AN INVESTIGATION OF ACADEMIC PERFORMANCE OF GRADE 9 LEARNERS IN COMPUTER STUDIES: A CASE STUDY OF CHAMUNDA SECONDARY SCHOOL IN MASAITI DISTRICT, ZAMBIA

BY

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A dissertation submitted to the University of Zambia in collaboration with Zimbabwe Open University in partial fulfillment of the requirements for the award of the degree of Master of Education in Educational Management

THE UNIVERSITY OF ZAMBIA

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AUTHOR'S DECLARATION

I, **Mwaba Beatrice**, do hereby solemnly declare that this dissertation is my own work, except where otherwise acknowledged, and that it has never been previously submitted for a degree at the University of Zambia or any other University.

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CERTIFICATE OF APPROVAL

This dissertation of **Mwaba Beatrice** is hereby approved as partial fulfilment of the requirements for the award of the degree of Master of Education in Educational Management by the University of Zambia in collaboration with the Zimbabwe Open University.

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DEDICATION

I dedicate this dissertation to my beloved husband Brian Chanda Chiluba for the financial and moral support he gave throughout this study. I dedicate this dissertation to our four children namely: Abigail, Bupe, Nkumbu and Natasha. I also dedicate this dissertation to my mother Theresa Mwaba and my sister Charity Mwaba both of whom helped so much in baby sitting and gave me support throughout the period I was away to undertake my study. Lastly I dedicate this work to my late father Dennis Mwaba who sacrificed so much for me to reach this far in education and my late brother Ernest Mwaba who also guided me in educational matters the time he was alive.

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ABBREVIATIONS

COL: Commonwealth of Learning

DEBS: District Education Board Secretary

DER: Australian Government's Digital Education Revolution

ECZ: Examination Council of Zambia

FDGs: Focussed Group Discussions

GNP: Gross National Product

ICT: Information and Communication Technology

IICD: International Institute for Communication and Development

MOE: Ministry of Education

MCT: Ministry of Communications and Transport

NGO: Non-Governmental Organisations

OECD: Organisation for Economic Corporation and Development

REA: Rural Electrification Authority

UNESCO: United Nations Educational Scientific and Cultural Organisation

USAID: United States Agency for International Development

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ABSTRACT

Development and teaching of Computer Studies in African Secondary Schools is vital if the continent is to reduce the knowledge, technological and economic gaps between itself and the rest of the world. But there had been few or no studies conducted to establish the performance of learners in Computer Studies subject so as to determine the worthiness of integrating it in school curriculum. There is a significant gap within the current bodies of research, most research does not focus on performance of learners in Computer Studies. This research aimed to fill this gap by addressing the performance of learners in Computer Studies since it was introduced in Secondary Schools in Zambia. A mixed method was adopted, using a convergent concurrent parallel design. The qualitative methods used interviews, while the quantitative used a descriptive cross sectional study. A 100 Pupils were randomly selected to respond to the questionnaire and 13 staffs that included the `Head teacher and teachers teaching computer studies were interviewed, making a total sample of 113. Fewer teachers were found teaching computer studies, while the Examination Council of Zambia archives of Grade 9 results for 2015, 2016 and 2017 showed a decreasing trend in performance. The pass rate in 2015 was 56%. In 2016 the pass rate was 38%. In 2017 the pass rate was 23%. Boys performed better than girls over the years. The study revealed a third of the learners had positive perception, with a dominance of males towards. Students challenges were computer accessibility and those that never had access were (65%). These challenges result in under performance of learners in the Computer Studies. Teachers reported a range of different challenges that they faced when teaching Computing. Challenges faced by teachers included not being confident in the subject matter and other comments focus on the fact that the students have difficulty understanding the material and in problem solving. These results suggested that simply increasing the educational input on computers at school may not produce the desired effect; instead, the quality of teaching also matters. %. Integrating computer use into effective instructional activities plays a more important role in influencing student academic performance

CHAPTER ONE: INTRODUCTION

1.0 Overview

This chapter focuses on the background of the study, statement of the problem and the general objective of the study. The chapter further outlines the specific objectives and the research questions, the conceptual framework and operational definition of the key terms of the study.

1.1 Background

The widespread use of Information and Communication Technologies (ICTs) has influenced all, among which lies education. All human life is affected by technology including the way we interact with each other. One cannot think of life without ICT, it is an indispensable tool. The use of technology and proliferation of computers and internet has brought about a lot of changes in the way organizations conduct their businesses. Not only in the business world but also in the education sector where the knowledge of ICTs has brought about improvements in the education processes such as administration, assessment and management of various stages in the education sector (Williams and Sawyer, 2007).

Many countries see ICT as a potential tool for change and innovation in the education field (Papanastasiou & Angeli, 2008) and thus, they make large investments in the integration of ICTs in school curriculum. Globally, the level of ICT available to education differs from country to country. The important role of ICTs in improving education is identified where nations have invested heavily in networking classrooms and increasing the number of computers in schools (Goodison, 2003; Hennessy *et al.,* 2005; Kozma, 2003; Kozma & Anderson, 2002; Kangro & Kangro, 2004; Pelgrum 2001). Australia has a strong movement toward ICT implementation in the classroom as demonstrated by the Australian Government's Digital Education Revolution (DER) policy (Rudd, Smith & Conroy, 2007) and more recently the ICT Strategic Plan 2013-2018

(Parliament of Australia, 2016). In Asia, similar movements have occurred. For example, Hong Kong implemented a Government initiative to put ICT into schools though the 'Empowering Learning and Teaching with Technology program' (Hong Kong Education Bureau, 2012). Europe and Central Asia have allocated 22% of their budget to ICT (World Bank, 2007).

The Organization for Economic Co-operation and Development (OECD) points out three main reasons why countries must adopt ICT in education. Firstly, the perceived needs of the economy and the requirement in most companies to have personnel with ICT skills. ICT is seen as an important employability criterion in the 21st century. It is perceived that countries which successfully embrace the information age will benefit economically (Newby et al., 2013; OECD 2001).

Secondly, ICT has become an important requirement for participation in society and the workplace. All learners need to become competent with ICT skills to fully engage in social activities. This is particularly important as public and other services are increasingly available online. Finally, ICT has the potential to transform pedagogical practices and increase the breadth and richness of teaching and learning (Al Harbi, 2014).

Following this assertion, in March 2007, the Zambian government launched its National ICT policy with the main objective of integrating Computer Studies into the educational curriculum so as to provide equitable access for all students regardless of the academic level. The policy stated that Computer Studies was to be introduced as a subject in government schools as only Private schools were producing ICT literate students at the time (MoTC, 2007). It also highlighted challenges such as the financial and technological resource constraints, inadequate awareness on the benefits of integrating ICTs in the administration of the delivery chain of education sector, and the high opportunity costs and lack of coordination (Isaacs, 2007). It further, suggests for the scale up of the introduction of Computer Studies in schools. Though Computer Studies was integrated

in the Revised Curriculum in 2013 as a single subject, it only became compulsory at Grade 9 levels in 2014 (Ministry of Education (MoE), 2013).

Moreover, the government through the Ministry of Education (MoE) and with the support of various stakeholders also developed an ICT policy for education (MoE, 2006). The policy also provides an overview of the goals, objectives and government commitment in key programme areas of ICT infrastructure to education institutions, content development, curriculum integration and teacher training. The vision is for ICTs to contribute towards reaching innovative and lifelong education and training in Zambia by 2030. The incorporation of Computer Studies in the Zambian school curriculum is aimed at promoting a major step in equipping ICT knowledge to learners (Ministry of Communication and Transport (MCT), 2007). This is the reason Computer Studies was introduced in the Revised Curriculum so that it can equip the learners with the essential skills necessary for them to have basic knowledge of ICTs (MoE, 2013).

The Curriculum Framework was developed in 2012 through a laborious consultative and participatory process (Sichone, 2013). In recognition of the importance of Vocational Subjects, every institution of learning is required to offer Vocational Subjects as part of their curriculum. Since the Vocational Subjects will provide sufficient practical skills to prepare learners for subsequent training or entry into the world of work, the curriculum should provide learners with opportunities for hands-on practical experience which is the essence for all the Vocational Subjects. Computer Studies is one of the vocational subjects (MoE, 2013).

Development and teaching of Computer Studies in African Secondary Schools is vital if the continent is to reduce the knowledge, technological and economic gaps between itself and the rest of the world (Farrell and Shafika, 2007). But there had been few or no studies conducted to establish the performance of learners in Computer Studies subject so as to determine the worthiness of integrating it in school curriculum. For educators and policy makers that wished to

invest in these initiatives as a means for improving the standard of living for people, there was little empirical evidence upon which to base decisions. Over the past decade the belief that increased access and use of computers would lead to improved lives and development due to greater efficiency in doing things, the development of critical skills in students, motivated educational leaders and policy makers to make substantial investments in educational technologies. Good performance in any subject is indeed vital to a meaningful education, and focusing on performance was essential to inform diagnosis and improve teaching processes and student learning in Computer Studies Subject (Warschauer *et al.,* 2010).

There was a significant gap within the current bodies of research, as much of the research focuses on best practice for teachers, rather than the performance of learners in Computer Studies. This research aimed to fill this gap by looking closely at the performance of learners in Computer Studies since it was introduced in Secondary Schools. Hence, a case study was conducted at Chamunda Secondary School in Masaiti District to determine the performance of Grade 9 learners in Computer Studies from 2015 to 2017.

1.2 Statement of the problem

ICTs in Zambia are on the increase almost everywhere, including schools. ICTs have become part of survival skills in this era. The chances of one to be employed without the knowledge of ICT are becoming slim. So the Government of Zambia felt it critical that learners should be taught effectively how to apply ICTs and this is the reason why the Ministry of General Education introduced Computer Studies as a compulsory subject at Grade 9. The Zambian curriculum was reviewed because of the growing need of including Computer Studies in the curriculum so that pupils are not left behind in the global world (Republic of Zambia, 2012). But introduction of Computer Studies as a Subject in Secondary Schools had not come without challenges. Mwale

(2015) argued that while the Ministry of General Education's decision to introduce Computer Studies as a compulsory subject in secondary schools would be a step in the right direction, its implementation would have proved beyond the capabilities of those involved. This is because many schools including those in urban areas did not seem to have the required infrastructure such as computer laboratories, computers and trained computer studies teachers. In the 2015 Junior Secondary School Leaving Examinations, the performance of learners in Computer Studies was not impressive. According to the Examination Council of Zambia (ECZ) Report, Computer Studies recorded the second lowest mean score of 30.07%. Despite the Zambian government's effort to make computer studies compulsory, most schools offering Computer Studies at Junior Secondary in Masaiti seemed to have a number of challenges in meeting the requirements for successful teaching of computer studies such as enough computers and Computer Studies trained personnel. As such most teachers offering computer studies do not have necessary ICT skills to deliver lessons in this subject thoroughly. However, while so much has been said about how ICTs could be used to improve teaching and learning experiences in science based subjects, very little, if any, is known about the performance of learners in Computer Studies since it was introduced in Zambian Schools (MoE, 2006). It was against this background that this study aimed to investigate the performance of learners in computer studies at Chamunda Secondary School in Masaiti District.

1.3 Purpose of the Study

This study aimed to investigate the academic performance of Grade 9 learners of Chamunda Secondary School of Masaiti District Zambia.

1.4 General Objective

The main objective of this study was to investigate the academic performance of learners in Computer Studies at Chamunda Secondary School in Masaiti District.

1.5 Specific Objectives

The specific objectives of this study were:

1. To establish the types of ICT resources and infrastructure available for teaching and learning Computer Studies
2. To establish the availability of trained teachers to teach Computer Studies
3. To investigate the performance of Grade 9 learners in Computer Studies
4. To explore perceptions of Grade 9 learners towards Computer Studies
5. To identify challenges learners face as they learn Computer Studies

1.6 Research questions

This study was guided by the following research questions:

1. What type of ICT resources and infrastructure are available for teaching and learning Computer Studies?
2. Are there trained teachers to teach Computer Studies?
3. How has been the performance of Grade 9 learners in Computer Studies?
4. What is the perception of Grade 9 learners towards Computer Studies?
5. What challenges do learners face as they learn Computer Studies?

1.7 Conceptual framework

The conceptual framework that was adopted in this study was based on the assumption that there are certain composite factors that can affect the performance of learners in Computer Studies. Independent variables were prior computer use and socio-demographic characteristics may influence the academic performance of a pupil. Prior computer use makes it easy for students to use computers and computer software that are used to deliver academics; socio-demographic characteristics include variables such as gender, age and area of residence which play a role in academic performance. Academic performance was the dependent variable in this study, how does academic performance vary based on the independent variables. Attitude which dealt with the overall perception of the learner about learning style and hence influencing performance was the intervening variable. Regardless of the variance of the independent variables, the intervening variable's influence is constant. ICT resource and infrastructure availability, ICT trained teachers, skills development and training were the moderating variables that provides the interaction effect where it moderates the relations between the independent variables. Academic performance in Computer Studies can be influenced by varied variables either positively or negatively. Figure 1 illustrates the relationship of factors that are likely to contribute to the performance of learners in Computer Studies.

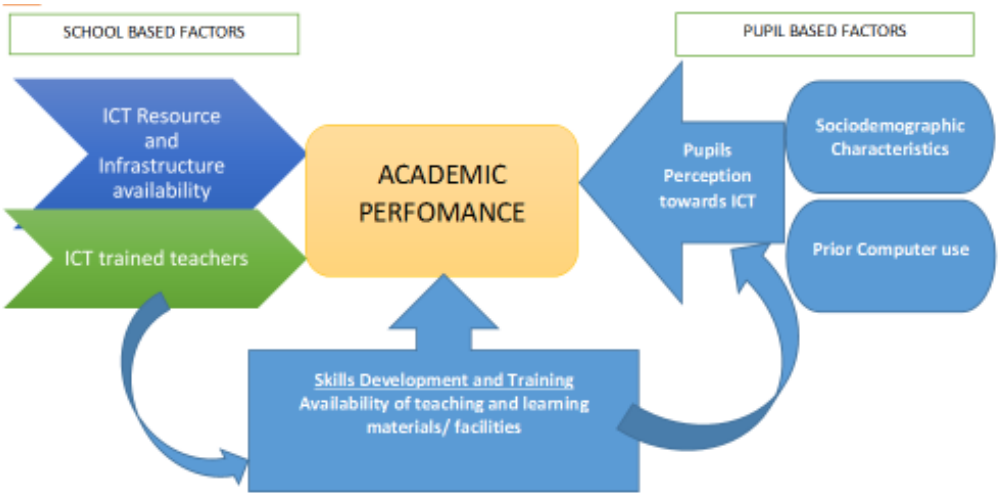

Figure 1: Conceptual framework of factors influencing ICT utilization

1.8 Significance of the study

The importance of Computer Studies as a subject cannot be over emphasized. Computer Studies develop and cement a strong attitude among pupils to undertake things such as project work and assignment on their own as it encourages critical thinking and independent learning. This study aimed to investigate the performance of learners in Computer Studies since it was introduced as a subject in Masaiti District. The findings of this study may be significant to the following stakeholders in the following ways. Firstly, the findings of the study may be used by policy makers in the Ministry of Education to address challenges that would be identified in this study. These could be policy issues in which the ministry would be in a position to put mechanisms in place that would enhance effective teaching and learning of computer studies. Secondly, the findings may be used by curriculum developers at the Curriculum Development Centre in addressing the curriculum issues raised in this study so that they could put in place any changes which could promote effective teaching and learning of computer studies. Thirdly, the research findings may be useful to Head teachers at secondary schools to develop strategies to address the challenges that

are raised in this study. The research findings may also be useful to teachers and learners in realizing their role in improving the academic performance in Computer Studies. This research might create an impetus for a more robust study in the area of Computer Studies throughout Zambia and see how learners in other districts have been able to perform in the same subject. The findings would also add to the body of knowledge which would be used by future researchers.

1.9 Definition of Key Terms in the study

For the purpose of the study, the following terms are taken to have the following meanings:

Academic performance: is the extent to which learners have successfully completed a course in Computer Studies and achieve the set goals by being successful in it.

1. Compulsory Subjects refer to subjects to be taken by all learners at a particular level or in a career pathway.

2. Information and Communication Technology (ICT) refers to computers, internet, photocopier and printer for use in schools.

3. ICT Integration refers to use of technology in communication, data processing and data storage to impact the knowledge of users and or to achieve desired goals (TS & Logistics Group, 2016).

4. Vocational Subjects refer to subjects which are not purely academic but which involve learning skills useful for a particular job.

1.10 Summary

In summary, this chapter has presented the background of the research, statement of the problem, general objective as well as specific objectives of the study. The research questions, conceptual framework, significance of the study and operational definitions of key terms have also been discussed.

CHAPTER TWO: LITERATURE REVUEW

2.0 Overview

This chapter will review literature on concept of ICT in education, ICT policy in education, the availability of resources and infrastructure, the teachers' skills and training in ICT and challenges learners face in Computer Studies. In this chapter, literature will be reviewed on the occurring factors affecting the performance of learners in computer studies in general.

2.1 Concept of ICT in Education

Oliver (2002) defines ICT as a term that stresses the role of unified communication and the integration of telecommunications, computers as well as necessary software, storage and audio visual systems which enable users to create, access, store, transmit and manipulate information. In other words, ICT consists of information technology as well as telecommunications, broadcast media, all types of audio and video processing and transmission and network based control and monitoring functions

Beresford (2002) asserts that ICTs, which include radio and television as well as newer digital technologies such as computers and the internet, has been touted as potentially powerful enabling tools for educational change and reform. When used appropriately, different ICTs are said to help expand access to education, strengthen the relevance of education to the increasingly digital workplace and raise educational quality by, among others, helping make teaching and learning into an engaging, active process connected to real life.

In another study, Kanyeki (2006) points out that one defining feature of ICTs is their ability to

transcend time and space. ICTs make possible asynchronous learning, or learning characterized by a time lag between the delivery of instruction and its inception by learners. Beresford (2002)

also states that ICT based educational delivery dispensed with the need for all learners and the instructor to be in one physical location. Additionally, certain types of ICTs such as teleconferencing technologies enable instruction to be received simultaneously by multiple, geographically dispersed learners, that is, synchronous learning.

Brown and Duguid (2000) state that ICTs also facilitate access to resource persons such as mentors, experts, researchers and professionals all over the world. Teachers and learners no longer have to rely solely on printed books and other materials in physical media housed in libraries (and available in limited quantities) for their educational needs. With the internet and the World Wide Web, a wealth of learning materials in almost every subject and in a variety of media can now be accessed from anywhere at any time of the day and by unlimited number of people.

Bradley and Yates (2000) mention that ICTs particularly computers, the internet and related technologies are important to better prepare the current generation of students for workplace. Technological literacy or the ability to use ICTs effectively and efficiently is, thus, seen as representing a competitive edge in an increasingly globalizing job market. Haddad and Drexler (2002) argue that ICT use in education could promote the acquisition of knowledge and skills that would empower students for lifelong learning. When used appropriately, ICTs, especially computers and the internet technologies, can enable new ways of teaching and learning rather than simply allowing teachers and students to do what they have done before in a better way.

Orivel (2000) reaffirm that ICT enhance learning and acts as a mobilized tool for higher performance in examinations. It provides a platform for student inquiry, analysis and construction of new information. Learners, therefore, learn as they do and whenever appropriate. They work on real-life problems, making learning less abstract and more relevant to the learners' life situation. Orivel (2000) concludes that ICT enhanced learning, promotes increased learner engagement and

is also just-in-time learning in which learners could choose what to learn when they need to learn it.

2.2 ICT Policy in Education

With the support of the International Institute for Communication and Development (IICD), the Commonwealth of Learning (COL) and the United States Agency for International Development (USAID), the Zambian Ministry of Education had developed a draft ICT policy for education by October 2006 and an implementation strategy by January 2007. This represented an extension of Zambia's national education and national ICT policies. The vision is for ICTs to contribute towards reaching innovative and lifelong education and training in Zambia by 2030. The guiding principles of the policy include the following:

- It must fit into national policies on education and ICTs
- There is a commitment to establishing strategic partnership with stakeholders
- There is a combined effort with government, the private sector, and NGOs
- The policy reflects general standards that the Ministry of Education wishes to uphold
- An integrated approach must be adopted that integrates all aspects of the value chain in the education process.

The policy also provides an overview of goals, objectives, and government commitment in key programme areas of ICT infrastructure to education institutions, content development, curriculum integration, teacher training, distance education, administration and support services, and finance. Linked to the policy is an implementation framework that sets out in detail the implementation objectives, activities, time frames, and budgets for each of these programme areas. It also outlines the ministry's commitment to promote collaboration between the private sector and education

institutions and to establish appropriate structures meant to facilitate the integration of ICTs in the education system.

2.3 Resources and infrastructure available for teaching of Computer Studies

Investing in ICT for schools might be perceived as an additional cost, and supporting significant ICT implementation is a problem experienced by many schools in developing countries, mainly those that rely on donor support. Farrell (2007) argue that high costs of acquisition and maintenance of ICT infrastructure is the challenge that has continued to hamper successful teaching of Computer Studies to learners in schools. Hennessy (2010) observed that one of the greatest challenges in implementation of ICT in school is balancing educational goals with economic realities. Implementing ICT requires large capital investments, schools need to be prudent in making decisions about what models of ICT will be implemented to offer computer studies successfully. Magambo (2007) also reveals that there is an outcry from teachers on lack of basic resources like enough textbooks in schools which affect proper delivery of Computer Studies lessons. Several researchers and authors have argued that lack of physical educational

facilities, like buildings, are the major hindrances of successful teaching of Computer Studies in schools in Africa (Hennessy, 2010).

Computer Studies do require supporting physical infrastructure to be in place before they can be taught. However, for many schools in developing countries like Zambia, there is seldom free room and in some schools, no suitable building at all. For these schools, the teaching of Computer Studies often requires the construction of computer labs which can be costly. The teaching of Computer Studies usually calls for the purchase of new specialized furniture which is costly and most schools cannot meet the expenses. There are limited resources to equip schools with ICT infrastructure and this has been a barrier in conducting lessons in Computer Studies. Ndwiga

(2005) highlights that there are inadequate resources such as computer laboratories in 33.3% of schools in poor countries which is a major setback in successful teaching of Computer Studies.

Contrary to the governments' plan to invest in ICT in education, Schools have done very little with some having taken no initiative to help put in place resources for successful teaching and learning of computer studies subject. The high cost of computers makes it hard for the schools to procure enough computers for effective teaching and learning of Computer Studies. Kinyanjui (2003) findings revealed and established that more than 40% of schools in his study sample which was conducted in Kenya had less than 10 computers and only 4.5% schools had more than 20 computers. Most of the schools do not have enough computers. The inadequacy in number of computers in schools could be attributed to huge capital required to purchase and install computers in school.

ROK (1999) states that quality and adequacy of resources such as teaching and learning resources determine the effectiveness of lessons being delivered. IFIP-UNESCO (2006) also states that in any educational system, the level of available resources places a restriction on the degree to which any new subject can be introduced into school curriculum. Most secondary schools operate on limited resources to conduct successful lessons in Computer Studies. Pelgrum (2002) reveals that lack of ICT infrastructure is one of the factors for non-teaching of some Computer Studies lessons. A study by Middleton, Flores and Knaupp (1997) also established the hardware factor as a significant barrier to successful teaching of computer Studies subject. Computer studies require a lot of capital outlay and funding for accessories and consumables. Most research studies review that teachers feel more money is needed for internet and purchase of enough computers. Developing countries lack the resources and appropriate infrastructure for successful delivery of Computer Studies lessons in schools (James, 2010). The effective delivery of Computer Studies

lessons would require the availability of enough computers and their proper maintenance including other accessories (Williams et al, 2000).

Mwale (2015) also states that the ministry of general education spokesperson Hillary Chipango said the ministry is aware of the problems that pupils in rural areas are currently facing in the implementation of new policy. "The ministry is working hand in hand with the rural electrification authority (REA) to make sure that all the schools in rural areas are electrified," Mr Chipango told the Sunday times in an interview. In this regard, the students in areas where there is no electricity are to learn theory for some time till their schools are connected to the power grid. Being a new subject, it was the first time that pupils came face to face with the ICTs. There was a deepening concern and worry for those that had never laid their hands on a computer in their lives. In Sudan, the education authorities had embarked on building and capitalizing on ICT policy as a gateway for sustainable development seen as a tool for integrating the economy onto the global market (Hamdy, 2007). Zambia national union of teachers (ZNUT) general secretary Newman Bubala said that the policy was ineffective because there were currently no facility in both rural and urban schools.

Mwale (2015) says the implementation of the ICT policy of the ministry of education could serve as an important milestone in enhancing technology advancement in Zambia. However, perhaps it is also crucial to realize the fact the many Zambian schools currently struggling to have adequate learning and teaching materials such as books, laboratories and classrooms. Many schools in rural areas do not have a laboratory for computer studies subject and pupils' performance has not been impressive. It is a great idea to have ICT in schools because of the changing world, but such initiative should be accompanied by enough computers and electricity in rural areas. Indisputably, the introduction of Computer Studies subject is a great idea, but requires time, resources and

energy in order to achieve the intended objectives. It is, therefore, hoped that as Computer Studies continues to be taught in secondary schools, more attention should be placed not only on building the capacity in teachers, but also improving the environment through the provision of electricity and computer labs in schools (Mwale, 2015).

2.4 Teachers' Skills and Training in Computer Studies

Teachers' ICT skills and access to professional development play a significant part in conducting successful lessons in Computer Studies subject. Research suggests that teachers' attitudes, beliefs, adequacy, and skills influence successful teaching of Computer Studies in schools (Hennessy, 2010). Unfortunately, in many African countries, lack of well trained teachers and low levels of teachers' ICT skills and knowledge has been recognized as major obstacles to successful delivery of Computer Studies lessons in schools (Dzidomu, 2010). For efficient teaching of Computer Studies in schools, there should be adequate personnel that have correct skills to handle the subject. Where such skills are missing, it would be difficult to fully teach some lessons in Computer Studies in schools. Mwaniki (2007) also identifies low number of qualified teachers being among the factors that has adversely affected the performance of learners in Computer Studies.

Teachers are indispensable to successful computer education teaching. Successful teaching of Computer Studies subject can only be assured through teachers with necessary ICT knowledge and skills. This means that teachers need to become sufficiently competent to make personal use of information and communication technology as a mind tool, to become masters of a range of educational paradigms that use ICT, and also to become sufficiently competent to make use of ICT in teaching Computer Studies (Krischener & Davis, 2003). On the contrary, Newhouse (2002) found that many teachers lacked the knowledge and skills to use computers and were not enthusiastic about the changes and integration of supplementary learning associated with bringing

computers into their teaching practices. Further, Yusuf (2005) notes that teachers' competence and self-efficacy in their capacity to work effectively with computers is a significant factor in determining their patterns of teaching Computer Studies lessons for the benefit of the pupils.

To successfully implement ICT in schools, there should be comprehensive pre service courses on ICT that equips teacher trainees with the required skills. A study by Higgins & Mosely, (2011) revealed that inability of teachers to understand why they should implement Computer Studies and how exactly to teach is an impediment to its implementation. In addition, in service courses for subject teachers already in the profession should be developed that will guide them on how to use Computers and other resources during Computer Studies lessons and offer them basic skills needed for its teaching. Many authors believe that continued professional development of teachers can help to successfully teach Computer Studies in schools (Higgins & Moseley, 2011). Dzidonu, (2010), supports this statement by saying that a promising way forward should be a sustained professional development that draws on teachers' local professional capabilities, supports reflective classroom performance, and encourages peer learning by teachers of same age group and similar subjects. Malcolm and Godwyl (2008) reported that lack of professional development programs for teachers to upgrade their skills on emerging technologies is a hindrance to successful teaching of Computer Studies lessons. Afshari *et al*. (2009) further points out that teacher who are actively involved in their professional development are able to make changes in their teaching. For example, formal certification of in-service professional development that leads to diplomas or degrees in ICT could improve their skills and knowledge. Krysa (1998) points to professional development and training as a solution to successful Computer Studies teaching. Ensminger *et al.* (2004) found that low levels of skills and the need to train users also influence successful delivery

of some computer lessons. The effective use of computers by teachers depends not only on their attitudes, but also on the training they have received (Afshari *et al.,* 2009).

The UNESCO (2005) survey shows that about 35% of the already trained teachers in secondary schools in Europe, Asia and Africa have basic skills in ICT, which leave 65% of the teaching workforce on the three continents still with no computer skills. UNESCO (2005) expresses the need for teachers, professors, technical and administrative staff to be given training that enables them to integrate new information and communication technologies into their teaching programs. Numerous problems related to ICT infusion occur among the teachers due to the lack of technical skills and knowledge of maintaining the functionality of the computers. According to Afshari et al, (2009), the success of educational innovations depends largely on the skills among the most inhibiting obstacles to the use of computers in schools.

Teo and Lim (1998) note that competence of individual teachers handling computers is very low; most of them lack both educational and technical training. Hsin-Kai, *et al. (*2007), report that teachers' technological skills such as technology proficiency and computer literacy are critical for successful teaching of Computer Studies. However, much as training is emphasized by Ministry of Education in Zambia, teachers with ICT skills is still low. This indicates that skills development may not alone affect the academic performance of learners in Computer Studies and thus, one wonders the role of skills development towards Computer Studies teaching in secondary schools in Luanshya district and hence the need for this study.

Sife *et al.* (2007), reports that the ICT training and workshops are needed only to improve the skills of the teachers, but also as a means of getting them involved in delivering quality Computer Studies lessons. Nachmis *et al.* (2004) state that staff training should be a continuous process for regular updates with the development of ICTs. Therefore, teachers need to be trained in Computer Studies

subject. It is also discovered by Adegoke (2006) that teachers incompetency and lack of confidence in the use of computers greatly influence non-teaching of some Computer Studies lessons in secondary schools. Adebayo (2007) submitted the absence of trained teachers in computer studies to teach students practical aspects of computer and non-availability of computers and allied tools in school have been militating against actual teaching of some computer studies lessons.

Furthermore, recent research in Turkey found that the main problem with successful teaching of computer studies in institutions is insufficient amount of in-service training programs for teachers (Ozden, 2007) and Topraki (2006) concluded that limited teacher training in the ICT in Turkish schools is an obstacle. These claims by researchers on the relationship of teachers' competency and academic performance of learners in Computer Studies need further investigation through research and hence the need for this study.

UNESCO (2009) observes that the proportion of teaching staff with ICT skills is small in developing countries and the teacher competency level need to be addressed by training and deployment of teachers to Computer Studies. There has been an emphasis on the importance of having highly qualified and motivated teaching force capable of understanding the needs of the learner and curriculum in order to implement it effectively. The introduction of computer studies curriculum in secondary schools in Zambia in 2014 was consecutively followed by its introduction in some teacher training colleges (MoE, 2007).

However, implementation of ICT courses in teacher training colleges has been hampered by a number of factors. Oduda (2004) hold similar views as argues that although computer studies is an examinable subject at Grade 9, few teachers are trained in the subject. He further stresses that schools depend on hire personnel to teach the subject most of whom are not professional in classroom delivery and they also use those who have a little bit knowledge in computer studies.

Quite good numbers of teachers in secondary schools do not have any skills in the use of computers. Such teachers may end up skipping some lessons in Computer Studies.

Seidmen (1996) conducted a study into issues surrounding teacher training and its relationship with the successful implementation of computer studies. The majority of teachers in schools lack computer training and a few of them have some sound working knowledge of computers. Seidmen (1996) refers to the need for an international trend on the part of educators to train all teachers on the use of computers in the curriculum. Training all teachers on the educational use of computers is of special importance when considering integrating the Computer Studies into the regular curriculum. Mintz (2007), points to professional development and training as a solution to successful teaching of Computer Studies lessons.

Pelgrum (2001) found that lack of knowledge/competence in Computer Studies, among teachers in developing nations, is the primary obstacle to the uptake of ICTs in education. More surprising perhaps, is the findings from a study by Korte and Husing (2007). They analyzed an earlier report, carried out by Empirica (2006), on ICT integration among schools in 27 European countries, where funding should not be a significant issue. The findings nevertheless, indicates that lack of computer knowledge, is a factor in preventing the successful teaching of ICTs. It is perhaps interesting that similar findings are discovered in both developing and developed countries. Mulenga (2003) in her study, the implementation of computer studies curriculum in secondary schools found that teachers with lower ICT proficiency are not willing to implement Computer Studies. The results from these studies review that knowledge and skills affect effective implementation of computer studies, but did not mention anything concerning the academic performance of learners in computer studies thus, leaving a gap for this study to close by investigating the academic

performance of learners in Computer Studies at Chamunda Secondary School in Masaiti District of Zambia.

2.5 Challenges Facing Learners

ICT is perceived as a prerequisite for development. However, when it comes to comparing the developing world with the developed world, there is a huge gap in the usage of ICT between these two groups. This gap is referred to as the "Digital Divide" and can be seen within a country and between countries (Parliamentary Office of Science and Technology, 2006). The ICT environment surrounding education in developed countries is relatively abundant. The research done by UNESCO (2000), highlights that the number of PCs (Personal Computers) in schools is increasing and access to the internet is easy in developed countries. Moreover, ICT is actively adapted in schooling to the extent that ICT changes pedagogical practice innovatively (Kozma, 1999). In contrast, studies by Grabe (2002) review that in underdeveloped countries, CT infrastructure is weak and the internet access is limited. The study further review that supply of PC (Personal Computer) in schools is much less than needed and trained personnel who could resolve computer illiteracy is also in serious shortage.

Parliamentary Office of Science and Technology (2006) evaluates that the digital divide is mainly related to such factors as appropriate products, cost, education, literacy, human resources and government regulations. To tackle the digital divide, carefully selected technology could be used. Open source software, which is basically free because its source code is open to the public, might be a good choice for the countries under financial pressure. Governments have a significant role in reducing the digital divide. They can cut the tax imposed on ICT related imports or liberalize the market for PCs, telecommunication and the internet business. These actions will result in a lower price of ICT related products and an increase in affordability. Industries also have a role in

closing this division. Normally, industry works for profit, but corporations have a social responsibility to spend their resources on unprofitable but highly required areas and some of them are actively involved in addressing the digital divide (Lewis, 2003).

In his study, Oliveira (1998), state that the main challenges for implementing ICT in the education sector in the underdeveloped and developing world include: The first issue, which almost all developing countries face, is how to deal with the scarcity of financial resources. Oliveira (1998) go on to state that resources in the developing world are always scarce so that they have to be spent mostly on basic supplies such as food, housing and roads. In a sense, investing in ICT for schooling might be regarded as a long term issue which means adopting ICT in the education system is relatively not an urgent issue considering the serious poverty in many African countries. Oliveira (1989), says this results in a vicious circle between scarcity of funds and underdevelopment. When it comes to the controversy of priority of investment between basic services and ICT, both might be linked in the case of education (Parliamentary Office of Science and Technology 2006). Additionally, the study by Oliver (2002) indicates that one piece of good news about cost is that the cost of hardware is decreasing rapidly. The price of PCs and peripherals is reduced to half of the original price every two years. Because of this, the salary of the IT professionals who could teach the new technology is the biggest burden on education budgets and followed by software related costs.

Secondly, access to the internet is highly limited in remote areas, and relatively poor infrastructure in developing nations such as supply of electricity, make this worse (Gulati, 2008). Gulati (2008), further asserts that low infrastructure is the fundamental problem for developing countries to deal with and it might take a long time and huge funding to improve. Low literacy rates also hinder locals in rural and remote areas from accessing information through the internet and due to little

dominance of English on the internet; non-English speaking local people are isolated from the benefits of using internet.

In addition, Kozma (1999), states that another challenge faced by developing nations in teaching and learning of Computer Studies is a lack of trained teachers. When it comes to practically applying Computer Studies, which is new to traditional teachers, many do not know how to deal with it and sometimes they are reluctant to accept new technologies. Thus, tutors who could train these teachers about new technology and IT professionals who could technically install and maintain the system are needed.

Whereas results indicate that ICT has penetrated many sectors including banking, transportation, communications, and medical services, the Kenyan educational system seemed to lag behind. Further, recent report by the National Council for Science and Technology (NCST, 2010) indicate that computer use in Kenyan classrooms is still in its early phases, and conclude that the perceptions and experiences of teachers and administrators do play an important role in the use of computers in Kenyan classrooms. NCST (2010), stated that challenges facing implementation of computer education in Kenya included;

• Lack of qualified teachers to teach ICT in schools. The demand for ICT learning has been tremendous and the number of teachers who were trained to teach ICT cannot met the demand. There are more students willing to be taught computing skills than there are teachers to transfer the skills.

• Lack of computers; computers are still very expensive and despite spirited efforts by the government agencies, NGO, corporate organizations and individuals to donate computers to as

many schools as possible, there still remain a big percentage of the schools unable to purchase computers for use by their pupils.

• Lack of electricity; many schools are still not yet connected to electricity; Kenya being a developing country, the government had not been able to connect all parts of the country to the national electricity grid. Consequently, those schools that fell under such areas were left handicapped and might not be able to offer computer studies. Broken down computers; while a good number of schools have benefited from donated used computers, they have not been adequately equipped with the same on maintenance and repair; hence, it was very common to see a school's computer lab full of broken down computers, some were repaired and some not. This had actually been a major problem, and the government put strict measures on any person, NGO or corporate bodies willing to donate second hand computers.

The challenges above might also be applicable to the Zambian situation. For example, in his study, Bwalya (2015) state that the biggest challenge facing potential ICT consumers in Zambia is the high cost of equipment and broadband services. He further said that ICT equipment is already expensive for the citizens of a country with a per capita Gross National Product (GNP) which only just exceed the cost of a single personal computer. The cost of computers and peripherals such as modems is pushed up further by high rates of taxation. Additionally, the cost of broadband services is high amounting to US$100 per month, compared with around US$20 in Europe. As a result, many schools fail to offer adequate lessons in Computer Studies. He further said that there is general apathy and lack of interest by teachers to venture into the latest technology which is quite evident especially in rural schools (Bwalya, 2015). As a result the academic performance of learners may be affected. This study may fill the gap by investigating the academic performance of learners in Computer Studies at Chamunda Secondary School in Masaiti District, Zambia

2.6 Summary

As observed from the related literature from various scholars and past researchers collected from secondary sources i.e. textbooks, internet and journals, it shows to a large extent that effective computer studies teaching and learning in developing countries is still minimal in secondary schools. As regards the resources and infrastructure used in teaching of the computer studies, most studies indicate that to a large extent, costs of these are very high and thus affect effective teaching and learning of computer studies in secondary schools is not effective. Some of the resources and infrastructure in a number of schools for teaching of computer studies in secondary schools in Zambia are inadequate or completely unavailable. There are inadequate numbers of computers in schools. For those schools that have some computers, the computer to student ratio is also very high. In the case of teachers' skills development and training, most scholars and past studies suggest that a large extent of these variables positively affect computer studies teaching and learning. Further, lack of skilled teachers also affects the effective teaching of the computer studies subject. Lastly, remedies or ways to improve the performance of learners in computer studies has been highlighted. However, no study has been done in Masaiti district on the performance of learners in computer studies subject, the gap that this study intends to fill. This study therefore investigates the academic performance of Grade 9 learners in computer studies subject in Masaiti specifically Chamunda Secondary School.

CHAPTER THREE: METHODOLOGY

3.0 Overview

This chapter describes the methods that were used in this study. It explains the research design, the study population, sampling method and procedures, data collection procedures and instruments, data analysis, limitations and ethical issues.

3.1 Study Design

A mixed method was adopted, making use of a convergent concurrent parallel design (triangulations). The qualitative methods used interviews, while the quantitative used a descriptive cross sectional study in strategically chosen secondary school of Masaiti District. In this study, mixed methods design was chosen because of the complexity of the research objectives; based on this premise it was vital. Mixing various methods allows the possibility of getting a more accurate picture of the phenomenon, while different methods help to answer slightly different questions (Todd, Nerlich & McKeown, 2004); provided for a greater diversity of views (Teddle & Tashakkori, 2003) and helped to understand complex phenomena (Newman, Ridenour, Newman, & DeMarco Jr., 2003).

3.2 Study Setting

The study was conducted at Chamunda Secondary School in Masaiti District. This school was chosen based on the premise that it is centrally located in Masaiti District and it has both boys and girls. At the same time it is important to have a comparison of Computer Studies performance between boys and girl. This is because there is a suggestion in literature that boys tend to perform better than girls in Computer Studies. Chamunda Secondary is a school for both boys and girls that

is committed to providing equitable learning environment that embraces intellectual, physical, social, moral and spiritual growth.

3.3 Study Population

Chamunda was the main study unit for my study and it is government owned. Teachers merely responded on behalf of their school and the progress of Computer Studies in their school and how learners have performed in Computer Studies since 2015. I chose to investigate the performance of learners in Computer Studies at Grade 9 level because learners at this level have had experienced enough to express views relating to this subject. Results also would be concrete as they had been at secondary for two years. More over most jobs now embrace the use of ICT in their daily activities. So pupils should have basic knowledge on ICT to be accepted in the world of work in the 21st century as an added advantage. Hence, pupils in Grade 9 from Chamunda Secondary school responded to both qualitative and quantitative questions, but also a desk review analysis was done on results in Computer Studies of the 2015- 2017 pupils who sat for the exam.

3.4 Sample Size Determination

A sample is of a population selected to participate in a research study with 7% as an education outcome for those that utilized ICT (Livingstone, Sonia, 2012). A sample size of 100 learners was determined using the following formula:

$$\frac{N = Z^2 \times P(1-P)}{D^2}$$

Where:

N= total number of people to be interviewed

P= proportion of prevalence estimate of factor under study

Z= 1.96 reliability coefficient for the normal distribution to the significant level of 0.05

D= 0.05 degrees of precision at 955 level of confidence

$\underline{N= Z^2 \text{ X } P(1-P)} = 1.96^2\text{X } 0.07(1-0.07 = 100$

$D^2 \qquad\qquad (0.05)^2$

All from Chamunda Secondary School.

In addition, focus group discussions (FGDs) were used to collect additional data from learners from Chamunda Secondary. Each FGDs comprised of an initial sample size of 6 participants, which made a total of 12 participants from the school. Then one key informant from the school was considered. This sample size was based on the concept of theoretical saturation, meaning if the theory reached beyond the given numbers the sample size would increase respectively. Therefore initially a total of 14 participants were considered for the qualitative part. A combined sample size was therefore 113 (i.e. 100+13).

3.5 Sampling Procedure

The researcher used more of non-random sampling methods to select target unit. Chamunda Secondary School was purposefully selected as a study site on the basis of convenient to the researcher. Therefore, a convenient sampling procedure was employed in this study and this is because some pupils as well as teachers were not present at the time of data collection and only those that were available were considered. This method was employed for both the quantitative and qualitative component.

3.6 Data collection techniques

Since the study was a mixed methods research, a triangulation of perspectives was carried out. The study solicited teacher and learner perspectives and those of the head teacher (investigating any institutional and infrastructure constraints) and how this influence technology use and later on having an impact on learner performance in Computer Studies. An in-depth interview was conducted to gain more insight into the concept. The triangulation methods ensured a designed balanced self-report (surveys) with the direct observation and interviews along with technical measurements that were gathered from the study. And since the study collected qualitative and quantitative data for triangulation purposes, a mixed method techniques was used. These included;

Desk review: some socio-economic and demographic data were collected through desk review of previous performance of Grade 9 at Chamunda Secondary School. The review of secondary data provided predominant Computer Studies learning outcomes, education status, enrolment and exam attendance data and number of teachers at this school.

Focus group discussions (FGDs): FDGs interviews with Grade 9 pupils that have been utilizing ICT at the respective school were conducted. There were two groups. A group consisted of 6, the interviews asked questions relating to how the equipment helped to support learning Computer Studies among pupils. A focus group discussion guide and recorders were used to collect qualitative data from participants.

Key Informant Interviews (KIIs): A key informant interview guide was used to collect in-depth qualitative data from key informants from the school targeting a head teacher and deputy or any teacher in management to give an over view of challenges of Computer Studies and students performance. FDGs and A teacher interview was carried out based on the methods of theoretical saturations, the interview bordered on experiences with the devices, ease of use, constraints,

support needed, perceived change, support for collaborative learning and whether this make education outcomes of pupils better or not; also questions bordered on challenges encountered in the use of ICT, trend of performance over the years since the introduction of Computer Studies in secondary schools focusing on their experiences and perceived outcomes of the subject; Classroom observations of Computer classes was also done, therefore field noted was collected and photographs were taken as well.

Open ended questionnaire; students of Computer Studies responded to an open ended set of questionnaire to answer questions on ICT infrastructure and availability of computers in class and other variables.

3.7 Reliability and Validity of Quantitative data

3.7.1 Reliability

Devellis (1991), as cited by Mugenda, (2004) evaluates that reliability is the proportion of variance attributable to the time measurement of a variable and estimates the consistency of such measurement over time from a research instrument. It is a measure of the degree to which a research instrument would yield the same results or data after repeated trials. In order to ensure reliability the researcher issued the questionnaires to the respondents, collected them and checked on the responses.

3.7.2 Validity

Validity establishes the relationship between the data and the variable or construct of interest. Its estimates how accurately the data obtained in a study represents a given variable or construct in the study Mugenda, (2004). The researcher will visit the sampled students to make them aware of the need of the study. This ensured validity of the data collected.

3.8 Trustworthiness of the qualitative data

Trustworthiness refers to a series of techniques used to ensure rigor of qualitative designs (Guba, 1981). Polit & Beck (2003) postulates that trustworthiness of qualitative data is measured through credibility, transferability, dependability and confirmability. To ensure trustworthiness in the study, the following steps were taken.

Credibility: In order to establish confidence in the truth of the findings, the context of the narration was reviewed to ensure the participants addressed questions to be asked, the richness of the narration was also compared with the main themes in terms of consistence and the explanation they supported.

Transferability: was assured as the researcher gave a detailed process of the qualitative data collection method, procedure and analysis to ensure repeatability of the study. This was also achieved by giving a description of the text, participant's characteristics and excerpts.

Dependability: To ensure dependability, the researcher first followed up unique results of the quantitative part by formulating qualitative questions to follow up on quantitative.

Confirmability: Data was audited to ensure they reflected the participant's perspectives and experiences. This was done by comparing the questions that were asked with the answers given. (Lincoln & Guba, 1985).

3.9 Data Management

Data management for the study is one of the most important aspects. Hence data management looked at each of the components mentioned above;

- Development of data collection instruments: Development of the data collection instruments were done in conformity with operationalized study variables and followed universal standard guidelines for questionnaire design.

3.10 Data Analysis

Quantitative data: Data analysis was done using SPSS. For Univariate descriptive data, SPSS was used to generate frequency tables and measures of dispersion. Bivariate analysis was used to measure influence of specific variables on performance. Inferential statistics was used to assess the strength of relationships between specific categorical variables (Using Chi-square 2x 2 table at =<0.05 alpha. Presentation of results used different charts, graphs and frequency tables; excel generated and SPSS.

Qualitative data: Each data collector transcribed verbatim from audio to written language of analysis (English). The analysis was done manually using deductive coding to analyze qualitative data (also called: external codes or pre-set codes) .These was determined prior to analysis generally to test and confirm selected variables. Coding themes were created as a way to group together clusters of codes. Development of themes were based on the four principles; Firstly-Consistency: ideas that recur Second-Patterns: ideas that recur predictably Third-Contradictions: between ideas, patterns, respondents, between what you might expect to find and what you do find and Fourth-Salience: ideas that appear especially important to respondents, regardless of their frequency.

3.11 Ethical Considerations

Permission to conduct the study was sought from the District Education Board Secretaries (DEBS) office as well as from the Head teacher of Chamunda Secondary School. An informed consent was signed by all participants before interviews. A written informed consent was read and signed before each interview. It was made clear in the consent form that the study would not coerce any

participants and that they were free to withdraw from interviews at any time they felt like. The consent also addressed the following issues; risks and discomforts, potential benefits, confidentiality, subject's rights and right to refuse or withdraw. Notifications for data collection was done through the DEBs office that sent a notice to target school prior to data collection.

Confidentiality: The participants were guaranteed that the collected information would not be made available to anyone who is not involved in the study and it will remain confidential for the purposes it is intended for.

Permission: The researcher sought permission to carry out the research from the University.

Informed consent: The prospective research participants were fully informed about the procedures involved in the research and were asked to give their consent to participate.

Anonymity: The participants remained anonymous throughout the study and even to the researchers themselves to guarantee privacy.

3.12 Study Limitations

Although this research was carefully prepared, there were however some limitations that arised from this study. Firstly, the research was conducted in just one district with only one school; the findings could not be generalized to other districts and later other schools. Also the period in which to carry out this research was not adequate to yield valid findings. It would be better if it was done in a longer time. Secondly, the population of the study sample was small factoring in a period required to carry out this important research. Thirdly, since the questionnaire was designed to measure the performance of learners in computer studies it might be difficult to measure. This is because it may have some bias from the respondents as they come from these very places where research was done from and hence, they may give sided views. However, notwithstanding these

limitations, the study followed the principles of interpretation research which is certainly not to seek generalization from the setting of population but rather to supply an understanding of the deeper structure of the phenomenon of the study.

3.13 Summary

This chapter discussed study design, study setting, study population, sample size and sampling procedure. It also discussed how data was collected, the instruments that were used and above all the reliability of the instruments that were used in data collection. Lastly, it also discussed limitations and ethical considerations.

CHAPTER FOUR: RESULTS

4.0 Overview

This chapter presents the findings of the study. The main objective of the study was to investigate the academic performance of learners in Computer Studies at Chamunda Secondary School in Masaiti District Zambia. The specific objectives of the study were to establish the types of ICT resources and infrastructure available for teaching and learning Computer Studies, to establish the availability of trained teachers to teach Computer Studies, to investigate the performance of Grade 9 learners in Computer Studies, to explore perception of Grade 9 learners towards Computer Studies and to identify challenges learners face as they learn Computer Studies.

4.1 Types of ICT Resources and Infrastructure Available for Teaching and Learning

The first objective was to establish the types of ICT resources and infrastructure available for teaching and learning Computer Studies at Chamunda Secondary School. To meet this objective, data was collected through an Observation Checklist. The following table presents a summary of the main types of resources and infrastructure available at Chamunda Secondary School for teaching and learning.

Table 1: Types of ICT resources and infrastructure at Chamunda Secondary School

Item	Number
Number of computers in working condition	10
Number of computers not in working condition	15
Number of computer laboratories	0
Number of pupils per class in Computer Studies	25
Ratio of computers to pupils	1-3
Electricity availability at Chamunda Secondary	Yes
Internet connectivity at Chamunda Secondary	No
Human Resource (teachers)	3
Textbooks	1

4.2 Availability of Trained Teachers to teach Computer Studies

Objective number two was to establish the availability of trained teachers to teach Computer Studies. Data collection was done through interviews. Chamunda has no teachers qualified to teach Computer Studies. All of them are trained to teach other subjects but merely teach on voluntary basis. This in itself has contributed to the academic performance of learners in Computer Studies.

4.3 Academic Performance of Grade 9 Learners at Chamunda Secondary School

Objective number 3 was to investigate the academic performance of Grade 9 learners at Chamunda Secondary School from 2015 to 2017.A review of Grade 9's performance in Computer Studies was conducted and it was based on the 2015, 2016 and 2017 academic years Final Results compiled by Examination Council of Zambia. The performance of students in Computer Studies has a decreasing trend for the past years in terms of pass rate. The pass rate in 2015 was 56%, while the pass rate in 2016 38% and in 2017 it was 23%. On average boys have been performing much better than girls over the period under review. At the same time the number of students doing

computer studies has been increasing over the last 3 years. In 2015, a total of eighty-seven (87) were enrolled in Computer Studies; in 2016 eighty-six (86) students were enrolled in Computer Studies; and in 2017 the number of students doing Computer Studies increased to 111 students. . Data was collected through analysis of Grade 9 final results compiled by Examination Council of Zambia. The table below summarizes Grade 9 final results from 2015 to 2017.

Table 2: Computer Studies Performance of Grade 9 for 2015, 2016 and 2017 academic years

2015			2016			2017		
Total	Boys	Girls	Total	Boys	Girls	Total	Boys	Girls
87	29	20	86	21	12	111	13	12
56%	33%	23%	38%	24%	14%	23%	12%	11%

4.4 Demographic Characteristics

Objective number 5 was to identify the challenges learners face as they learn Computer Studies This section presents the socio-demographic information of the pupils at Chamunda Basic School presented in bar graphs, charts and tables. The study found it crucial to ascertain the said information since it was deemed that such information was a clear indicator of factors that may influence one's academic performance. The analysis relied on this information of the respondents so as to categorize the different results according to their acquaintance and responses.

The survey collected demographic data, including age, gender, presented in Table 1. The median age of respondents was M = 15.04 years of age. The male respondents were 62 % with 38% being female, being no significant difference of gender, thereby limiting one possible area of bias.

4.3.1 Distribution by Gender

The study sought to establish the distribution by gender of the respondents in selection of the sample. It was observed that majority (62%) of the respondents were male while (38 %), of the sample were female. The table shows descriptive statistics for the sample population under study

Table: 3 Demographic Profiles of participants

VARIABLE	Overall n=100	Frequency	Percent
SOCIODEMOGRAPHIC			
Age in Year: Mean/ standard deviation	13/2.1		
Sex: Male Female	 62 38	 62 38	 62% 38%
Where first encountered computers Primary Secondary Home	 1 (1) 70 18 (7.53) 28 (11.72)	 1 70 18 (8.00) 28 (12.44)	 1% 70% 0 0
Years of use of computers/related technologies: Mean/ Standard deviation	1/0.9		
Hours per week computer available: Mean/Standard deviation	2/0.3		
Hours per week internet available in school: Mean/ standard deviation	1/0.1		
Area of use of computer in school			
Computer lab	33	33	33%
Library	0	0	0%
Class room	0	0	0%
Others	67	67	67%

Some students had accessibility to computers while other not, and this was a significance difference. Some students had access to computers from their homes (5%), those accessing it

through it internet were (computer oriented crime) (30%) and those that never had access were (65%).

4.4 Factors Associated with Computer Studies Performance

The Six Social Economic Status (SES) components were used to establish a relation to computer use. A one-way ANOVA was used to assess the differences among groups on computer study (see Table 3). Home computer exposure was the most commonly used SES component (k = 30), followed by school computer use (k = 15), internet cafe (k = 14), The Q statistic of homogeneity indicated that the type of SES component significantly moderated the relation between SES and Computer Studies academic achievement, $Q_b(5, 79) = 587.14$, $p < .001$. A weighted ANOVA revealed that the average ES was .28 school computer use. SES measures based on "home resources" produced the highest mean ES (.51).25. The follow-up tests consisted of all pairwise comparisons among the six types of SES indicators. Pairwise comparisons were conducted using Bonferroni adjusted alpha levels of .003 per test (.05/15). Each of the pairwise comparisons between the three most commonly used indicators (Sex and age) were nonsignificant. Other pairwise comparisons, however, were all statistically significant at $p < .001$.

To estimate the effect of the pass rate of Computer Studies academic performance measure on the relation between SES and academic achievement, a separate database was constructed using studies that reported correlations on single or multiple academic achievement variables. In total, there were 167 independent correlations with a mean ES of .29. As presented in Table 3, there were four different measures used to assess academic achievement: 2015 pass rate (k = 57), 2016 pass rate (k = 58) and 2017 pass rate (k = 7). The choice of academic achievement measure was a significant moderator of the correlation between SES and academic achievement, $Q_b(4, 167) = 884.21$, $p <.001$.

Table 4;Association of Social Economic Status (SES) and academic performance

Moderator	Categories	*K*	Q-*Between*	Mean ES	−95% CI	+95% CI
Type of SES Components		79	587.14*	.32	.32	.33
	Age	30		.30	.30	.31
	Sex	15		.28	.26	.29
	Level of access	14		.29	.27	.31
	Electricity	10		.33	.32	.34
	Use of internet	6		.25	.22	.28
	Computer software use	4		.51	.49	.53
SES range Restriction		102	238.65*	.32	.32	.33
	No computers	78		.35	.35	.36
	Number of Teachers	15		.28	.28	.29
	Challenges of ICT	9		.24	.22	.27
SES internet source		62	775.55*	.29	.28	.30
	Home	31		.38	.37	.39
	Internet	18		.19	.19	.20
	School	13		.24	.21	.26
Achievement Measures		167	884.21*	.29	.28	.29
	2015 pass rate	45		.22	.22	.23
	2016 pass rate	58		.32	.32	.33
	2017 pass rate	57		.35	.34	.36

Note. k = number of effect sizes; ES = effect size; CI = confidence interval for the average value of ES.

*$p < .005$.

4.5 Computer Proficiency among students

The proficiency of students was assessed using the following scale; excellent, good, fair and no expertise. The excellent use included use of email, internet, surfing and searching and other elements, so those who scored excellent were 1%, the very good scale included able to use all the skills mentioned in the excellent category and number of students who were in this category were 2%, while those in the good category which is able to use office application, word processing and

spread sheet, 8% students responded to this. The category with the highest number of responses existed in the fair category which is able to operate basic computer function and word processing; they were 53% respondents to this.

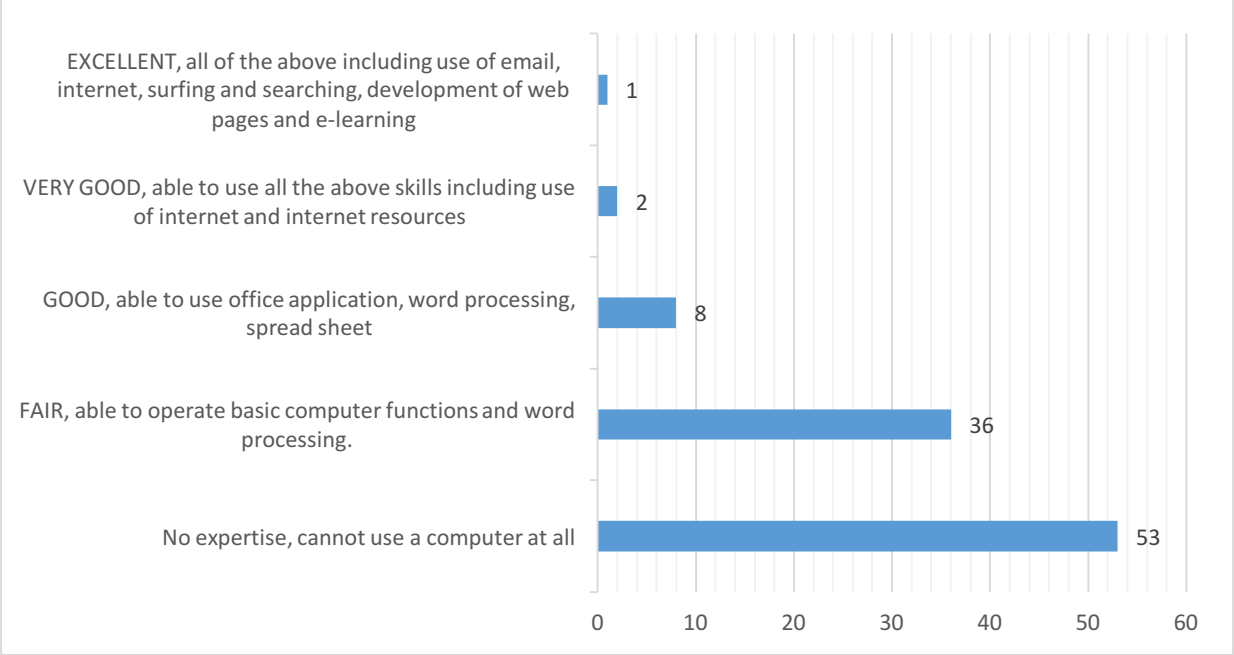

Figure 2: distribution of computer competency

The computer skills among students were assessed using selected computer programs: word processing, spread sheet, databases, presentation tool and internet. In word processing 76% students had basic understanding, followed by those who never had understanding, while when it came to use of spread sheets, the majority of students 89% had no skills and only 11 of the sediments had some basic skills. No student had any skill in databases and presentation tools. For internet skills, 90 students had basic skills in use of internet and only 5 never had any skills.

Table 5:Computer skills of the students (n=100)

Computer Program	None%	Basic%	Intermediate%	Proficient%
Word processing	15	76	4	5
Spread sheet	89	11	0	0
Databases	100	0	0	0
Presentation tool	100	0	0	0
Internet	5	90	5	0

Table 6 below shows computer use and learning skills among participants, some statement were administered and the responses were to be "Yes, No and Not sure". Forty percent of students indicated that they computers to help them to learn other subject, while 50% use computers to assist them in answering questions, only 60% were taking Computer studies as a subject, use of computers to learn change the attitude towards the subject had 67% students indicating so. 30% of participants were using internet to share knowledge with other learners and 20% were using computer software to help them learn on their own.

Table 6:Computer use and learning among students

Statement on computer use	**Yes %**	**No %**	**Not sure %**
Does using computer to learn change your attitude towards the subject?	67	20	13
Do you take computer studies as a subject?	60	40	25
Do you use computers to assist you in answering questions?	50	20	25
Do you use computers to help you learn other subjects?	34	30	40
Do you use internet to share knowledge with other learners?	30	30	40
Do you use computer software to help you learn on your own?	20	70	10
Have you ever used computers/internet to search for materials on emerging issues like drug abuse	20	75	5

4.7 ICT Infrastructure for Computer studies at Chamunda Secondary Schools

The tables below represent statement on ICT infrastructure and other computer related activities. The statement uses a 5 point Likert scale that ranged from strongly disagree, disagree, undecided, agree and strongly agree. Most of the students agreed that the school allowed learners to have access to computers.

Table 7: Importance of ICT infrastructure and access

Statements	Strongly disagree%	Disagree%	Undecided%	Agree%	Strongly agree%
The school allows access of computers to learners	12	4	6	70	8
The number of computers influence the average hours per week computers are available to you.	0	0	0	10	90
Level of access and use of e-mail and educational website enhances learning/teaching.	3	3	12	80	2

In table 7, it shows the computer studies teaching. 75% of the respondents strongly disagree that number of hours used in teaching computer studies lessons is sufficient. 80% of the respondents said that there was a presence of educational software such as Microsoft Power Point and all the respondents indicate that Computer studies is taught as a subject.

Table 8: Computer studies teaching in schools

Statements	Strongly disagree %	Disagree%	Undecided%	Agree %	Strongly agree%
Number of hours used in teaching computer studies lessons is sufficient.	75	5	10	5	5
There is presence of educational software such as Microsoft Power Point.	0	5	5	10	80
Computer Studies is taught as a subject.	0	0	0	0	100

4.8 Importance and Benefits of computer studies

The table 9 and 10 show importance of ICT training and teacher experience to support teaching and learning Computer Studies and benefit of using ICT in enhancing skills and competencies of learners in computer studies respectively. 80 % of participants agreed that the number of teachers with ICT training affect the use of computers in teaching and learning of computer studies, while 81% agree that the level of expertise in ICT directly influence quality of teaching computer studies and all the participants strongly disagree that there is use of internet for teaching and learning purpose.

Table 9: Importance of ICT training and teacher experience to support teaching and learning of computer studies

Statement	Strongly disagree %	Disagree %	Undecided %	Strongly agree%	Agree %
The number of teachers with ICT training affect the use of computers in teaching and learning of computer studies	0	5	5	10	80
The level of expertise in ICT directly influence quality of teaching computer studies	0	5	5	9	81
There is use of internet for teaching and learning purposes.	100	0	0	0	0

On the benefit on the use of ICT in enhancing skills and competences of learners of computer studies majority of the participants 90% agreed that use of ICT contributed to learner motivation to learn computer studies. While all the participants agreed that ICT enhances change in the way computer studies is taught in schools and lastly 90% agree to use ICT improves teaching and learning confidence.

Table 10: Benefit of using ICT in enhancing skills and competencies of learners in computer studies

Statement	Strongly disagree%	Disagree %	Undecided%	Strongly agree%	Agree%
Use of ICT contribute to learner motivation for learning computer studies	0	0	0	10	90
ICT enhances change in the way computer studies is taught	0	0	0	0	100
Use of ICT improves teaching and learning confidence	0	0	5	5	90

4.9 Challenges in the use of ICT among learners

There are many challenges affecting teaching and learning of Computer Studies and how this may consequently affect the performance of learners in schools. Some of the revealed challenges in this study; 80% participants indicated that policy and strategy of government and school enhances use of computers in teaching and learning of computer studies. 80% strongly disagree that the number of computers available to the school is sufficient for teaching and learning of computer studies.

Table 11: Challenges affecting teaching and learning of computer studies

Statement	Strongly disagree	Disagree	Undecided	Strongly agree	Disagree
Policy and strategy of government and school enhances use of computers in teaching and learning of computer studies	5	5	5	80	5
The number of computers available to the school is sufficient for teaching and learning of computer studies	80	10	10	0	0

When it came ICT supporting teaching and learning of computer studies. 40% disagree that there is an increase in teacher learner collaboration, while 70% of the participant's indicated that the

level of ICT use in computer studies has a direct impact on learner performance in examinations. Participants indicated that 80% use of ICT in computer studies has a positive impact on learner performance in examination.

Table 12: Use of ICT in supporting teaching and learning of computer studies

Statement	Strongly disagree%	Disagree %	Undecided %	Agree %	Strongly agree%
There is increase in teacher learner collaboration	30	40	20	5	5
The level of ICT use in computer studies has a direct impact on learner performance in examination	0	5	5	20	70
Use of ICT in computer studies has a positive impact on learner performance in examination	0	0	10	10	80
ICT has an effect on perception and attitudes of learners in learning computer studies	5	5	20	40	30

4.10 Findings from interviews

4.10.1 Introduction

This section presents the results of the content analysis of the semi- structured interviews of in-depth and focus group interviews which attempted to answer objective four and five of the study namely, to explore perception of Computer Studies learning among learners and to identify challenges learners face as they learn Computer Studies. The description of the participants is followed by the presentation of the predetermined and emerging themes, derived from the thematic analysis. In the presentation of the findings, verbatim quotations were used to illustrate the themes and sub-themes. To ensure anonymity and confidentiality of the participants, cryptogram **D1** to **D14** were employed to present data for participants. The quotations are in italics and three ellipsis points (…) were used to indicate unnecessary material that was omitted.

4.10.2 Challenges faced by teachers

This study found that both teachers and students experience a number of challenges that impede the use of computers for teaching and learning. Teachers expressed computer illiteracy, lack of training to use computers and an overloaded syllabus as the main problems that prevent their use of computers to teach. On the other hand, students expressed poor access, poor computer skills and late onset of use of computers as some of the reasons why they do not use computers to learn The responses of teachers in the open ended questions indicates that teachers were concerned about the depth and breadth of their own computing subject knowledge, and in particular that of computer studies. Teachers express the worry *"...that my own subject knowledge is not always secure"*. They also report that they have spent hours of their own time trying to upgrade the skill in the subject:

D09: *"...sometimes I spend my own time trying to develop my competencies so that I can deliver quality lessons for students because there is limited material and exposure to computers in our setting, especially internet is a problem ... "*

Teachers report that they have attended many training courses to build up their knowledge but still lack confidence in solving problem that students would come across:

D02: *"At the moment it is my own foundation knowledge about the construction of solutions to problems I have worked through several training booklets and courses but it is just the ability to solve problems that the students would come across in the system that they are using."*

Differentiation is also a concern for teachers. In some cases this is because students have differing experience of computer studies based on their prior exposure:

D10: *"The different abilities of students especially when they come in from primary… some are well-versed in computer studies and other not and this is a difficult when you try to teach them."*

In other cases, teachers referred to some students progressing faster than others and the gap between their students widening, making more differentiation necessary:

D11: *"The gap between those that engage and achieve very quickly grows at an alarming rate. I have found the ability gap to be much bigger than any other subject or topic and it seems to be down to the way in which the children think." without losing the less able pupils..."*

Teachers need to find pedagogical approaches that support their students. They express the challenge of developing, promoting and sustaining problem-solving strategies and techniques amongst the students they teach. They demonstrate their desire to find ways to help students work through problems rather than give up:

D02: *"…finding ways to encourage pupils to logically think through their problems, rather than ask for assistance at the first sign of difficulty."*

Although not frequently mentioned, some teachers referred to literacy difficulties as a stumbling block when learning to code:

D03: *"Literacy is a big issue when teaching computing; this has been the main stumbling block when trying to introduce variables, functions etc. "*

4.11 Challenges relating to resources

The analysis of teachers' qualitative responses, highlight a variety of resource related challenges which include possessing adequate hardware and software resources to teach the subject, sufficient funding to purchase resources for a new subject, and software resources correctly installed, configured and maintained to run correctly on the platform that the school operates.

4.12 Availability and accessibility of computer studies resources

This study found that computers were available and accessible to teachers and learners but were not largely being employed in the teaching and learning of Computer Studies. This implies that availability of computers was not the only challenge although it was previously viewed as a big challenge.

D05: *"we face a big challenge for a lack of computers in our schools and this makes it difficult for us to learn computer studies"*

4.13 Variations in the students' use of ICT

There were some variations in the students' voices about the frequency of use of ICT. For example, one group of students described ICT as being used intensively on a daily basis:

FGD-D03: *"if you don´t bring the laptop you won't be able to do anything because you won´t get tasks on paper"*

In contrast, a group of students in the same focus group discussion estimated the time of ICT use to between three and four hours per week. However, the majority of the students in the groups said that they used ICT at school at least four out of five days a week. According to the students, the use of ICT was either decided on by the subject teacher or themselves. However, some students stressed that their teachers ought to decide when to use ICT:

4.14 Summary of the Chapter

Results of the qualitative data helped to explore perception of Computer Studies learning among learners and to identify challenges learners face as they learn Computer Studies. Participants felt that certain infrastructural issues need to be addressed in schools to address the challenges that exist in this areas. Participants were concerned about the absence about the unavailability of

computers in schools of the. Suggestions were mentioned on the improvement and assessment on the need for updates on current trends in computer studies

CHAPTER FIVE: DISCUSSION

5.0 An overview

This chapter discusses the findings of this study. The study aimed at investigating the academic performance of learners in Computer Studies at Chamunda Secondary School in Masaiti District. This chapter presents the discussions under the following headings: Types of ICT resources and infrastructure available for teaching and learning Computer Studies, the availability of trained teachers to teach Computer Studies, the performance of Grade 9 learners in Computer Studies, the perception of Grade 9 learners towards Computer Studies and challenges learners face as they learn Computer Studies.

5.1 Types of ICT resources and infrastructure available for teaching and learning Computer Studies

The ***first objective*** of this study was to establish the types of ICT resources and infrastructure available for teaching and learning Computer Studies at Chamunda Secondary School. The results on Tables 4.1.0 of chapter four showed that the school has 10 computers in good working condition and 15 computers are broken down. Enough computers are needed for carrying out practical lessons in Computer Studies. There are 25 pupils per class in Computer Studies. So on average the ratio of computer ratio to students is 1:3 students per computer. At least there needs to be one computer per child so that practical lessons in computer studies are conducted successfully. For the 10 computers that the school has, there is no computer laboratory for safe keeping of computers which makes computers to be easily being tempered with. There are no trained teachers in Computer Studies at Chamunda Secondary School but there are volunteer teachers trained in Business Studies Mathematics. Hence, they find it difficult to teach some topics which they are not conversant with. One teacher said that when she does not know how to go about a particular

topic, she skips it to avoid embarrassment from pupils. This means when a lesson is skipped, learners will not have the skills needed and this largely contributes to the poor performance of learners in Computer Studies Subject at Grade 9. Most of the students agreed that the school allows learners to have access to computers, but it most of them at the same time 90% indicated that the number of computers influence the average number of hours per week a computer should be available to them.

Table 6 of chapter four also showed that 95% of the pupils strongly disagreed that there were enough computers available in the school, 100% of the pupils strongly agreed that electricity was available though it is interrupted at times due to load shedding by Zambia Electricity Company. This affects the use of computers at times until power is restored as the school does not have a generator. 100% of the pupils strongly agreed that internet was not available at the school, 75% of the respondents strongly disagree that the number of hours used in teaching computer studies lessons is insufficient and this leads to some topics not being tackled. As a result it contributes to the poor performance in final examinations in Computer Studies. 80% of the respondents say there is a presence of educational software such as Microsoft power point and all the respondents indicated that Computer studies is taught as a subject at Chamunda Secondary School to all Grade 9 learners.

On the other hand, three Computer Studies teachers and the Head teacher revealed that management at this school were concerned with the shortage of ICT infrastructure equipment such as computers, printers, furniture, wiring, and enough computer lab. One of the computer studies teachers declared that none of the pupils has their own computer during learning but they have to share one and be in groups of three and this disturbs the teaching and learning of ICT as it requires every pupil to concentrate and practice on the computer what they are learning. The head of school also explained the computers has no free time accessibility for pupils who want to practice at their

own time due to shortage of computers and smallness of where the computers are kept. Another computer studies teacher also elucidated that pupil's lack of practice during the lesson cause poor performance in Computer Studies as they fail to remember and master the concepts and operation of certain software due to lack of practice. This study revealed that proper infrastructure and computer lab are vital for safe keeping of computers in the school. But computers alone cannot enhance the academic performance of learners in Computer Studies.

5.2 The availability of trained teachers to teach Computer Studies

The **second objective** was to establish the availability of trained teachers to teach Computer Studies at Chamunda Secondary School. This Study revealed that there are three teachers at Chamunda Secondary School who help to teach Computer Studies all of whom are not trained in the subject. Two female teachers are trained to teach Computer Studies and a male teacher is trained to teach Mathematics. This presents a controversy when it comes to teaching Computer Studies as teachers do not have the skills needed to teach the subject effectively. This becomes the major contributor to the poor performance of learners at Grade 9 in final examination in Computer Studies at Chamunda Secondary School. Hennesssy (2010) supports that teacher's ICT skills and access to professional development play a significant role in conducting successful lessons in Computer Studies. For efficient teaching of Computer Studies to learners, there should be adequate personnel that have correct skills to handle the subject well. Table 3 of chapter four shows that 60% of the pupils agreed that teachers showed partially knowledgeable ICT skills during computer studies lesson while 40% of the pupils strongly agreed that partially knowledgeable ICT skills during computer studies lesson. 100% of the pupils strongly disagreed that teachers showed expertise knowledgeable in ICT skills during computer studies lessons. 60% of the pupils agreed that teachers showed barely knowledgeable ICT skills during computer studies lessons and

100% of the pupils strongly disagreed that teachers show unknowledgeable ICT skills during computer studies lesson and do not use computers when teaching.

This study revealed that training and teacher experience in ICT support teaching and learning Computer Studies and has a lot of benefit using ICT in enhancing skills and competencies of learners in computer studies respectively. 80 % of pupils agreed that the number of teachers with ICT training affect the use of computers in teaching and learning of computer studies, while 81% agree that the level of expertise in ICT directly influence quality of teaching computer studies and all the pupils strongly disagreed that there is use of internet for teaching and learning purpose.

The results also revealed that the head teacher at this school was concerned with the shortage of ICT trained teachers. The school is big with about 500 pupils rationing to only three teachers of ICT. The head of school said that the three ICT teachers also need training as their qualifications show other teaching subjects and not ICT. These teachers were at Chamunda in that they did some partial certificate in ICT and have some knowledge in computer use. The Head teacher seriously pointed on the need by the government of the republic of Zambia to engage itself in the training of ICT teachers as there is lack of ICT trained teachers in public schools.

The teachers explained that the number of pupils is so large that the three of them cannot manage to handle all the school pupils efficiently. They attributed pupil's poor performance in Computer Studies to this as they don't spend enough time with the pupils teaching them Computer Studies as a subject as they also have other duties to do in the school. The head teacher said that other teachers have resisted volunteering to teach computer studies as they are not trained and hence some grades they do not learn computer studies due to shortage of trained teachers. The head teacher explained that we could like to see a situation where a child starts to learn computer studies from grade one up to grade nine so that when they come to Secondary School it is easy for them to grasp some concepts easily, but it has not been like this due to shortage of trained teachers and

ICT infrastructure. Mwaniki (2007) also identifies low number of qualified teachers being among the factors that adversely affected the performance of learners in Computer Studies. Successful teaching of Computer Studies can only be assured through qualified personnel in the subject. This study established that there is lack of trained ICT teachers at Chamunda Secondary School in Masaiti District of Zambia and this attributes to the poor performance of Grade 9 learners in computer studies at final examination.

5.3 The performance of Grade 9 learners in Computer Studies

The **third objective** was to investigate the performance of Grade 9 learners in Computer Studies at Chamunda Secondary School. A reveal of Examination Council of Zambia archives final grade 9 results on the student's performance in Computer Studies was done and it was based on the 2015, 2016 and 2017 academic years. The performance of students in Computer Studies has a decreasing trend for the past years in terms of pass rate. The pass rate in 2015 was 33% boys and 23% girls giving a total of 56%. In 2016 the pass rate was 24% for boys and 14% for girls giving a total of 38%. In 2017 the pass rate was 12% boys and 11% girls giving a total of 23%. On average boys have been performing much better than girls over the years. At the same time the number of students doing computer studies has been increasing over the last 3 years. In 2015 87 was the total number of those that were doing Computer Studies, in 2016 about 86 students were doing Computer Studies. In 2017 the number of those doing Computer Studies was increased to 111 students. As presented in Table 4, there were four different measures used to assess academic achievement: 2015 pass rate ($k = 57$), 2016 pass rate ($k = 58$) and 2017 pass rate ($k = 7$). The choice of academic achievement measure was a significant moderator of the correlation between SES and academic achievement, $Q_b(4, 167) = 884.21$, $p < .001$. The proficiency of students was accessed using the following scale; excellent, good, fair and no expertise. The excellent use included use of

email, internet, surfing and searching and other elements, so those who scored excellent were 1%, the very good scale included able to use all the skills mentioned in the excellent category and number of students who were in this category were 2%, while those in the good category which is able to use office application, word processing and spread sheet, 8% students responded to this. The category with the highest number of responses existed in the fair category which is able to operate basic computer function and word processing; they were 53% respondents to this.

Table 4 showed the computer skills among students was accessed using some of the programs from the computer; word processing, spread sheet, databases, presentation tool and internet. In word processing 76% students had basic understanding, followed by those who never had understanding, while when it came to use of spread sheets, the majority of students 89% had no skills and only 11 of the sediments had some basic skills. The results showed that no student had any skill in databases and presentation tools. For internet skills, 90 students had basic skills in use of internet and only 5 never had any skills.

The result of the hypothesis indicated that there is a significant relationship between academic performance and information and communication technology utilization of students in Lagos state, Nigeria. This finding confirms earlier studies by Reichstetter (2002) and Idding, Ortmann and Pride (1999) that, reading comprehension and vocabulary development achievement levels showed improvement through coupling technology with multiple instructional strategies. When students use Microsoft Word often, their reading capacity also increases. It also supports that of Christensen, Griffin and Knezek, (2001) who equally found that higher classroom technology integration was found to positively associate with Iowa Test of Basic Skills scores on vocabulary, reading and writing for elementary students. With the proliferation of ICT platforms across the nation and in most high schools and or colleges, learners are now able to access needed

information, harness it and apply the same to solving human challenges more readily with ease. So the coming of Computer Studies on board is a good move as it will help learners to keep up with global trends only if they acquire needed skills. Educational technology facilities may be available in schools but teachers cannot use them because of lack of skills. The School needs to provide training causes for teachers to gain experience in dealing with emerging technologies. Additionally, the school must provide teachers and students with necessary ICT resources including computers. Teachers cited lack of skills for not using computers for teaching Computer Studies Subject. This is in support of the study conducted by Balanskat *et al.* (2006) which showed that in Denmark many chose not to use ICT because of their lack of skills rather than for pedagogical reasons. Hence, lack of teacher competence may be one of the contributing factors to low academic pass rate in Computer Studies. From the research findings some initial training is needed for teachers to develop appropriate skills regarding the effective use of computers to support the learning and teaching of Computer Studies.

The results revealed that the Head teacher at this school was concerned with the poor performance of pupils in ICT. The participants' responses from the interview transcripts reviewed that most of the learner's progress and performance in Computer Studies was very poor and has kept on getting poorer. The teachers said that teaching of computer studies is facing a lot of challenges as a result pupil's poor performance in the subject. The head teacher explained that at our school we have been recording depreciating results each examination year from the time Computer Studies was introduced. The head teacher attributed this to untrained teachers, lack of ICT infrastructure and conducive computer lab. The head teacher's explanations match with the school's documentation on the grade nine examination results from the examination council of Zambia.

5.4 The perception of Grade 9 learners towards Computer Studies

The **fourth objective** was to explore perception of learners towards Computer Studies learning at Chamunda Secondary School. The research findings revealed that more than ¾ of the students (81%) have a positive attitude towards ICTs, although, male students (50%) are of greater support than female students (50%). This is supported by Schumacher and Morahan Martin (2001) who argued that females are less experienced with ICT's and are more likely than males to have negative attitudes towards computers. Moreover, Shashaani (1997) examined some males and females about their interest in internet use and discovered that there was a great difference on the interest level between the two groups. Male respondents showed to be more interested in internet services and use more than female .As such, students feel that appropriate use of ICTs would have a positive impact on their study habits, and can help them improve on their academic performance. The results on table 4. 5.1 show that majority of the pupils 60% strongly agreed that Computer Studies learning promises a better future career, 70% of the pupils strongly agreed that Computer Studies learning is for the boys, 100% of the pupils strongly agreed that Computer Studies learning helps learning of other subjects, 70% of the pupils strongly agreed that Computer Studies learning improves academic performance and 80% of the pupils strongly agreed that Computer Studies learning helps make school work easier.

5.4 The perception of learners towards Computer Studies learning

Four participants were involved in the interview, that is; three computer studies teachers, the Head of school. The results revealed that management at this school confirmed that Computer Studies learning helps pupils learn other subjects easily. Subjects like Mathematics, English and Business Studies where pupils also indicated that they use ICT to learn these subjects. The head of school explained that Computer Studies learning enables pupils to take opportunity of the internet material

for their studies and research. The teachers also explained that in the case of projects and take home tasks the internet has helped a lot of pupils to find information needed to do their school tasks. Overall, the teachers agreed that Computer Studies learning improves pupils academic performance. They also added that in this era of busy parents and guardians the internet fills their gap to help children Google and get answers which are later confirmed by teachers and concluded on.

The teachers explained that Computer Studies learning helps pupils to type their projects and field based learning reports. This helps them to research more on internet and get through knowledge in a specific filed. The teachers also explained that Computer Studies learning arouses interests in pupils for greener future opportunities and careers. This study concluded that both teachers and pupils have positive perception of Computer Studies learning and teacher training and other factors affect performance in the subject. The research findings revealed that more than a third of the students (81%) have a positive attitude towards ICTs, although, male students (90%) are of greater support than female students (73%). This is supported by Schumacher and Morahan Martin (2001) who argued that females are less experienced with ICT's and are more likely than males to have negative attitudes towards computers. Moreover, Shashaani (1997) examined some males and females about their interest in internet use and discovered that there was a great difference on the interest level between the two groups. Male respondents showed to be more interested in internet services and use more than female. As such, students feel that appropriate use of ICTs would have a positive impact on their study habits, and can help them improve on their academic performance.

5.5 The challenges learners face as they learn Computer Studies

The **last objective** was to identify challenges learners face as they learn Computer Studies at Chamunda Secondary School. Table 4.6.1 of chapter four revealed that 80% participants indicated

that policy and strategy of government and school enhances use of computers in teaching and learning of computer studies. 80% strongly disagree that the number of computers available to the school is sufficient for teaching and learning of computer studies. Results show that 40% disagree that there is an increase in teacher learner collaboration, while 70% of the participant's indicated that the level of ICT use in computer studies has a direct impact on learner performance in examinations. Participants indicated that 80% use of ICT in computer studies has a positive impact on learner performance in examination. Figure 4.6.4 shows the distribution of area of computer access by pupils. The computer accessibility of students differed differently. Some students had access to computers from their homes (5%), those accessing it through it cyber were (30%) and those that never had access were (65%).

These challenges result in under performance of learners in the Computer Studies. The benefits of learning Computer Studies and acquiring the skills needed for use in future.

Teachers reported a range of different challenges that they faced when teaching Computing. Some of the challenges mentioned relate to the teachers' own difficulties – for example, not being confident in the subject matter or not being able to differentiate sufficiently for a mixed-ability group, and other comments focus on the fact that the students have difficulty understanding the material and in problem solving.

Following the work of Finger and Houguet (2007) described above in viewing challenges as intrinsic or extrinsic helps us to analyze the findings from our teachers. Some of the challenges for teachers are extrinsic such as lack of resources; others such as their own subject knowledge of understanding of appropriate pedagogy are intrinsic. The areas of challenge for students can also be divided as intrinsic or extrinsic to the students too.

5.6 Summary of chapter six

The results revealed that both teachers and students experience a number of challenges that impede the use of computers for teaching and learning. Teachers expressed computer illiteracy, lack of training to use computers and an overloaded syllabus as the main problems that prevent their use of computers to teach. On the other hand, students expressed poor access, poor computer skills and late onset of use of computers as some of the reasons why they do not use computers to learn. The responses of teachers in the open ended questions indicated that teachers were concerned about the depth and breadth of their own computing subject knowledge, and in particular that of computer studies. Teachers expressed the worry *"that my own subject knowledge is not always secure"*. They also report that they have spent hours of their own time trying to up skill in the subject.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.0 Overview

This chapter discusses the conclusion and recommendations based on the objectives of the study which aimed at investigating the academic performance of learners in Computer Studies at Chamunda Secondary School in Masaiti District. The study found a decreasing trend in performance of grade 9 learners. These were compounded by challenges from the part of students and teachers. Availability of ICT resources like computers was also an issue as well as inadequate computers.

6.1 Conclusion

This study found that both teachers and students experience a number of challenges that impede the use of computers for teaching and learning. Teachers expressed computer illiteracy, lack of training to use computers and an overloaded syllabus as the main problems that prevent their use of computers to teach. On the other hand, students expressed poor access, poor computer skills and late onset of use of computers as some of the reasons why they do not use computers to learn It was found that students who use computers almost every day have significant higher achievement scores than those who use computers in moderate or low frequencies. These results suggested that simply increasing the educational input on computers at school may not produce the desired effect; instead, the quality of teaching also matters. At Chamunda Secondary School there is no single teacher trained specifically to teach Computer Studies. This explains why teachers at times fail to carry out practical lessons to offer learners practice. Having teachers going for Computer Studies training may help improve the performance of learners in the subject as of late the school had been experiencing depreciating results in Computer Studies at grade 9 final examinations, in 2015 56%, in 2016 38% and in 2017 23%. Integrating computer use into effective

instructional activities plays a more important role in influencing student academic performance. Finally, the noticeable academic performance of students who had never used computers at school suggests future research on factors and characteristics that exist in this group of students.

6.2 Recommendations

This study will hopefully provide a starting point for looking into the Academic performance of Grade 9 learners in Computers Studies so as to better future performance in the subject. The following were the recommendations of this study:

1. There is need for the Ministry of Education to employ qualified teachers to offer Computer Studies at Chamunda Secondary School.
2. The Ministry of Education should adequately fund the school to purchase enough ICT equipment like computers, adequate learning and teaching materials and build computer labs.
3. This study showed limited resources at Chamunda school, with only 10 computers for all students with computer ratio to student of 1:3. Lack of trained teachers was also an issue. In address the growing challenges faced by teachers and students in availability of ICT resources, purchase of computers and learning software should be budgeted for in order to avoid reliance on donated computers and software.
4. During holidays the District Education Board Secretary in collaboration with the Head teacher should organize Continuous Professional Development (CPD) in the school and invite trained personnel from other schools to enlighten teachers at Chamunda Secondary School in Computer Studies especially topics which they find difficult to teach.

improve infrastructure, employing qualified and trained teachers of comp studies and who should do that so that it is specific.

6.4 Recommendation for Further Research

The following are the suggested areas for further research.

1. A replication of this study on a wider scale would be ideal for evidence generation.

2. A comparative study of rural schools versus urban schools on the application of ICTs in teaching and learning of Computer Studies.

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APPENDIX 1: Information sheet and informed consent/assent form

PARTICIPANT INFORMATION SHEET

PROJECT TITLE: An Investigation of the Academic Performance of Grade 9 Learners in Computer Studies: A Case Study of Selected Secondary School in Masaiti District, Zambia

Description of the Project

This is a an academic study being carried by a student of a Masters of Education in Educational Management at the university of Zambia and Zimbabwe Open University whose title is "*An Investigation of the Academic Performance of Grade 9 Learners in Computer Studies: A Case of Selected Secondary School in Masaiti District, Zambia".* The investigation involves questions on computer studies subject and ICT use in schools. The questions are not personal, and focus more on use of ICT. For your privacy, your personal information will be protected, and will be strictly for follow up purposes.

Expected duration of participation

The questionnaire will take about 10 to 20 minutes for closed questions and about 30 minutes to an hour for interviews.

Costs

You will not have to pay any costs if you take part in this project and you will not be paid either.

Benefits for participation

The study is also expected to benefit the schools in terms of improving the performance of students in Computer Studies. In general, the study will contribute to knowledge on ICT, especially related to teaching and learning of Computer Studies.

There are no direct benefits for participating in the discussions, other than exchanging points of views about teaching and learning and academic performance of pupils in Computer Studies. You

will receive no payment for participating in the discussions. The participants will have a throughout study period opportunity to ask as many questions as possible for clarifications.

Risks and inconveniences

There are no risks from taking part in the study. Questions maybe sensitive especially if pupils are not performing well in Computer Studies for a particular school.

Protection of your privacy

You are not allowed to write your name or initials on the questionnaire. Serial number will be used so that there is no identification of study participants. All information will be kept in the research's confidential file. Provisions will be made to ensure respect for the privacy and anonymity. Your name will never be used in any report related to this research.

Voluntary Participation

Your participation in this study is entirely voluntary and you can freely withdraw at any point during the study, even after you have signed this Informed Consent Form. This will not affect you or the School in any way.

INFORMED CONSENT FOR ADULT PARTICIPANTS (18 YEARS OF AGE AND OLDER):

I confirm that I have been informed about the study and that I have received a copy of the research participant information sheet and the Informed Consent Form. I have read and understood the information. I have been given sufficient information concerning the conditions, the duration of the study and any possible risks. In addition, I have received sufficient time to consider the information and to ask questions, to which I have received satisfying answers.

I am further aware that information I will give will be treated in confidence and I will not be personally identified in any project reports or documentation.

I freely consent to participate in this study and consent to cooperate in the activities requested.

Name of adult participant……

Signature: ……

Name and signature of Researcher Name and Signature of witness

…… ……

Date: ……

ASSENT FORM FOR PARTICIPANTS LESS THAN 18 YEARS OLD

I confirm that I have been informed about the study and that I have received a copy of the research participant information sheet and the Informed Consent Form. I have read and understood the information. I have been given sufficient information concerning the conditions, the duration of the study and any possible side risks. In addition, I have received sufficient time to consider the information and to ask questions, to which I have received satisfying answers.

I freely consent that our pupil participates in this study and consent him/her to cooperate in the activities requested, including in Focus Group Discussions (FGDs).I agree that our pupil participate in the study.

I agree that in addition to my consent, oral assent of our pupil will be requested before he/she is enrolled in this study.

(a)…… (b)……...

Name of Pupil Age at last birthday

(c)…… (d)……

Signature or thumb print of Pupil (NOT MANDATORY)

Signature or thumb print of parent/Teacher

Date……..

APPENDIX II: INTERVIEW GUIDE FOR TEACHERS

Title

An Investigation of the Academic Performance of Grade 9 Learners in Computer Studies:

A Case of Selected Secondary School in Masaiti District, Zambia

Instructions

Indicate clearly the correct answer by ticking or writing in the space provided.

QUESTIONNAIRE SERIAL #:.....

SECTION A: Demographic Data

1. Age at last birthday,

2. Date of birth……/……/……

3. Sex male [ ]

Female [ ]

4. Highest level reached in education?

a) Junior secondary [ ]

b) Senior secondary [ ]

c) College [ ]

d) University [ ]

5. Where did you receive your specialized training?

Zambia [ ]

Other [ ]

6. Number of years in service.

a) 1-4 years [ ]

b) 5-9years [ ]

c) Above 10years [ ]

SECTION B: Attitudes of respondents towards teaching of computer studies

7. How do you find teaching Computer Studies Subject to learners? Do you have any challenges in teaching the Subject?

……

……

8. If you have any challenges, what are they?

……

……

9. Are you provided with enough educational resources to use during teaching?

Yes [ ]

No [ ]

10. Do you need any assistance in terms of teaching Computer Studies to learners?

Yes [ ]

No [ ]

11. If yes, explain the nature and form of assistance.

……

……

12. In the years that you have worked as a Computer Studies teacher, which part of your work can you say is the most challenging?

……

……

13. How do you manage to work or rather teach in the midst of challenges mentioned?

……

……

14. Does your training provide you with some basic knowledge on how to teach Computer Studies to learners?

Yes [ ]

No [ ]

15. If yes, explain giving an example of the basic knowledge that you are provided with.

……

……

16. List at least four advantages of teaching Computer Studies as a Subject?

……

……

……

……

17. Is the introduction of Computer Studies into the curriculum a good policy?

Yes [ ]

No [ ]

a). If yes to question 17, give reasons.

……

……

b).If no to question 17, give reasons.

19. How many computers do you have?.....

20. How many computers listed above are in good condition?.....

21. How many pupils take computer studies?.....

22. What is the ratio of computers to learners at your school?.....

23. What remedies would you suggest to ensure effective teaching of computer studies?

……

……

……

SECTION C

1. Please indicate how applicable each of these statements is describing the importance of ICT infrastructure and access.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
The school allows access of computers to learners					
Does the number of computers influence the average hours per week computers are available to you?					
Level of access and use of e-mail and educational website enhances learning/teaching.					

2. Please indicate how applicable each of the statements is describing computer studies teaching in schools.

	Strongly disagree	Disagree	Undecided	Agree	Strongly agree
Number of hours used in teaching computer studies lessons is sufficient.					

There is presence of educational software such as Microsoft Power Point.					
Computer Studies is taught as a subject.					

3. Please indicate how applicable each of the following statements is in describing the importance of ICT training and teacher experience to support teaching and learning of computer studies.

	Strongly disagree	Agree	Undecided	Strongly agree	Disagree
The number of teachers with ICT training affect the use of computers in teaching and learning of computer studies					
The level of expertise in ICT directly influence quality of teaching computer studies					
There is use of internet for teaching and learning purposes.					

4. Please indicate how applicable each of these statements is in describing the benefit of using ICT in enhancing skills and competencies of learners in computer studies.

	Strongly disagree	Agree	Undecided	Strongly agree	Disagree
Use of ICT contribute to learner motivation for learning computer studies					
ICT enhances change in the way computer studies is taught					
Use of ICT improves teaching and learning confidence					

5. Please indicate how applicable each of these statements is in describing the challenges affecting teaching and learning of computer studies in your school.

	Strongly disagree	Agree	Undecided	Strongly agree	Disagree
Policy and strategy of government and school enhances use of computers in teaching and learning of computer studies					
The number of computers available to the school is sufficient for teaching and learning of computer studies					

6. Please indicate how applicable each of these statements is in describing the use of ICT in supporting teaching and learning of computer studies.

	Strongly disagree	Agree	Undecided	Strongly agree	Disagree
There is increase in teacher learner collaboration					
The level of ICT use in computer studies has a direct impact on learner performance in examination					
ICT has an effect on perception and attitudes of learners in learning computer studies					

Thank you for your participation

THE END

APPENDIX III: QUESTIONNAIRE FOR HEAD TEACHER

Title

An Investigation of the Academic Performance of Grade 9 Learners in Computer Studies:

A Case Study of Selected Secondary Schools in Luanshya District, Zambia

Instructions

Indicate clearly the correct answer by ticking or writing in the space provided.

QUESTIONNAIRE serial #.....

SECTION A

Demographic Data

1. Age at last birthday,

2. Date of birth……/……/……

3. Sex male [ ]

Female [ ]

4. What is your professional qualification?

a) Teachers Certificate [ ]

b) Teachers Diploma [ ]

c) Teachers Degree [ ]

d) Any other specify ……

5. Number of years in service.

a) 1-4 years [ ]

b) 5-9years [ ]

c) Above 10years [ ]

SECTION B

6. Is Computer Studies offered at your school?

Yes [ ]

No [ ]

7. If yes to question 6 above, how is it being offered?

a) Integrated in all subjects [ ]

b) Integrated in some subjects [ ]

c) As a separate subject [ ]

d) As part of extra-curricular activities [ ]

e) Any other specify……

8. If no to question 6 above, give reasons.

……

9. Is the introduction of computer studies a good policy?

Yes [ ]

No [ ]

10. If yes to question 9 above, give reasons.

……

11. If no to question 9 above, give reasons.

……

12. Has your school got computers for use in computer studies lessons?

.....

13. If your school has computers, how many does your school have?.....

14. How many computers listed above are in good working condition?.....

15. How many pupils take computer studies?.....

16. What is the ratio of computers to students at this school?.....

17. Tick if the following facilities and resources are available at your school?

a) Computers [ ]

b) Electricity [ ]

c) Backup generator [ ]

d) Uninterrupted power supply [ ]

e) Printers [ ]

f) Photocopier [ ]

g) Overhead Projectors [ ]

h) Computer Laboratory [ ]

18. Are teachers who teach computer studies trained in computer studies?.....

19. If yes in question 18 above, when were they trained? ……

20. How do you rate the computer literacy levels of teachers in your school?

……..

21. Does the literacy level of teachers affect the performance of learners in computer studies?

…….

22. If yes, how does it affect?

……

23. How can you rate the performance of computer studies in the previous final examinations (2017)?

i) Very good [ ]

ii) Good [ ]

iii) Average [ ]

iv) Poor [ ]

v) Very poor [ ]

24. Do you as a leader of the school support the teaching of computer studies?

Yes [ ]

No [ ]

25. If yes to Question 24, state the type of support.

……

……

26. If no to Question 24, give reasons.

……

……..

27. What challenges does your school face in teaching computer studies?

……

……

……

28. What remedies would you give to overcome challenges in teaching of computer studies subject at your school?

……

……

……

Thank you for your participation

THE END

APPENDIX IV: QUESTIONNAIRE FOR LEARNERS

INSTRUCTIONS:

Please tick in relevant boxes and fill appropriate information in the blank spaces.

QUESTIONNAIRE SERIAL #:…….

Date:……..

SECTION A

1. State the name of your school……
2. What is your gender? Female ☐ Male ☐
3. How old are you?.....
4. For how long have you been using computers and related technology?
   a) Less than 1 year [ ] b) 2 years [ ] c) over 3 years [ ]
5. Where did you first encounter with computers?

   a) Primary school [ ] Secondary school [ ]

   Home [ ] Computer Cyber [ ]

5. How many hours per week are computers available to you?.....
6. How many hours per week is the internet available to you in school?.....
7. Where do you use computers in school (Tick the one that applies?)

Computer Lab [ ] Library [ ]

Class room [ ] other (state) [ ]

Level of expertise	Tick the one that applies
No expertise, cannot use a computer at all	
FAIR, able to operate basic computer functions and word processing.	
GOOD, able to use office application, word processing, spread sheet	
VERY GOOD, able to use all the above skills including use of internet and internet resources	

EXCELLENT, all of the above including use of email, internet, surfing and searching, development of web pages and e-learning	

8. Apart from the school where else do you have access to computers?

Home [ ] Cyber cafe [ ] None [ ]

9. How many hours on average per week do you use computers outside the school?

……

10. How could you rate your level of expertise in computers?

……..

11. How would you rate your skills in the following computer areas? (Tick the appropriate).

	None	Basic	Intermediate	Proficient
Word processing				
Spread sheet				
Databases				
Presentation tool				
Internet				

12. Answer the following questions related to using ICT as a learning tool.

a) Do you use computers to help you learn other subjects?

b) Do you use computers to assist you in answering questions?

c) Do you take computer studies as a subject?

d) Does using computer to learn change your attitude towards the subject?

e) Do you use internet to share knowledge with other learners?

f) Do you use computer software to help you learn on your own?

g) Have you ever used computers/internet to search for materials on emerging issues like drug abuse?

13. If you use computers to learn other subjects state the subjects.

……
……

14. Do you learn ICT in other subjects? Yes [ ] No [ ]

15. If yes, state some of these subjects?

……

……

16. Do you think ICTs can be used for the following purposes?

Purpose	No	Yes	Not Sure
Motivate learners			
As a subject for teaching			
Relaxation for students			

17. What would be the main reason for learning Computer Studies in school? (Tick all that applies)

Prestige	
Improve learners' skills	
To enhance learning	
Further studies	
It's a requirement for job employment	
Internship	
Others (state)	

18. Do you think learning Computer Studies will prepare you adequately for further studies and job market?.....

19. If your answer to question 18 is No, what are the additional skills that you think should be included in the curriculum?.....

……

SECTION B

Please indicate how applicable each of the following statements is in describing your level of ICT use by Ticking in the correct box.

	Agree	Not sure	Disagree
a) I love to use Computer to study			
b) All students need basic Computer skills			
c) It is not everybody who can master computer skills			
d) Using a computer is difficult for me			
e) I love studying things about computers			
f) The challenge of solving problems with computers does not appeal to me			
g) I am not skillful in using a computer			
h) I cannot get good grades in computer studies			
i) I have confidence when attending computer lessons			
j) I take a long time to understand computer lessons			
k) I am tired of using a computer			
l) Learning computers is a waste of time			
m) The time spent on learning computers should be better spent on other subjects			
m) I do not concentrate on a computer when using one			

THANK YOU FOR ANSWERING THE QUESTIONNAIRE.

APPENDIX V: Focus Group Discussion Guide for Pupils

FOCUS GROUP DISCUSSION GUIDE FOR PUPILS

Name of School…….

Dear Pupils,

This focus group guide intends to investigate more about the teaching and learning of Computer Studies at your school. Please assist as your contribution in this discussion is highly valued and the information recorded will be treated with utmost confidentiality. The discussion will take one hour. Two questions will be involved in the discussion. Time allotted for each question is 30 minutes.

Discussion Questions

1. In your opinion, what challenges does Computer Studies teaching and learning face in secondary schools?(Probe questions will be whether pupils have easy access to computers, pupils have enough computers, it should be a compulsory or option subject).
2. What ways (measures/ remedies) should be taken in order to improve the situation? (Probe questions will be on what pupils would like: What the government should do, what schools should do, what other stake holders should do).

Thank you for your participation.

THE END

APPENDIX VI: OBSERVATION CHECKLIST

Item	Observation
1. Number of computers available in the school.	
2. Number of computers in working condition.	
3. Number of computers not in working condition.	
4. Number of computer laboratories	
5. Number of pupils per class in computer studies.	
6. What is the ratio of computers to pupils?	
7 Does the school have electricity?	
8. Number of human resource (computer studies teachers)	
9. Does the school have Internet connectivity?	

APPENDIX VII: PERMISSION LETTER TO STUDY SITE

Beatrice Mwaba
University of Zambia-Zimbabwe Open University
P.O Box 32379
Lusaka.
31st July, 2018.

Ministry of General Education,
Masaiti District Education Board Secretary,
P.O Box 41,
Masaiti.

Dear Sir/Madam,

RE: REQUEST FOR PERMISSION TO COLLECT DATA FOR MY STUDY FROM SELECTED SCHOOLS OF MASAITI DISTRICT.

I am a student of the University of Zambia-Zimbabwe Open University pursuing Master of Education in Educational Management. In partial fulfillment of the requirements of the program, I am required to carry out a research project. My study title is: An Investigation of the Academic Performance of Grade 9 Learners in Computer Studies: A Case of Selected Secondary School in Masaiti District, Zambia. I would therefore like to request your permission to enable me collect data for my study from your schools. This data collection will involve one-to-one interviews, semi structured questionnaires and a desk review. I intend to record the interviews in order to better review the responses of the participants. The study is purely for academic purposes and the information collected will be treated with utmost confidentiality.

Thanking you in advance for your consideration.

Yours faithfully,

Mwaba Beatrice.
Student Computer #: 716815912

Beatrice Mwaba
University of Zambia-Zimbabwe Open University
P.O Box 32379
Lusaka.
31st July, 2018.

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