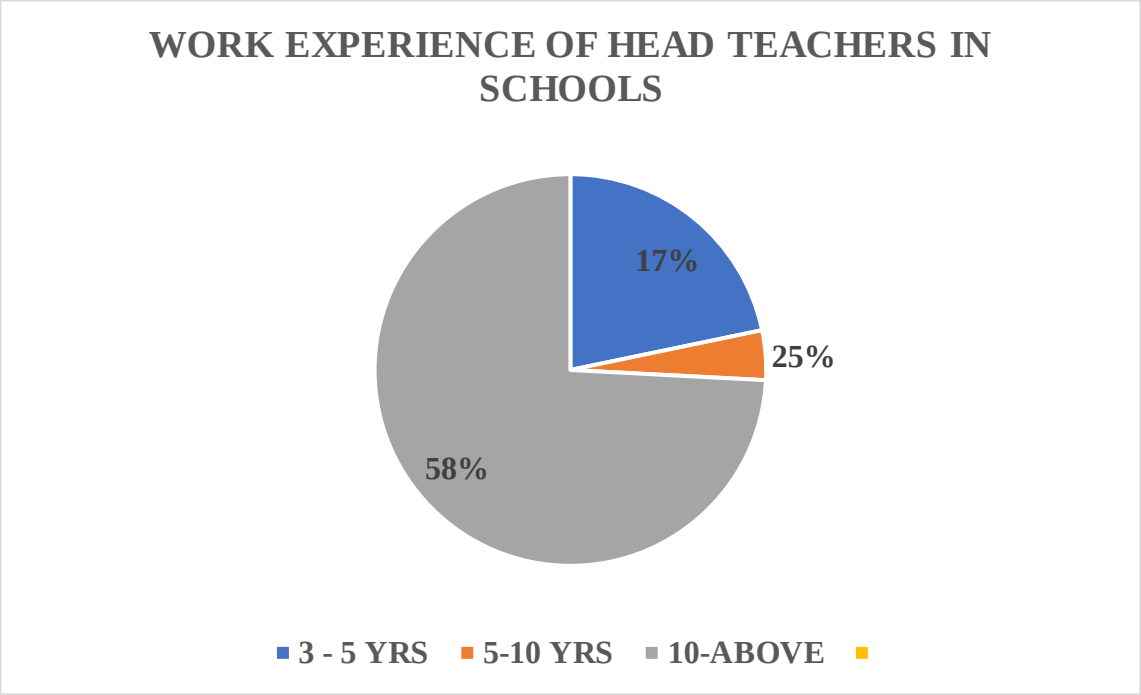

Figure 4.3: Work Experience of Head Teachers

PRESENTATION OF FINDINGS

4.4 ADEQUACY OF ICT RESOURCES FOR TEACHING AND LEARNING GEOGRAPHY IN SCHOOLS

This section presents an analysis of findings relative to the objectives of this study. The area under focus includes presentation of quantitative data and qualitative findings.

4.4.1 Quantative data and Qualitatative findings for objective three

The presentation is grounded on various data collection methods namely, questionnaires with teachers and students, interviews with the head teachers as well as classroom observation.

4.4.1.1 Adequacy of ICT resources for teaching and learning Geography in schools

The study sought to investigate the adequacy of ICT resources in schools towards Integrating ICT in the teaching and learning of Geography as a subject. Table 4.1 presents distribution on how students responded to the statements presented in the questionnaire.

NOTE: *The questionnaires in this study used a Likert scale ranging from Strongly Agreed to Strongly Disagreed. For purposes of clarity, the researcher has merged Strongly Agreed with Agreed to Agreed, and merged Strongly Disagreed with Disagreed. The original questionnaires are attached as appendices*.

Table 4.1: Student views about the adequacy of ICT resources for teaching Geography

Stem: My school ---

Serial number	**Items**	**Agree**		**Undecided**		**Disagree**		**Total**	
		f	**%**	**F**	**%**	**F**	**%**	**F**	**%**
1	Has adequate ICT	130	54	0	0	110	46	240	100
2	Uses ICT in Geography	101	42	0	0	139	58	240	100
3	Has no regular power supply for ICT	111	46	0	0	129	54	240	100
4	Lacks internet connectivity	185	79	0	0	55	21	240	100
5	Allows students to use ICT	101	42	0	0	139	58	240	100
6	Has enough teachers to integrate ICT	130	53	3	1.2	110	46	240	100

Key: A-agreed, **U**-undecided, and **D**-disagreed.

Students should be in a position to access the ICT so that they can use them in learning Geography in class. Table 4.1 item 1 shows that, 54% of the participants agreed that schools have adequate ICT resources for teaching and learning Geography lessons. Equally, of the target population, Table 4.1. item 1 shows that 46% indicated that schools lack adequate ICT resources. This implies that more students can access ICT in schools. Those who access ICT have varied use, ranging from personal use to class use. The main use of computers among students is to access information, which is mainly done in the classroom. From the findings of the study, it is evident that, other schools' ICT resources were present in varying proportions.

Furthermore, proper use of ICT is not possible without the knowledge, skills and experience to use the available infrastructure in the schools. Students were asked on *ICT use in Geography lessons item 2 and if the schools allows them to use ICT''* item 5 on the table shows that 42% agreed that ICT resources are used in schools. However, 58 % of the respondents disagreed that school ICT resources were used in teaching and learning Geography as a subject. The findings confirm that few schools are using ICT resources in Geography lessons in secondary schools.

Similarly, only 21% of the students could access the internet while 79% of the students never accessed internet support in learning Geography as shown in item 4. This implies that the majority of students are not able to access computers often. Those who access computers are students who take computer studies as a subject. The schools have not made an effort to

make internet connection available to the students with electricity affecting effective usage of ICT where 46% of the students agreed that, schools had regular power supply while 54% disagreed having a regular power supply.

4.4.1.2 Adequacy of ICT resources for teaching Geography from teachers

The study also sought to investigate the adequacy of ICT resources for Teaching Geography to Teachers. The table 4.2 below presents percentages of how they responded to the statements presented in the questionnaire.

Table 4.2: Teacher views on adequacy of ICT resources for teaching Geography in schools

Stem: My school ---

Serial number	**Items**	**Agree**		**Undecided**		**Disagree**		**Total**	
		f	**%**	**F**	**%**	**F**	**%**	**f**	**%**
1	Has adequate ICT	24	67	0	0	12	33	36	100
2	Uses ICT in Geography	14	31	0	0	22	69	36	100
3	Has no regular power supply for ICT	28	78	0	0	8	22	36	100
4	Lacks internet connectivity	30	83	0	0	6	17	36	100
5	Allows students to use ICT	26	72	0	0	10	28	36	100
6	Has enough teachers to integrate ICT	31	86	0	0	5	14	36	100

Key: A-agreed, **U**-undecided, and **D**-disagreed.

Equally, teachers should be in a position to access the ICT so that they can use them in teaching and learning Geography in class. Table 4.2 item 1 shows that 67% of the participants agreed that schools have adequate ICT resources for teaching and learning Geography lessons. Equally, of the target population, 33% indicated that schools lack adequate ICT resources. This implies that, the majority of school teachers can access ICT more often. Those who access ICT have varied use, ranging from personal use to official use. The main use of computers among teachers is to access information and prepare assignments and tests, which is mainly done in the office. Findings of the study, show that other schools' ICT resources were present in varying proportions.

Furthermore, proper use of ICT is not possible without the knowledge, skills and experience to use the available infrastructure in the schools. ICT knowledge and experience depend on teachers' pre-service and in-service training and the research revealed that, teachers have varied academic and ICT knowledge. Thus, when asked, "about *the use of ICT in Geography lessons'',* item 2 on the Table 4.2 show that 31% agreed that ICT resources are used in schools. However, the majority, 69% of the respondents, disagreed that schools use ICT resources in the teaching and learning of Geography as a subject. The findings confirm that few schools are using ICT resources in Geography lessons in secondary schools.

Similarly, teachers were asked on the impact of ICT resources if had noticed any learning skill with ICT among their students. Table 4.2 Item 5 shows that 72% were allowed to use ICT resources in learning Geography'' Based on the wording of this question, some teachers

who have not noticed an impact on their student learning to use ICT resources, agreed to have seen great improvement and performance in Geography as a subject with ICT resources in schools. However, of the total sample size, 28% of them revealed that teachers do not allow students to use ICT resources in Geography lessons.

In addition, findings by the research (Table 4.2 item 6) show that schools have enough teachers to integrate ICT resources in teaching Geography. Of the teachers and students reporting on the adequacy of ICT resources in schools, the findings revealed that 82% agreed that schools have enough teachers to integrate ICT resources in Geography classrooms, assessments and a heightened use of the geographical information system.

4.4.1.3 Responses to interview questions on adequacy of ICT resources for teaching and learning Geography by Head Teachers (HT/T) and DEM

It was revealed that all schools visited had ICT facilities and devices useful for the teaching and learning process. The most common devices found in all the visited schools were; Computers (laptops and desktops), televisions (with DSTV subscription), radios, printers and internet facilities. It was observed that, most computers available were outdated and were running on old operating systems. However, 5 secondary schools did not have a projector, as some were damaged and have not been repaired since.

Head teacher, revealed that there were very few activities that required the use of projectors in secondary schools. This was because only schools teaching computer studies as a subject needed such services. Participant HT1 explained this scenario as follows:

> *We need to have more laptops and projectors as a school because there are subjects like Geography and computer studies which need these resources in classrooms but due to high student's enrolment ratio in schools and lack of resources most teachers avoid using ICT resources even when they are free.*

In all schools visited, it was observed that TV was restricted to the staffrooms only and laptops to departments, thus only personally owned laptops were used by the participant teachers in lesson delivery. Tablets/iPads and smartphones used were also personally owned by the teachers. Furthermore, in all 12 schools visited, students were not allowed to come with their iPads/tablets and smartphones. One of the Head teachers revealed that this restriction is done to avoid students losing concentration during lessons via the usage of social media and the internet. Participant HT2 explained this as follows:

> *Students are not supposed to come with their phones or tablets unless special permission is given. This is because they tend to be distracted in class as they either will want to show off the device to their friend or they will be busy on WhatsApp and Facebook thereby missing out on the lesson*

4.4.1.4 Data collected through Lesson Observation

In order to corroborate and complement the information provided by the respondents concerning the adequacy of ICT resources in the sampled schools, the researcher directly observed the resources. Using an observation schedule previously developed, observation was done in all the twelve schools involved in the study. A summary of the findings is provided in Table 4.3

Table 4.3 ICT resources found in schools

STEM: My school has---

ITEM	**Yes**		**No**	
	F	**%**	**F**	**%**
Computers	7	58	5	42
Computer laboratory	6	50	6	50
Radio	3	25	9	75
Tablets	0	0	12	100
Smart phones	1	8	11	92
Internet	4	30	8	70
Television	6	50	6	50

Key: Y- Yes, N- No

The findings in Table 4.3 show a close similarity between what the respondents reported and the observation that was made in schools related to the adequacy of ICT resources. Adequacy of ICT in education is directly dependent on the availability of necessary ICT infrastructure which includes the number of computers, electricity grid and internet connectivity. The study observed that a number of the secondary schools have ICT resources. Schools had ICT

infrastructure which includes, Computer laboratory, LCD projectors, radios, televisions and DVDs which are mostly used for computer studies. For example, the head teachers, teachers and students reported 58% respectively of the availability of computer resources and this was confirmed by the researcher as 100%.

As reported by the head teachers, 6 sampled schools had computer laboratory and this was confirmed by the researcher. Of the head teachers sampled, 33 % confirmed that there was internet connectivity in their schools, and this corroborated with what the researcher found. There were no tablets in all the schools as observed by the researcher and the head teacher had pointed this out. The close similarity between what the head teacher, teachers of Geography and students said about the availability of ICT resources and the observations made added to the reliability of the research instruments.

4.5 ATTITUDES TOWARDS THE INTEGRATION OF ICT IN TEACHING AND LEARNING

This section presents an analysis of findings relative to the objectives of this study. The area under focus includes presentation of quantitative data and qualitative findings.

4.5.1 Quantative data and Qualitatative findings for objective two

The presentation is grounded on various data collection methods namely, questionnaires with teachers and students, interviews with the head teachers as well as classroom observation.

4.5.1.1. Attitude of students towards the integration of ICT in teaching and learning

The study sought to find out the attitude of Students towards the Integration of ICT in learning. Table 4.4 below presents percentages of how they responded to the statements presented in the questionnaire.

Table 4.4: Attitude of students towards the integration of ICT in teaching and learning.

STEM: In my school---

Serial number	Items	Agree		Undecided		Disagree		Total	
		f	%	F	%	F	%	F	%
1	ICT Improve students' performance in Geography	142	59	2	1	96	40	240	100
2	Geography teachers like using ICT	80	33	0	0	160	67	240	100
3	Students easily understand Geography with ICT	92	38	0	0	148	62	240	100
4	ICT makes Geography learning interesting	173	72	1	0	67	28	240	100
5	Students like using ICT	159	67	0	0	81	33	240	100

Key: A-agreed, **U**-undecided, and **D**-disagreed.

As presented in Table 4.4 item 1 show that 59% of students agreed that ICT improve performance in Geography in their schools while 40% disagreed with the statement that "ICT improve students' performance in Geography in their school and 33% of the students said Geography Teachers like using ICT, 67% of the students said Geography Teachers do not

like using ICT, 38% of the students said they easily understand Geography with ICT resources and 62% of the students confirmed that they had problems in understanding Geography with ICT in their schools.

However, 72% of the students said ICT makes Geography learning interesting and 67% of students confirmed that they like using ICT in Geography learning that their schools had. From the study, it was evident that all the students had positive attitudes towards Integrating ICT resources into Geography lessons.

4.5.1.2 Attitude of Geography teachers in Integrating ICT resources in the teaching and learning of Geography in schools.

The study also sought to find out the attitude of Geography teachers towards the integration of ICT in the teaching and learning of Geography. Table 4.5 below presents percentages of how they responded to the statements presented in the questionnaire.

Table 4.5: Attitude of Geography teachers in Integrating ICT resources in the teaching and learning of Geography in schools.

STEM: In my school---

Serial Number	Items	Agree		Undecided		Disagree		Total	
		F	%	F	%	F	%	f	%
1	Students use ICT resource	10	28	1	3	25	69	36	100
2	Teachers frequently use ICT	18	50	3	8	15	42	36	100
3	ICT does not make any difference	26	72	0	0	10	28	36	100

4	I fail to use ICT	30	83	0	0	6	17	36	100
5	Teachers and students fear using ICT resources	17	47	0	0	19	53	36	100
6	ICT distracts the attention of the students.	13	36	3	8	20	56	36	100
7	Administration allows the use of ICT	25	69	0	0	11	31	36	100

Key: A-agreed, **U**-undecided, and **D**-disagreed.

Table 4.5 shows the teacher's attitude in Integrating ICT resources in Geography lessons. Thus, when asked, " *Students use ICT resource?*" 100% of study participants responded. Of those who responded to item 1, 28% responded with "agree", and an additional 69% disagreed that teachers integrate ICT in Geography lessons. Of these respondents, 69% of them indicated that they were already doing the type of teaching associated with learner-centered, which includes Integrating ICT into classroom activities. This, therefore, showed a positive attitude towards Integrating ICT resources among teachers.

Moreover, Item 2 show *the frequency of use of ICT resource*s by teachers during Geography lessons. The findings revealed that 50% agreed, whereas 42% disagreed, that they frequently use ICT in their lessons. Another T1 explained, "It is the most effective way I know to grow as a staff both in content exchange, psychological support and continuous improvement of teaching. Others respondents reported seeing great findings from using ICT resources including, focusing on observable student learning, involving more students, evaluating the effectiveness of Lesson Study based on student learning and understanding, making lesson

planning time more productive, helping to meet the needs of individual students and improve student performance.

There were mixed responses on the assumption that teachers feared computer and technological breakdown as they integrate ICT resources in Geography lessons. Item 5, on Table 4.5 show that 47% of *teachers and students fear using ICT as a teaching and learning* resource and 53% disagreed that teachers fear using ICT in Geography lessons. Teachers commented on a lack of resources contributing to low usage of ICT in schools. As other teachers reported, *"with ICT gives me ideas'', interventions, and assessments that I may not have thought of.* This, therefore, they showed a positive attitude toward Integrating ICT resources among teachers.

The final question of the main portion of the study asked if *ICT distracts the attention of students"* item 6, revealed that, ICT distracts the attention of students. 100% (n = 36) of the survey participants responded to this question. Of those who responded, 13 representing 36% agreed, and 20 representing 56% disagreed that ICT distracts the attention of the students. This revealed that teachers have a positive attitude toward Integrating ICT resources in teaching and learning Geography.

4.5.1.3 Responses to interview Questions on the attitude towards use of ICT from the Head teachers (HT) and DEM.

Findings from head teachers revealed that teachers have a positive attitude towards the use of ICT in Geography. Participant HT2 and HT 3 cited that:

> They *have a positive attitude. Teachers like using ICT and believe ICT resources make teaching and learning more interesting*

Despite these pronounced benefits the use of ICT presented, Headteachers also expressed the downside that comes with the use of ICT. One of the challenges mentioned was that concentration on the subject during lessons is compromised due to the student's curiosity to explore ICT devices further. As a result, the students are disturbed and this eventually leads to poor performance. Participant HT6 explained as follows:

> *I once gave my tablet to one of the students to read out some work to their classmates and the minute I left them unsupervised, he and his friends halted the lesson so that they could explore other functions that the device had. Totally out of the lesson's content, they began taking pictures*

This showed that the device proved to be more of a disturbance than a teaching aid, as students were more interested in using the device for pleasure rather than learning geographical concepts. An additional downside that the use of ICT devices and platforms brings to the classroom is that most students are not from families that can afford to get them any ICT devices. Hence, such students tend to be negatively affected as they often have to

rely on their friends' devices or spend most of their time coping notes and drawing diagrams instead of studying. This discourages some teachers from Integrating ICT into their lessons, as they felt that some of the students would feel left out. Participant HT4 explained as follows:

> *In most cases, I prefer teachers using the traditional way of teaching, thus the use of chalkboard, because no child should feel left out in class. If they do feel left out then I would have failed as a head teacher, therefore to ensure that no one is left behind in school, I encourage teachers to teach using traditional methods among them use of chalkboards such that each learner is on the same page*

Moral degradation is yet another threat brought about by the use of ICT, if misused. Some students indulged themselves in the consumption of illicit content found on the internet. This could be pornographic content or crime-related, which in the long run result in indulgence in sexual relations and other morally degrading vices. Participant HT 4 explained to say:

> *I avoid leaving my teachers and students unsupervised when dealing with ICT that requires them to Google up some work, by doing, so I try to restrict them from visiting sites that have harmful and illicit content*

According to the findings of this study, teachers were demotivated to integrate ICT in the teaching of Geography due to the challenges that are brought about by the use of ICT. Despite the benefits of using ICT as cited, the challenges appear to be more pronounced due to the inadequate ICT devices and facilities available in the visited schools.

4.5.1. 4 Findings from Lesson Observation

The findings from lesson observations revealed teachers' willingness to learn more on how to integrate computers into the teaching and learning processes. However, teachers face difficulties in the implementation of Integrating ICT in classroom practices due to their inadequate knowledge and lack of skills to use ICT in their pedagogical practices. This lack of adequate computers proved to have been a common problem for all schools visited under the study. Participants T3/4/5 said; *that there was a high enrollment that resulted in ICT devices not being enough for the students to use during lessons.* It was also established that internet services were hardly available as school management told the teachers that they have no money to always have an active internet subscription in school. As a result, some teachers utilized their data bundles whenever they wished to access the internet on school laptops or computers. This discourages most teachers from using ICT because the cost of buying data bundles was high.

4.6 EXTENT OF ICT INTEGRATION IN THE TEACHING AND LEARNING OF GEOGRAPHY IN SECONDARY SCHOOLS

This section presents an analysis of findings relative to the objectives of this study. The area under focus includes presentation of quantitative data and qualitative findings.

4.6.1 Quantative data and Qualitatative findings for objective three

The presentation is grounded on various data collection methods namely, questionnaires with teachers and students, interviews with the head teachers as well as classroom observation.

4.6.1.1 Extent of Integrating ICT in teaching and learning Geography in secondary schools

The students were asked to indicate the extent of ICT integration in the teaching and learning of Geography in secondary schools. Table 4.6 below presents percentages on how they responded to the questionnaire. **A**-agreed, **U**-undecided, and **D**-disagreed.

Table 4.6 Extent of Integrating ICT in teaching and learning Geography in secondary schools as responded by students.

STEM: In my school---

Serial Number	Items	Agree		Undecided		Disagree		Total	
		f	%	f	%	f	%	F	%
1	ICT is integrated in Geography	163	68	4	2	73	30	240	100
2	ICT is effective in Geography	161	67	0	0	79	33	240	100
3	The community support the use of ICT	51	21	14	6	175	73	240	100
4	There is internet professional support	30	13	0	0	210	86	240	100
5	Geography is effectively understood with ICT resources	133	55	0	0	107	45	240	100
6	ICT has improved learner performance in your school	161	67	0	0	79	33	240	100
7	The administration support use of ICT	55	23	0	0	185	77	240	100

Key: A-agreed, **U**-undecided, and **D**-disagreed.

Table 4.6 of the sampled student's item 1, 68% confirmed that ICT was fully integrated into the teaching and learning of Geography, and 30% of the students said ICT was not integrated into teaching Geography effectively. On average, ICT resources helped students more in sourcing information on various topics, as the internet contains much information which can be of help to students. However, the school's community has not made any effort to improve and support ICT as shown in Table 4.6 item 3. On connection available to students, findings revealed that 21% of the students accessed the internet, 73% did not access the internet. Furthermore, only 13% of students could access the internet while 87% of students never accessed internet support in the teaching and learning Geography as shown in item 4. This implies that the majority of the students are not able to access computers. Those who accessed computers are those taking computer studies as a subject. The main use of computers among students is to access information, practical skills and test which are mainly done in the classrooms.

Finally, administrative support in the integration of ICT is crucial as established in the literature review because it would reduce anxieties associated with new technologies in school. Item 7 on Table 4.6 show that 23% of students agreed that there is administration support for the integration of ICT while 77%, disagreed that the administration supports the school in the integration of ICT in Geography lessons in secondary schools.

4.6.1.2 Extent of Integrating ICT in teaching and learning Geography in secondary schools as responded by teachers

The study also sought to find out the extent of ICT integration in the teaching and learning of Geography among teachers in secondary schools. Table 4.7 below present percentages on how they responded.

Table 4.7: Extent of Integrating ICT in Teaching and Learning Geography in Secondary Schools as Responded by Teachers

STEM: In my school--

Serial Number	Items	Agree		Undecided		Disagree		Total	
		f	%	F	%	f	%	F	%
1	ICT is integrated in Geography	15	42	0	0	21	58	36	100
2	ICT is effective in Geography	30	83	0	0	6	17	36	100
3	The community support the use of ICT	14	39	0	0	22	61	36	100
4	There is internet professional support	11	31	0	0	25	69	36	100
5	Geography is effectively understood with ICT resources	27	75	0	0	9	15	36	100
6	ICT has improved learner performance in your school	19	53	0	0	17	47	36	100
7	The administration support use of ICT	14	39	0	0	22	61	36	100

Key: A-agreed, **U**-undecided, and **D**-disagreed.

From Table 4.7 item 1 shows that 42% agreed that ICT was fully integrated into the instructional programs while 58% of teachers said ICT was not integrated in the teaching of Geography effectively. On average, ICT resources are not helping students more in sourcing information on various topics, this is because the internet and electricity were the main factors mentioned for low integration in schools.

Table 4.7 shows that only 31% of the teachers can access the internet, while 69% of the teachers never accessed internet support in the teaching and learning of Geography as shown in item 4. This implies that the majority of teachers were not able to access computers often. Those who accessed the computers have varied use, ranging from personal use to official use. The main use of computers among teachers is to access information and prepare assignments and tests, which is mainly done in the office. The schools have not made an effort to make internet connection available to the teachers where 31% of the teachers accessed the internet and 69% do not access the internet which is mainly through prepaid modems.

Technical support in ICT is crucial as established in the literature review because it would reduce anxieties associated with new technologies. The research revealed 39% indicated that there is administration support for the internet in Geography lessons whereas 61%, responded that the administration does not support the use of ICT in Geography lessons in secondary Schools. Similarly, technical support by the community in Integrating ICT was a

big challenge. Table 4.7 Item 7 shows that 39% of respondents agreed that there was administration support, and 61% disagreed.

4.6.1.3 Responses to interview questions on ICT Integration in teaching and learning Geography from the Head Teachers (HT) and DEM

The study revealed that various ICT devices and platforms are being utilized in the teaching of Geography. Amongst these laptops, printers, tablets/iPads, projectors and smartphones proved to be the most widely used ICT devices that are integrated into the teaching and learning of Geography. Participant HT8 explained this as follows:

> *Our teacher likes to come with his tablet, and he uses it when teaching because that is where he saves his notes. Sometimes he uses to show diagrams on the tablet whenever the projector is not available. I did not know how students use tablets in classrooms. But I know how to open a document on my phone and a computer*

Furthermore, using ICT resources lack support from the school administration as the schools are not furnished with adequate ICT resources. Participant HT2 narrated that: Initiative and motivation by school administration and lack of ICT technical supports were further mentioned that contribute to the challenges of teachers in the integration of ICT in classroom instructions

However, Head teachers from other schools strongly disagreed when they were asked if there is a collaboration between themselves and the community on Integrating ICT in teaching

and learning Geography as lack of knowledge, indiscipline, and vandalism of ICT resources amongst students hinder them to collaborate. Participant HT5 narrated that:

> *Due to lack of this collaboration sometimes students lack necessary learning facilities like computers, machine, papers etc. because parents are not involved in their student's development due to increase in indiscipline and vandalism which are promoted when students use ICT resources*

Participant: HT4 revealed that are unable to support in ICT due to the high number of students,

> *Frankly speaking, we cannot support teachers and students because of increase in learner enrollment ratio, low interest in teachers and lack of knowledge because they do not know how to effectively use them to specific needs of students in the class*

On teachers Integrating ICT resources in teaching Geography, eight head teachers said they use them when they are available. Participants HT8 stated that:

> *Teachers use teaching materials, but they are rarely available. They are very important to be used, especially in inclusive classrooms*

The school administration supports teachers in teaching using ICT resources. However, Participants HT12 said that

> *The challenge has been on an increase in student's enrollment in schools and lack of*

commitment amongst teachers towards Integrating ICT resources in teaching and learning Geography

When asked why teachers lacked commitment? It was revealed by the DEM that teachers lack motivation. The DEM narrated that:

> *Lack of teachers' knowledge and the large teacher-to-student ratio in school greatly affect the effective integration of ICT resources in teaching and learning and Geography in most schools in Malawi.* The DEM further agreed that '*schools lack ICT resources basically due to inadequate government funding*

Finally, the Head teachers were asked to point out what they regarded as any other advantage associated with the integration of ICT in the teaching and learning of Geography. Some of their responses were that, the use of ICT had the capacity of developing some practical skills in pupils that are needed for one to succeed in life. They attributed this to the fact that the use of ICT in the teaching and learning process provides hands-on experience for students, thereby intensifying the ability to grasp geographical concepts being passed on. Head teachers also explained that the integration of ICT in the teaching process ensured that students were made aware of the digital world as it relates to Geography, therefore, making the subject more relevant to the student. According to Participants HT 12:

> *Students are exposed to the use of gadgets and software that enhance their research capabilities and skills. This will help them once they get into tertiary education as well as in industry too.*

Therefore, ICT resources are important in Geography, especially considering that it is a subject that bridges earth (natural science) and man (social science).

4.6.1.4 Lesson Observation

During a lesson observation at B1, G1, H1, and F1 Schools, whilst conducting a lesson on GIS/ Remote sensing via PowerPoint, the teachers only relied on bulletin notes and pictures to convey the concept of Map work and Earth Movements. The focus on pictures and bulletin notes was at the cost of not using videos and models found in some software installed on the laptop, such as Encarta Encyclopedia or Google Earth. Such software has animations illustrating Map Work and Earth movements. When asked about these during interviews, the teacher explained not being aware of such a provision being available on the laptop. Participant T03 explained this as follows:

> *I don't know any software that has Geographic videos, which is why I rely mostly on the bulletin. The alternative would be using YouTube but then again that would require data bundles which the school does not provide*

During another lesson observation conducted at D1 School, when a form 3 students was asked to operate the laptop, they showed to have little know-how on the basic functions of how to operate a laptop and display a PowerPoint presentation on a projected screen. However, opening the same PowerPoint document on their mobile devices was a walkover as they were more convenient with their mobile device.

Teachers in the visited schools occasionally shared printed-out copies of PowerPoint documents with students whenever ink was available in the school printers. This, however, was not common as in most cases the printers were reserved only for administration to use for running documents and thus teachers had little to no access to printers. Teachers in most cases were forced to use their own money to have their work printed out, and this proved costly due to the overwhelming number of students in classes. As a result, students incurred the cost of printing these documents, as teachers would only share soft copy documents. In an interview with the students, it was noted that their lack of knowledge of how to operate the computer was because they are hardly given work that needs the use of the laptop. Participant L23 explained as follows:

> *Even when our teacher wants to send us soft copy notes, we access them through our phones. After all, we can't afford to buy laptops and some of my friends who don't have smartphones print and photocopy the same notes from the market because we are not allowed access to use the school printer. There are also very few computers in the computer lab, and they are never connected to the Internet when we go there*

When asked about the availability of computers in school to students, one of the teachers explained to echo what the learner had explained about not having enough devices in the lab. The teacher explained that the school has a very high enrollment rate that surpasses the available resources. The computer lab at E1 consisted of 15 desktops and one printer, whilst the Geography classes handled by the teacher comprised not less than 84 students per class. Therefore, it was difficult to conduct lessons from the computer laboratory where students

could have hands-on access to computers. As a result, the teacher was limited to the use of just his laptop and the projector during classes. Participant T03 explained this as follows:

> *Our computer lab has 15 computers and my class is a class of 84 students, so it is not possible to conduct a lesson from the lab as a result I mostly on the projector if I want to show them a video or diagrams*

Findings from the classroom observation provided the following to be common factors hindering effective integration among teachers and students:

- Inadequate number of computers in the schools.
- Inadequate power supply.
- Limited internet connectivity.
- Inappropriate hardware and software.
- Teachers have poor pre-service training in ICT.
- Students on the other hand lack the skills to use computers in their schools.

Finally, it was observed that the computers in the schools are mainly located and used in the office for office practices. Out of the four Head teachers interviewed, only one had a school policy on the use of ICT in school, contained in this school's strategic plan for five years. The others did not have a clear-cut strategy on how to integrate the use of ICT in teaching and learning Geography in their school.

4.7 DISCUSSION OF THE FINDINGS

4.7.1 Introduction

This section discusses the findings regarding the objectives of the study, which aimed at investigating the extent to which teachers integrate ICT resources in the teaching and learning of Geography in secondary schools. It is the Ministry's policy that ICT should be integrated into education so that the students and staff are prepared in the use of ICT so that they become ICT literate; skills that are required in the present society, (MOEST, 2013).

4.7.2 Adequacy of the ICT Resources in Secondary Schools that Offer Geography

The first objective was to find out the adequacy of ICT resources in secondary schools in Nkhotakota District for the teaching and learning of Geography. The findings of this study agree with Rodgers's Diffusion of Innovation Theory (2003) (see Figure 1.9) that adequate ICT resources and the continuing support of good practice are among the greatest determinants of successful technology adoption. In this study, the quantitative findings in Table 4.1 revealed that, over 54% of students agreed that, ICT resources were available in their schools. Similarly, Table 4.2 shows that, over 64% of teachers confirmed that ICT resources were accessible in schools. Similarly, from the lessons observed, schools had a wide range of resources for the teaching of Geography. Nyambane et al., (2014) underscored the need to provide adequate ICT resources in schools and create a conducive learning environment for the effective integration of ICT in the classroom. Due to numerous advantages of ICT resources, they must be integrated into the curriculum and linked to all the learning activities (Orr, 2003). These findings mirror those of Banele (2019) who found that, technology in schools complements Geography learning, allowing access to current

online materials and making it possible for the students to interact with the global world which is an authentic environment for learning new ideologies. This is due to the role of ICT (change agents) who, according to Rogers (2003) as cited in Orr (2003) play a significant role in bringing knowledge and awareness about the existence of innovation to clients like teachers. Rogers argued this happens as Technology offers an all-inclusive learning experience to the students, which is required in the development of lifelong autonomous learning in schools. Therefore, due to the many advantages of ICT resources in schools, they must be adequate for effective integration into the curriculum and be linked to all the learning activities.

Afshari et al., (2009) states that limited access to computers is a barrier to the effective use of the class. Quantitative findings from this study revealed that, 58% of students and 69% of teachers in schools do not put to use these ICT resources as shown in Table 4.2. According to Rodgers's Diffusion of Innovation Theory (2003), if the innovation is not consistent with the values and norms of a social system, the innovation cannot be adopted as rapidly as the compatible one. This affects effective teaching and learning in schools with ICT. The process of Integrating ICT can be accelerated if schools feel that these ICT resources are compatible with their needs and school objectives.

The participants also mentioned that lack of internet connectivity (79%) makes teaching and learning less interesting, as shown in Table 4.1 All school Head teachers reported that Geography teachers did not fully use ICT in their lessons. Only a few teachers show videos

and still pictures related to their topics when summarizing the topic or the chapter. Jensen (2002) in his research outlined unreliable telecommunications networks pose a major hindrance for many people in Africa to use ICT, this also applies to education. Classroom observation by the researcher also confirmed ICT was not used in the Geography lessons of the schools involved in the study. Teachers and students of Geography were not engaged in any ICT-integrated lessons. This shows that the majority of teachers were not well-trained on how to integrate ICT into classroom instruction.

According to the Diffusion of Innovation Theory (2003), a teacher's knowledge (awareness) should expose students to the innovation's existence (ICT in our case) and gains some understanding of how it functions, this helps students develop persuasion (Interest). Thus, the findings from teachers' and students' questionnaires, school Head teachers' interviews and classroom observations confirmed that ICT was not effectively used by Geography teachers and students in Geography classrooms. This study found out that, most of the ICT required for training were not available in the sampled schools and those that were available were inadequate, the available ICT resources were utilized to a less extent. The study also identified a lack of power supply, insufficient resources, ICT skills shortage, higher ICT cost and poor physical infrastructure to be the factors hindering ICT utilization in these schools. The research findings of Rodgers (2003) also showed that, although there were adequate ICT types of equipment in schools, the need for the provision of enough ICT resources was found to be fundamental. This indicates that, there should be an emphasis on the provision

of access to ICT for Geography teachers on how to use ICT in the teaching and learning activities (Ndlovu, 2015).

4.7.3 Attitude of Geography teachers in Integrating ICT resources in the teaching and learning of Geography.

The findings of this study agree with the consensus of the Diffusion of innovation Theory (2003) (see figure 1.9) that collaboration between positive teachers' attitudes and ICT integration is needed to make Geography classrooms successful. Technology characteristics influence the diffusion processes of an innovation and are significant factors impacting an innovation adoption.

Findings from other research revealed that, teachers believe that ICT could be used as a pedagogical tool in improving their teaching when there are adequate resources and infrastructures (Mndzebele, (2013). And a positive attitude of teachers towards the integration of ICT in education has been seen as an important factor to encourage teachers to use ICT in their classrooms (Nyambane et al., 2014). According to Rodgers (2003) a teacher's knowledge should expose students to the innovation's existence (ICT in our case) and gains some understanding of how it functions. In this study, students are made aware of ICT as they have no judgment concerning the relevance of innovation in the process of learning. This helps students develop persuasion (Interest). In this attitude, formation takes place, that is, the students form positive attitudes towards ICT.

Rodgers's Diffusion of Innovation Theory (2003), emphasizes the stages taken to improve ICT usage and the new technologies and how they can help teachers enhance their pedagogical practices and assist students in their learning, as emphasized by other scholars (Afshari et al., 2009). The teachers, however, seemed positive about the fact that they had started to use ICT in class and had improved the use of ICT resources in school. Responses from participants show several benefits of using ICT in Geography lessons. These include access to a rich and wide variety of Geographical resources and information. Thus, ICT on its own is a massive library. The sources were described as much better than what a textbook offered. Some of the Head teachers reported on the usefulness of ICT: 'Getting better and helpful information, there is more information.' Not only was there more information but diagrams, maps and drawings, and vital Geographical language.

The school Head teachers were also asked to give their view on how they see the integration of ICT in teaching and learning. The majority of them believed ICT improve the quality of teaching and learning. However, few responded that computers and the internet take the attention of students away from their Geography learning. When school head teachers have a positive attitude towards ICT integration in schools, they give the necessary support to teachers in using ICT in their lessons. Teachers, students and school head teachers involved in the study showed a positive attitude towards the integration of ICT in the teaching and learning process. The findings of this study were in agreement with several research studies. A study conducted by Muslem et al., (2018) on examining Secondary school teachers' attitudes towards ICT use in education, applying descriptive research design and

questionnaire for 353 teachers working in different schools in Ankara, turkey. Teachers displayed a high level of positive attitude towards ICT use in education and a low level of anxiety towards ICT use in education.

Hong (2016) carried out a study on teachers' views on ICT integration using open-ended, semi-structured interviews with 23 teachers from different parts of Colorado, USA. The study revealed that, teachers involved in the study had a positive attitude towards ICT as an instructional tool. A study conducted on pre-service Geography teachers' attitudes toward the use of ICT in Geography teaching, revealed that pre-service Geography teachers had a positive attitude with no difference in gender or class (Albirin, 2006).

Even though a positive attitude towards ICT is one of the factors for the integration of ICT in education, having a positive attitude alone is not enough. Ndibalema (2014) ascertained that, teachers had positive attitudes towards using computers in their classrooms. Teachers were willing to learn more about how to integrate computers into the teaching and learning processes. However, teachers faced difficulties in the implementation of ICT in classroom practices due to their inadequate knowledge and lacked skills to use ICT in their pedagogical practices put forward. Almekhlafi et al., (2010) argued that that most teachers lack the knowledge as well as the necessary skills to make use of computers and therefore, they were not ready to change towards supplementing learning by Integrating ICT into their particular schools to bring ICT with new technology for teaching practices.

4.7.4 Extent of Integrating ICT in teaching and learning Geography in secondary School

The findings of this study also respond with Rodger's Diffusion of Innovation (2003) (see figure; 1.9) which stipulate the collaboration between adequate ICT resources in schools, positive teacher attitudes and integration to make Geography classrooms successful. The study found that the use of ICT in teaching Geography in secondary schools in the Nkhotakota District was still very slow (see Table 4.7). Not many schools had embraced the use of ICT in the teaching and learning process. The study found that the government, private sector and NGOs had donated ICT facilities to some schools, which could be used in the teaching and learning process. The study also revealed that all the schools had assorted ICT resources ranging from computers, LCD projectors, cell phones, and internet, CD ROMs, TVs and radio resources. However, these resources were inadequate in all the sampled schools. As noted by UNESCO et al., (2018), the government needs to encourage both public and private sectors to help in the promotion of ICT in secondary schools hence the need for all stakeholders to be engaged in the ICT financing in secondary schools.

Also, the Head teachers were all in agreement with the notion of ICT resources being inadequate and not supported for carrying out the teaching and learning process. Rodgers's Diffusion of Innovation theory (2003) explains that, effective integration of ICT in the teaching and learning process is hindered by a lack of power supply, adequate qualified ICT teachers, a lack of internet connectivity and a lack of technicians who could maintain or repair the equipment in case of breakdown. Similarly, these findings are in agreement with

the findings of Benele (2019) who identified several barriers while Integrating ICT into lessons. First, the teachers lacked confidence while using ICT resources, second, the ICT resources could not be easily accessed by the teachers and thirdly, the teachers lacked time for integration.

Furthermore, the teachers lacked the technical know-how on the usage of ICT resources with few resources in schools. Teachers lacked adequate ICT resources to integrate in teaching and learning. Afshari et al., (2009) findings also agree with these findings, in his study, he found that ICT integration into teaching was hindered by a lack of computers, which are core ICT resources, slow internet connection, poor IT rooms, insecurity, and insufficient in-service training for teachers. Kozma (2009) cited that ICT integration was hindered by the inadequate supply of computers and the attitudes of teachers towards the use of computer-related education. Time was another limiting factor and lack of training among the teachers who were the main implementers was also an issue.

Islam (2012) also found out that there was the integration of ICT in teaching and learning, but this cannot be completely realized due to the lack of computers in their schools, rules and regulations on ICT and the number of computers teachers in the schools were few. These findings are also supported by afshari et al. (2009) who also found out that teachers' knowledge of the use of ICT influenced how the students used the resources in learning. Nyambane et al. (2014) also found out that for ICT integration in education to be effective, the ICT resources should be accessible; the users must have confidence and competence

while using the resources. The teachers also need to have technical support, time, professional advancement and the right software and hardware.

As a policy, schools should follow a learner-centered approach. MoEST (2013) gave a guideline to use discussion methods in schools. However, it had challenges in practice as observed in lessons. The school Head teachers further explained that the implementation of student-centred was hampered by several factors such as large class size, teachers' workload, and lack of learning facilities, short instructional time, as well as inadequate teachers' in-service training. The findings from teachers, school head teachers and observation confirmed that, the majority of Geography teachers were not Integrating ICT resources in the teaching and learning of Geography in secondary schools.

4.8 Chapter Summary

This chapter presented the findings of the study based on three research objectives that sought to determine the extent of ICT integration in teaching Geography in secondary schools. The study found that there was profound evidence of a lack of ICT integration among the majority of schools, as was supported by the statistics. The study further found that the majority of schools did not have sufficient ICT tools needed for effective ICT integration in teaching Geography in secondary schools. The study also found that, ICT integration had not benefited the majority of schools. According to the findings of the study, only a small number of secondary schools had ICT resources, which were equally noted as insufficient. The study finally found out that there were profound challenges facing ICT integration in teaching, ranging from lack of ICT facilities to poor attitude of teachers towards its integration. The above findings suggest that ICT integration in secondary schools has not effectively picked up. This can be attributed to the massive challenges discussed in the study.

CHAPTER 5: SUMMARY OF FINDINGS, CONCLUSION RECOMMENDATIONS, AREAS FOR FURTHER STUDY

5.1 Introduction

The chapter presents the summary, conclusion and the recommendations of the study on integration of ICT in the teaching and learning of Geography in secondary schools.

5.2 Summary of findings

The purpose of the study was to investigate the integration of ICT in the teaching and learning of Geography in secondary schools in Nkhotakota District, Malawi. The study was guided by the following objectives: to assess the adequacy of ICT resources in secondary schools in Nkhotakota district; to examine the attitude of teachers toward the integration of ICT in the teaching and learning of Geography in secondary schools in the Nkhotakota District and to investigate the extent to which ICT is integrated with the teaching and learning of Geography in secondary schools in Nkhotakota district.

A descriptive survey design was adopted for the study. The sample of the study included 12 school head teachers, the DEM, 36 Geography teachers and 240 Geography students. A stratified random sampling technique was used to select 12 secondary schools from a population of 39 secondary schools in Nkhotakota district. Questionnaires, interviews and observation schedules were used as instruments for data collection. For effective data collection, the study administered Questionnaires for Geography teachers and students as well as an interview schedule for school Headteachers. The Statistical Package for Social

Sciences (SPSS) was used to analyze the data. Descriptive statistics, such as frequencies, and percentages, were used to present information in comprehensible form. The analyzed data was presented in the form of frequency tables and figures.

5.2.1 Adequacy of ICT resources in schools for teaching and learning

The study found that most of the sampled schools had ICT resources in a diverse amount, whereas some schools are better equipped with ICT resources. The schools had computers, computer laboratories, projectors, Televisions, video players, storage hard discs, digital content, and printers. Internet services were not yet introduced in the schools and power supply was not regular in most schools. The resources in the schools were inadequate to be used for teaching and learning Geography. The available resources were used mainly for teaching computer studies as a subject. Geography teachers never used them in their classroom lessons.

5.2.2 Attitude of Teachers Towards Integrating ICT in Classroom

The study revealed that, the majority of Geography teachers who participated in the study had a positive attitude towards the use of ICT in the teaching and learning. they believed ICT makes learning Geography interesting, and understandable, and improves students' performance. In addition, the study revealed that the attitude of the majority of school Headteachers and students were also positive towards the use of ICT in education. Even though a positive attitude existed, the application of ICT present in the community were not integrated in teaching Geography.

5.2.3 Extent of ICT integration by Teachers of Geography in the Classroom

The findings in the study (Table 4.7) showed that the majority of the respondents reported that many teachers were not Integrating ICT resources in Geography teaching in the classrooms. Teachers were predominantly using the lecture method and the traditional way of assessments in their classrooms. This could be due to several factors that hinder the implementation of ICT integration in schools. Some of the hindering factors cited by the respondents were large class sizes, short instructional time, a lot of content in the syllabus to be covered, the heavy workload of teachers, and inadequate learning facilities. The study also showed that most of the respondents believed adequate ICT resources for teaching and learning enhance or favor the integration of ICT in Geography teaching and learning as a student-centred approach, though Geography lessons were found to be dominated by teacher-centred methods of teaching.

5.3. CONCLUSION

The study has found that there are observable inadequate ICT resources like computers, computer laboratories, projectors, televisions, video players, digital content, and the Internet in schools. These resources were not enough or available for use by Geography teachers in teaching and learning. The available resources were few used mainly for teaching ICT as a subject. Geography teachers never used them in their classroom lessons. Therefore, there was low integration of ICT in Geography instruction. Furthermore, the majority of Geography teachers lacked inadequate skills and knowledge of computer literacy. Even though, some attended computer training, they did not have sufficient computer skills and

knowledge on the few resources found in schools. The majority of the teachers did not integrate ICT in teaching and learning Geography. Hence, there was low integration of ICT in schools. The study also revealed that Geography teachers, school administrators and students had positive attitudes towards the use of ICT in teaching and learning. Though the attitude of teachers and school Headteachers were positive, ICT was not integrated into instruction, hence, having a positive attitude alone could not make ICT integration practical in the classrooms.

The study has also found that teachers were still using the teacher-centred approach in the classrooms, whereas some teachers were using learner-centred approaches. Teachers predominantly used the lecture method and the traditional way of assessments in their classroom teaching. The main challenges facing teachers and students were related to the lack of adequate of ICT resources, teacher knowledge, administrative support, high student enrolment ratio and skills on ICT integration in schools. The lack of desktop computers, laptops, projectors, and internet services in the schools for Geography instruction was revealed as a major challenge alongside inadequate skill and awareness of ICT integration in schools. Overall, it can be concluded that this is due to numerous challenges such as lack of adequate resources for Geography instruction, inadequate ICT integration skills of teachers, and traditional methods of teaching. The integration of ICT in teaching and learning Geography in secondary schools in Nkhotakota district, Malawi is facing several challenges.

5.4 RECOMMENDATIONS

It is easily understandable that ICT is a part of technical and specialized knowledge and skills whose acquisition is much important if the society is to stand in par with the constantly dynamic world. It should be integrated in the education system to build globally competitive graduates from all levels of education. This study therefore recommends the following:

1. Intensive resource mobilization efforts should be put in place by the government to enable all schools to acquire ICT resources and improve access by all the students and teachers in the learning institutions.

2. Besides equipping students with the theoretical knowledge only, it would be commendable to also put more emphasis on practical application of ICT skills.

3. The government should avail mobile phones, which are relatively cheaper ICT resources, to schools to enable the students to access the internet. Furthermore, the government should relax its rule on the use of mobile phones in schools and allow those students who can afford to buy them to do so. Mobile phones, laptops and tablets should be provided to help ease congestion in the IT rooms.

4. The Ministry of Education needs to provide adequate in-service training on ICT integration skills for Geography teachers as a way of fostering a learner-centred approach by teachers through ICT.

5.5 AREA OF FURTHER STUDY

Since the study may not be generalizable, the following are areas for further studies.

1. Comparative study on the integration of ICT in teaching and learning in urban and rural areas.
2. Examine ICT use in the public and private secondary schools in Malawi
3. Investigate the effects of an absence of ICT integration in various secondary schools.
4. Role of government and non-governmental organizations in fostering ICT in secondary schools.

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APPENDICES

APPENDIX I: QUESTIONNAIRE FOR STUDENTS

INTEGRATING ICT IN THE TEACHING AND LEARNING OF GEOGRAPHYIN SECONDARY SCHOOLS IN NKHOTAKOTA DISTRICT, MALAWI

Dear respondent,

My name is **Aulaya Banda**, a student at Mzuzu University. I am doing a research on *Integrating ICT in the teaching and learning of Geography in secondary schools in Nkhotakota district, Malawi*" This research is part of the requirement for Masters of Education in Teacher Education. I kindly request you to fill this questionnaire with honesty. The information you will provide will be confidential and for academic purpose only.

General instructions

- Do not write your name on this questionnaire (Kindly respond to all items) Section A: Background information

Instruction:

Please mark with a tick (√) in the blank spaces provided to indicate the choice that best represents your opinion regarding particular question or statement

Section B: The adequacy of the ICT resources in secondary schools that offer Geography a subject

For each of the statements in table 1 below, indicate whether your agreement or disagreement with the statement by ticking in the appropriate spaces provided.

TABLE 1 ***Key: SA=Strongly Agree; A=Agree; U=Undecided; D=Disagree; SD=Strongly Disagree***

	ICT ADEQUENCY IN SCHOOLS BY STUDENTS	*SA*	*A*	*U*	*D*	*SD*
1	This school has Inadequate number of ICT resources					
2	students in this school use ICT resources in learning Geography					
3	The school has regular power supply to use ICT resources.					

4	*The school lacks internet connectivity*					
5	Students are trained on using ICT resources for learning.					
6	Students take part in learning with ICT resources					
7	The school has appropriate ICT resources					
8	The school buys ICT resources more often					
9	Computers are very few					
10	Students are allowed to use any ICT resources for learning					

SECTION C: THE ATTITUDE OF THE GEOGRAPHY TEACHERS TO THE NEED OF ICT INTEGRATION IN THE TEACHING AND LEARNING OF GEOGRAPHY.

Table 2: Instruction: Tick against the letter that corresponds to your opinion

Key: SA=Strongly Agree; A=Agree; U=Undecided; D=Disagree; SD=Strongly Disagree

	The attitude of the Geography teachers to the need of ICT integration in the teaching and learning of Geography	*SA*	*A*	*U*	*D*	*SD*
1	Geography Teacher uses any ICT resources in teaching and learning?					
2	Students like to use ICT resources during teaching and learning of Geography					
3	Teachers frequently use ICT resources during teaching and learning of Geography					
4	Administration allows the use of ICT in teaching and learning in your school?					

SECTION D: THE EXTENT OF ICT INTEGRATION IN THE TEACHING AND LEARNING OF GEOGRAPHY.

Table 3: Instruction: Tick against the letter that corresponds to your opinion

Key: SA=Strongly Agree; A=Agree; U=Undecided; D=Disagree; SD=Strongly Disagree

	The extent of ICT integration in the teaching and learning of Geography	*SA*	*A*	*U*	*D*	*SD*

1	I strongly believe that ICT is important in learning and teaching Geography					
2	Is ICT an effective way of teaching Geography in your school					
3	The school community fully support the use of ICT resources for teaching and learning					
4	Geography is effectively understood with ICT resources					
5	Geography Teachers often integrate ICT resources in teaching and learning					
6	The school administration support teachers in teaching using ICT					
7	Students use the multimedia technology anytime					
8	There is provision of professional support through the internet (online learning) at your school for students					
9	ICT has improved learner performance in your school					

Thank you for your participation

APPENDIX II: QUESTIONNAIRE FOR TEACHERS

INVESTIGATION INTO THE INTEGRATION OF ICT IN THE TEACHING AND LEARNING OF GEOGRAPHYIN SECONDARY SCHOOLS IN NKHOTAKOTA DISTRICT, MALAWI

Dear respondent,

INTEGRATING ICT IN THE TEACHING AND LEARNING OF GEOGRAPHYIN SECONDARY SCHOOLS IN NKHOTAKOTA DISTRICT, MALAWI

Dear respondent,

My name **is Aulaya Banda**, a student at Mzuzu University. I am doing a research on Integrating ICT in the teaching and learning of Geography in secondary schools in Nkhotakota district, Malawi" This research is part of the requirement for Masters of Education in Teacher Education. I kindly request you to fill this questionnaire with honesty. The information you will provide will be confidential and for academic purpose only.

General instructions

- Do not write your name on this questionnaire
- Kindly respond to all items

Section A: Background information

Instruction:

i. Please tick (√) in the blank spaces provided to indicate the choice that best represents your opinion regarding particular question or statement

ii. For how many years have you been teaching at this school?

<1 year □ 1-2 years □ 3-4 years □ 5-6 years □ 6 + years □

SECTION B: THE ADEQUACY OF THE ICT RESOURCES IN SECONDARY SCHOOLS THAT OFFER GEOGRAPHY A SUBJECT

For each of the statements **in table 1** bellow, indicate whether you're in agreement or disagreement with the statement by ticking in the appropriate spaces provided.

Table 1 Instruction: Tick against the letter that corresponds to your opinion

Key: SA=Strongly Agree; A=Agree; U=Undecided; D=Disagree; SD=Strongly Disagree

	ICT ADEQUENCY IN SCHOOLS BY STUDENTS	***SA***	***A***	***U***	***D***	***SD***
1	Adequate ICT resources in the school					
2	Good internet connectivity in the school					
3	The school has regular power supply					
4	The school has enough computers to integrate ICT in teaching Geography					
5	The school has functioning computers					
6	The school has enough LCDs/overhead projectors					
7	The school has enough printers					

SECTION C: THE ATTITUDE OF THE GEOGRAPHY TEACHERS TO THE NEED OF ICT INTEGRATION IN THE TEACHING AND LEARNING OF GEOGRAPHY.

Table 2:

Instruction: Tick against the letter that corresponds to your opinion

Key: SA=Strongly Agree; A=Agree; U=Undecided; D=Disagree; SD=Strongly Disagree

	The attitude of the Geography teachers to the need of ICT integration in the teaching and learning of Geography:	***SA***	***A***	***U***	***D***	***SD***
1	I enjoy using ICT in teaching Geography					
2	ICT is very important in the teaching of Geography					
3	using ICT or not does not make any difference					
4	using ICT or not does not make any difference					
5	I fail to use ICT because the school does not have the computers					
6	I fail to use an LCD or overhead projector because the school does not have them.					
7	I do not use ICT because it distracts the attention of the students.					

8	I do not use ICT because I am not trained to use them					

Section D: The extent of ICT integration in the teaching and learning of Geography.

Table 3:

Instruction: Tick against the letter that corresponds to your opinion

Key: SA=Strongly Agree; A=Agree; U=Undecided; D=Disagree; SD=Strongly Disagree

	The extent of ICT integration in the teaching and learning of Geography.	***SA***	***A***	***U***	***D***	***SD***
1	I strongly believe that ICT is important in learning and teaching					
2	Is ICT an effective way of teaching Geography in your school					
3	The school community fully always support the use of ICT resources for the teaching and learning					
4	Geography is effectively understood with ICT resources					
5	Teachers often use ICT resources in teaching and learning					
6	The school administration support teachers in teaching using ICT					
7	Teachers use the multimedia technology in teaching					
8	There is Provision of professional support through the internet (online learning) at your school					
9	ICT has Improved learner performance in your school					

Thank you for your participation

APPENDIX III: INTERVIEW GUIDE FOR HEAD-TEACHERS

INTEGRATING ICT IN THE TEACHING AND LEARNING OF GEOGRAPHYIN SECONDARY SCHOOLS IN NKHOTAKOTA DISTRICT, MALAWI

Dear respondent,

My name is **Aulaya Banda,** a student at Mzuzu University. I am doing a research on the " ***investigation into the integration of ICT in the teaching and learning of Geography in secondary schools in Nkhotakota district, Malawi***" This research is part of the requirement for Masters of Education in Teacher Education. I kindly request you to fill this questionnaire with honesty. The information you will provide will be confidential and for academic purpose only.

General instruction

- Kindly respond to all items

Section A: Background information

Instructions:

i. Answer the following questions.

ii. For how long have you been at this school?

1 year □ 1-2 years □ 3-4 years □ 5-6 years □ 6 + years □

Section B: The adequacy of the ICT resources in secondary schools that offer Geography a subject

1. Does your school have ICT policy and plan?

_____

_____

_____

2. Does your school have a culture of technology use i.e. in teaching and learning Geography?

_____

_____

_____

_____

3. How many computers do you have in your school?

_____

_____

4. How did you acquire them?

_____

_____

_____

5. Is your school connected to the internet?

_____

_____

6. What is the main use of the internet?

_____

_____

_____

_____

8. Does the government grant any extra funds for the ICT education at your school?

Yes [ ] No [ ]

1. If yes how do you use the budget allocation?

_____

_____

SECTION C: THE ATTITUDE OF THE GEOGRAPHY TEACHERS TO THE NEED OF ICT INTEGRATION IN THE TEACHING AND LEARNING OF GEOGRAPHY.

1. Does your school have a teacher(s) who specialize in ICT education?

_____

_____

_____

2. Who pays them? PTA/BOG or Government _____any other specify

_____

_____

_____

_____

3. Are the teachers given a chances and opportunities to learn to integrate computers into their classroom practices?

_____

_____

_____

4. Do you believe those teachers are motivated adequately to use ICT in teaching and learning in terms of: Training [ ] Administrative support [ ]

_____

_____

_____

5. Do you think the teaching load influences the use of technologies in teaching and learning Geography? If yes, please explain how.

_____

_____

Section D: The extent of ICT integration in the teaching and learning of Geography.

1. To what extent does the following ICT necessities influence integration of ICT in Geography teaching and learning use the following;
   Key: 1 = To a large extent, 2 = to little extent and 3 = not at all

2. How important is the integration of ICT in teaching and learning to your school?

_____

_____

_____

_____

_____

_____

_____

_____

3. What is the future of the integration of ICT in teaching and learning of Geography in Schools in Malawi?

_____

_____

_____

4. In your own opinion what can be done to improve the integration of ICT in teaching and learning Geography in your school?

_____

_____

Thank you for your participation

APPENDIX IV: INTERVIEW GUIDE FOR EDM

INVESTIGATION INTO THE INTEGRATION OF ICT IN THE TEACHING AND LEARNING OF GEOGRAPHY IN SECONDARY SCHOOLS IN NKHOTAKOTA DISTRICT, MALAWI

Dear respondent,

My name is **Aulaya Banda,** a student at Mzuzu University. I am doing a research on the "***investigation into the integration of ICT in the teaching and learning of Geography in secondary schools in Nkhotakota district, Malawi***" This research is part of the requirement for Masters of Education in Teacher Education. I kindly request you to fill this questionnaire with honesty. The information you will provide will be confidential and for academic purpose only.

General instructions

- Do not give your name
- Kindly respond to all items

Section A: Background information

Instruction:

i. Answer the following questions

ii. For how long have you been holding your position?

<1 year □ 1-2 years □ 3-4 years □ 5-6 years □ 6 + years □

Section B: The adequacy of the ICT resources in secondary schools that offer Geography a subject

What are the common ICT resources supplied by the government for teaching and learning Geography in secondary schools?

_____

_____

_____

_____

What role do you play on improving availability of ICT resources for teaching in schools?

What new changes has the government brought in secondary school on teaching and learning using ICT by teachers?

Section C: THE ATTITUDE OF THE GEOGRAPHY TEACHERS TO THE NEED OF ICT INTEGRATION IN THE TEACHING AND LEARNING OF GEOGRAPHY.

1. Does schools have teacher(s) who are specialized in ICT education?

2. Are the teachers given a chances and opportunities to learn to integrate computers into their classroom practices by government?

3. Do you believe those teachers are motivated adequately to use ICT in teaching and learning in terms of: Training [ ] Administrative support [ ] in schools

4. What do you think are the attitudes of teachers in teaching and learning using ICT in secondary schools of Malawi?

_____

_____

_____

Section D: The extent of ICT integration in the teaching and learning of Geography.

1. To what extent does ICT resources influence effective teaching and learning in secondary schools of Malawi

_____

_____

_____

2. What improvements has government brought to the teaching and learning with ICT resources?

_____

3. What are some of the challenges faced in schools which affect effective integration of ICT resources in schools?

_____

_____

_____

4. What do you think has been the achievement of effective integration of ICT in teaching and learning in secondary school?

_____

_____

Thank you for your participation!!

APPENDIX V: OBSERVATION CHECKLIST OF ICT RESOURCES IN SECONDARY SCHOOLS

	YES	NO
Computer		
Laptop		
Projector		
Computer laboratory		
Printer		

PPENDIX VI: MZUNREC ETHICS AND REGULATION APPROVAL AND PERMIT

MZUZU UNIVERSITY

DIRECTORATE OF RESEARCH

Mzuzu University
Private Bag 201
Luwinga
Mzuzu 2
MALAWI
TEL: 01 320 722
FAX: 01 320 648

MZUZU UNIVERSITY RESEARCH ETHICS COMMITTEE (MZUNIREC)

Ref No: MZUNIREC/DOR/22/37 **1st April, 2022**

Aulaya Banda,
Mzuzu University, P/Bag 201, Mzuzu.

Email: jamesaulaya@gmail.com

Dear Aulaya,

RESEARCH ETHICS AND REGULATORY APPROVAL AND PERMIT FOR PROTOCOL REF NO: MZUNIREC/DOR/22/37: INVESTIGATION INTO THE INTEGRATION OF ICT IN THE TEACHING AND LEARNING OF GEOGRAPHY IN SECONDARY SCHOOLS IN NKHOTAKOTA DISTRICT, MALAWI

Having satisfied all the relevant ethical and regulatory requirements, I am pleased to inform you that the above referred research protocol has officially been approved. You are now permitted to proceed with its implementation. Should there be any amendments to the approved protocol in the course of implementing it, you shall be required to seek approval of such amendments before implementation of the same.

This approval is valid for one year from the date of issuance of this approval. If the study goes beyond one year, an annual approval for continuation shall be required to be sought from the Mzuzu University Research Ethics Committee (MZUNIREC) in a format that is available at the Secretariat. Once the study is finalized, you are required to furnish the Committee with a final report of the study. The Committee reserves the right to carry out

compliance inspection of this approved protocol at any time as may be deemed by it. As such, you are expected to properly

Committee Address:
Secretariat, Mzuzu University Research Ethics Committee, P/Bag 201, Luwinga, Mzuzu 2; Email address: mzunirec@mzuni.ac.mw

maintain all study documents including consent forms.

Wishing you a successful implementation of your study.

Yours Sincerely,

Gift Mbwele

MZUZU UNIVERSITY RESEARCH ETHICS ADMINISTRATOR

For: CHAIRMAN OF MZUNIREC

A Letter of Introduction from the Department of Education Foundation

MZUZU UNIVERSITY

Department of Teaching, Learning and Curriculum Studies

Mzuzu University
Private Bag 201
L u w i n g a
M z u z u 2
M A L A W I

Tel: (265) 01 320 575/722
Fax: (265) 01 320 568
mdolo.mm@mzuni.ac.mw

1ST APRIL 2022

TO WHOM IT MAY CONCERN

Dear Sir/Madam,

LETTER OF INTRODUCTION: MR AULAYA BANDA

Mr. Aulaya Banda is a registered Master of Education (Teacher Education) Program student at Mzuzu University. He has been cleared by the Mzuzu University Research Ethics Committee (MZUNIREC) to collect data for the research study he is conducting as a requirement for the program.
Kindly assist him accordingly.

Yours faithfully,

Dr. Margaret M. Mdolo
Program Coordinator