An Enquiry into the Challenges Faced in the Adoption of Computer Studies in Public Learning Institutions: A Case of Five Selected Day Seccondary Schools in Kasama District of Northernprovince of Zambia

Brian Kabwe

Abstract. This dissertation investigated the challenges and prospects of the introduction of Computer Studies in Schools: the case of selected public secondary schools: Lukashya, SoftKatongo, Kasama Central, Misamfu and Ituna in Kasma District. The objectives of the research contained within; ascertaining the challenges that schools are facing in the teaching and learning progression of Computer Studies in Kasama District; instituting the academic enactment of learners taking Computer Studies in their final examinations in Kasama District; as well as ruling out what procedures were invented to be put in place so as to promote quality teaching and learning of Computer Studies in schools in Kasama District. The researcher employed both qualitative and quantitative research techniques in this study. This research was principally predisposed by the Maslow's Hierarchy of Needs theories. The imperative findings of the research were that schools were facing related challenges in terms of teaching and learning of Computer Studies. These challenges basically included scarcity of computers, lack of teaching and learning materials, in addition to shortage of furniture, lack of space in computer laboratories, poor or no internet service, besides poor teacher preparedness to teach. In terms of the elements that were impairing these challenges, the findings of the study discovered that: lack of funds to procure computers, furniture, teaching and learning materials; lack of trained teachers; and inadequate space in computer laboratories. On the question of academic performance, it was revealed that schools performed better in the 2020 ECZ examinations than in 2021. Thus, there was a gradual decrease in the performance of the learners. On measures to enhance the academic performance of the learners, the study revealed that there is need to lobby for more funds to procure teaching and learning materials; and building spacious computer rooms. Furthermore, there was need to recruit trained teachers or build the capacity of existing teachers and also motivating the pupils to take the subject extremely. The study will employ both quantitative and qualitative approaches. The target population will be 300 respondents. The sample size will be 50 including 25 pupils, 5 school administrators, 5 Guidance and counseling teachers, 5 officials from civil societies and 10 parents. The study consists of five chapters. Chapter one provides the introduction of the research problem, background of the problem, objective of the study, research questions and the significance of the study. Chapter two provides literature review.

Chapter three gives research methodology and chapter four offers the research finding. Chapter five provide the conclusion and recommendations.

Index Terms- Computer Studies, Secondary Schools, Kasama District, Teaching Challenges, Learning Resources, Academic Performance, Teacher Preparedness

I. Introduction

Background

Education is key in stimulating individual and national ecological development. Governments from place to place across the globe are investing comprehensively in education due to its power in transforming individuals and nations. China, for example, which has the largest education system in the world, has had its investment in education increased in the last ten years at the rate of 19% on average at all levels proportional to the growth of the national economy (OECD, 2016). In Zambia, the government also raises the value of the relevance of education in transforming the country. This can be seen in the goals of the education system as envisioned in the National Policy on Education called educating our Future (1996). Commenting on the goals of the education system, it has been stated that: The Ministry of Education has set for itself the goals of (a) producing a learner who is capable of:

- being animated by a personally held set of civic, moral and spiritual values;
- Developing an analytical, innovative, creative and constructive mind;
- Appreciating the relationship between scientific thought, action and technology on the one hand and sustenance of the quality of life on the other;

Demonstrating free expression of one's own ideas and exercising tolerance for other people's views.Maintaining and observing discipline and hard work as the cornerstones of personal and national development…. (MOE, 1996).

As a result, this shows that education is tangential in promoting individual and national sustainable development. It ought to be noted that realizing these goals on education is not a simple task for Zambia. There is need for the government and other pertinent stakeholders in the provision of education to come on board and put in the much needed resources. To this end, the country is belligerent to finance its education system. Zambia has "a weak budget performance associated with late, erratic, and inadequate funding to the education sector" (UNESCO, 2016:20).

Circumstances involving corruption, misappropriation and misapplication of funds cannot be ignored as well. To this end, there is need to increase budgetary allocation to education and safeguard that the Ministry of Finance as well as other stakeholders pay out funds in full and in a timely fashion to the Ministry of Education in so as to effectively implement national education policies.

Likewise, for education to be significant, it has to be quick to respond to the desires of the people in society. It has been perceived that science, technology and innovation is key in addressing persistent gaps among developed and developing countries in access and use of existing technologies, and to develop innovations - and that this could be transformative in achieving the Sustainable Development Goals and

producing more prosperous, sustainable, healthy and inclusive societies (UNCTAD, 2018).

In the 21st century, for that reason, it is generally accepted that computer studies as a subject of study is a powerful tool necessary in transforming society through kiss-and-tell the learners to existing technologies and empowering them with capabilities to be the drivers of innovations for prosperity and sustainable development. It has been observed that, "one of the many challenges facing developing countries today is that of preparing their societies and governments for globalization and the information and communication revolution. Policy- makers, educationists, non- governmental organizations, academics, and ordinary citizens are increasingly concerned with the need to make their societies competitive in the emergent information economy" (Meenakshi, 2013:1

This is largely because it is key in the spread of information and technology. The introduction of Computer Studies in schools offers a firm foundation upon which the learners and citizens in general can prepare themselves to participate and compete in the globalized economy. Consequently, the global fluctuate towards a knowledge-based society has seen the role of Information and Communication Technology necessitated by Computer Studies in education becoming increasingly important (Mandoga et al., 2013). The term ICT as applied to education, are technologies such as computers, the Internet, broadcasting technologies which includes radio and television, and telephony that can expedite not only delivery of teaching, but also learning the techniques. These technologies have been well-known as important tools for realizing a new paradigm of learner-centered education that better supports learners" needs through differentiated and personalized instruction (Khan; 2009). Thus, governments around the world and particularly in least developed countries are expected to take the teaching of Computer Studies in schools very serious as the subject is key in transforming society and promoting sustainable development.

According to Ghavifekr and Athirah (2015) "ICT integration in education generally means technology-based teaching and learning process that closely relates to the utilization of learning technologies in schools". Due to the fact that pupils are familiar with technology and they will learn well within technology-based environment, the issue of ICT integration in schools, specifically in the classroom is vital. This is because; the use of technology in education underwrites a lot in the pedagogical aspects in which the application of ICT will lead to effective education with the help and supports from ICT elements and components. It is right to say that almost all ranges of subjects" start from mathematics, science, languages, arts and humanistic and other major fields can be learned more effectively through technology-based tools and equipment. In addition, ICT provides the help and complementary supports for both teachers and students where it involves effective learning with the help of the computers to serve the purpose of learning aids. Computers and technology do not act as replacing tools for quality teachers but instead they are considered as add-on supplements needed for the better teaching and learning.

As a developing country, Zambia needs to be part of this new dispensation which entails integrating Computer Studies into the education system. This is because as the country lags behind in the adoption, use and innovation in Computer Studies, many learners will be losing out on better education, effective application of skills and well-paying jobs on the global labour market. To this end, the National Educational Policy called Educating our Future acknowledges under one of the goals of education that education should "produce a learner capable of appreciating the relationship between scientific thought, action and technology on the one hand, and sustenance of the quality of life on the other" (MOE, 1996:5). Therefore, it is paramount to recognize and commend the effort of the government in introducing Computer Studies as a subject in secondary schools in Zambia (MESVTEE, 2013).

It also indicates that the Zambian government appreciates the role of Computer Studies in spurring development. To this end, there is need to investigate the challenges and opportunities of the introduction of Computer Studies in selected public schools in Kasama District. This is largely because the taking on and effective use of Computer Studies as a subject in education and other sectors of development is a key driver for learners" achievement and national development through enhanced access to information and knowledge. It should be noted that Computer Studies as a subject of study has the potential to raise achievement among the learners and citizens in the country through greater collaboration, improved communication and opening of wider opportunities to share information (Victoria, 2011).

As a result, it is undisputable that increasing funding to the provision of education in general, and the teaching and learning of Computer Studies in particular, is a worthwhile goal. Commenting on financing of education, it has been stated that, "running of education depends on real resources such as staffing, buildings, and equipment; and monetary resources, which are funds needed to be used to obtain real resources" (Kelly, 1999:297). Consequently, the government and other stakeholders need to see to it that the teaching and learning of Computer Studies in schools as a new subject is given proper attention and urgent support in terms of financing of education. Largely, in terms of the benefits of teaching Computer Studies in schools and at national level, among many others, these include greater collaboration, improved communication, wider job opportunities on the global market, an acceleration of economic and social development, and greater inclusion of isolated, particularly rural populations, into the mainstream of society (Kabanda, 2012).

Nevertheless, taking on Computer Studies as a subject in schools is not an easy task as the costs associated with the provision of education are huge and numerous. It has been stated that, "proper financing of the education sector is cardinal in order to attain higher standards of quality education and equitable access (Patrinos, Barrera- Osorio, and Guaqueta, 2009)."

Hence, this call for a huge investment in infrastructure, training of teachers, provision of teaching and learning materials as well as electrification of schools that are not yet connected to the national power grid. Pointing out on the definition of factors that regulate school effectiveness, for instance, it has been listed that:

Inadequate material support is cardinal. Material support for a school is adequate for effectiveness when: Textbooks and other reading materials in an appropriate language with relevant contents are available in sufficient quantity for children to use them; Teachers have guides that outline what to teach and how to teach it and that provide diagnostic and evaluation materials to use with students…; classrooms are equipped with blackboards and chalk, enough desks to seat all the children, and visual aids that support instruction (Kelly, 1999:268).

Thus, this study, attempted to investigate the challenges and prospects of the introduction of Computer Studies in selected public schools in Kasama District. The study focuses on instituting the challenges and prospects in schools.

3. Research Problem

It is generally agreed that Computer Studies as a subject of study is a force that has changed many aspects of human endeavors and with the world moving rapidly into digital media and information, the role of Computer Studies in education is becoming more and more important (Adesote and Fatoki, 2013). In the same vein, the Ministry of Education in Zambia has introduced Computer Studies in schools as a subject in an effort to ensure that learners are fitted out in this area of development and are made relevant to society (MESVTEE, 2013). This is also in line with the country's National Education Policy and Vision 2030. However, it has been observed that one of the major challenges that the education system faces is the low quality of education as evidenced by low performance results in the National Assessment Surveys (GRZ, 2017).

This has not spared the teaching and learning of Computer Studies in Zambia. Thus, this implies that there is need to establish the challenges and opportunities in the teaching and learning of Computer Studies in schools. It should be noted that if this question is not addressed, learners" academic performance is likely to remain poor in Computer Studies thereby denying pupils opportunities to excel in life and add value to their world and national development. In the area of Computer Studies, the government in Zambia has stated that priority will also be given to the procurement and supply of learning and teaching materials and upgrading teacher competences (GRZ, 2017). In terms of infrastructure, for instance, it has been stated that school infrastructure has improved- more schools now have a library, science laboratory, electricity, and latrines than in 2006, when the last Public Expenditure Tracking Survey (PETS)- Quantitative Service Delivery Survey (QSDS) was conducted (World Bank, 2016). Arising from the facts discussed above, it is not clear whether or not schools in Kasama District are prepared to teach Computer Studies. However, despite significant support by the government to schools and from other stakeholders in the provision of education, learning outcomes have also been persistently low (World Bank, 2016). This study, therefore, aimed at investigating the challenges and opportunities associated with the introduction of Computer Studies in selected public schools in Kasama District.

4. Purpose of the Study

The purpose of the study was to investigate the challenges and opportunities of introducing Computer Studies in selected public schools in Kasama District.

5. Objectives of the Study

Arising from the research problem, the following were the objectives of the study:

- Identify the challenges that schools are facing in the teaching and learning process of Computer Studies in Kasama District.
- Establish the academic performance of learners taking Computer Studies in their final examinations in Kasama District. To determine measures that should be put in place (if any) to promote quality teaching and learning of Computer Studies in schools in Kasama District.

6. Research Questions

Arising from the Research problem and objectives of the study, the following were the research questions:

- What challenges are schools facing in the teaching and learning process of Computer Studies in Kasama District?
- How is the academic performance of the learners taking Computer Studies in the final examinations in Kasama District?
- What measures should be put in place (if any) to promote quality teaching and learning of Computer Studies in schools?

7. Significance of the Study

A lot has been written on the importance of Computer Studies in schools as a subject of study. However, the area of challenges and opportunities has not been given the attention and urgency that it deserves especially in Zambia (Bwalya, 2015 and Gregory, 2016). Therefore, it is hoped that this research will:

Provide policy makers and practitioners with data on the challenges and opportunities associated with the introduction of Computer Studies in public in schools. This will help in the formulation of policies and prioritizing implementation of activities associated with the teaching and learning of Computer Studies in schools. The findings will also add value to the body of knowledge and practice pertaining to how the teaching and learning process of Computer Studies in schools can be enhanced. This study will also deepen and widen my knowledge on the understanding of the opportunities and challenges in the teaching of computer studies in public schools.

8. Delimitation of the Study

Delimitations are used to address how the study would be narrowed in scope (Cresswell, 1994). The study focused on investigating the challenges and opportunities of the introduction of Computer Studies in public (GRZ) schools in Kasama District. It looked at four schools. These were randomly selected from the four of the eight zones found in Lusaka District. This means that one school was selected per pair of two zones. Kasama District was selected as it had the necessary information and relevant to this study.

9. Theoretical Framework

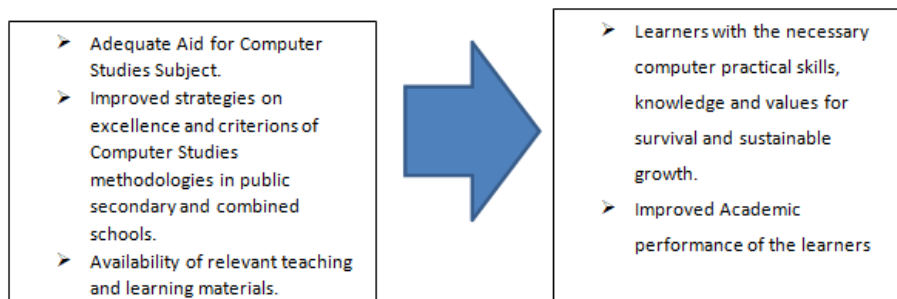The study was guided by the Maslow's Hierarchy of Needs Theory.

Maslow's Hierarchy of Needs Theory

Maslow's hierarchy of needs theory was proposed by a psychologist called Abraham Maslow and is based on a five-step hierarchy of needs. Maslow stated that people always have needs, and when one need is relatively fulfilled, others emerge in a predictable sequence to take its place (Kreitner, 2009). From bottom to top, Maslow's needs hierarchy includes physiological, safety, love, self-esteem, and self-actualization needs. According to Maslow''s prepotency process principle, people are motivated first to satisfy each lower- order need and then, in sequence, each of the higher- level needs (Dessler, 2011).

Maslow's theory has many implications. In relation to this study, Maslow'' theory is relevant in that pupils are faced with various needs in their academic life. They have expectations. For example, when in school pupils expect the school administration to ensure that school teaching and learning materials are in the right state. Thus, in the event that pupils are made to take some subjects which lack the necessary materials or requisites this makes it difficult for them to focus on the next step of needs which in this case can be concentrating on their studies and ensuring that they enhance their academic performance. Insufficient resources, therefore, may negatively impact on the academic performance of the pupils in the school. Thus, this study aimed at establishing the preparedness of schools in terms of teaching and learning materials in Computer Studies and how it was affecting the delivery of lessons.

10. Conceptual Framework

There are many factors which are associated with achieving quality education and these form a conceptual framework that show inter-linkages between major groups of those that explain quality education. In this model, quality education, which is the acquisition of relevant knowledge, values and practical skills embedded in quality curriculum is a dependent variable while characteristics like funding, availability of resources and clear policies for standards are independent variables. This conceptual framework is based on the research objectives and theoretical framework used in the study. It argues that if schools are not sufficiently funded by the government and have inadequate teaching and learning materials, it makes it difficult for the teachers and pupils to maximize learning opportunities from the teaching and learning process thereby making quality education unattainable. Diagrammatically, the conceptual framework is as shown in Figure 1 below: Figure 1: Conceptual Framework

- ➤ Adequate Aid for Computer Studies Subject.
- ➤ Improved strategies on excellence and criterions of Computer Studies methodologies in public secondary and combined schools.
- ➤ Availability of relevant teaching and learning materials.

- ➤ Learners with the necessary computer practical skills, knowledge and values for survival and sustainable growth.
- ➤ Improved Academic performance of the learners

10. Definition of Key Terms

The study used various terms and which were defined based on the objectives of the study. The following were the terms and definitions in relation to the objectives of the study:

- **Learners-** In this study, the term learner implies the pupils between grade 8 and 12 in schools. It should be noted that these are the ones who take Computer Studies.
- **Public Schools (GRZ)-** institutions of learning offering education to pupils in grades 8 to 9, owned and controlled by the government.
- **Quality Learning-** schools which are prepared to teacher and with the necessary resources like adequate infrastructure, teaching and learning materials, and tools, necessary in increasing learning opportunities among learners and acquisition of relevant knowledge, values and skills as outlined under the goals of education in the National Educational Policy called Educating our Future.
- School-which is an established learning institution under the Ministry of General Education where teaching and learning is offered to the pupils.
- **School Infrastructure –** this will mean the presence of computer laboratories and functioning computers as well as other relevant teaching and learning materials.

11. Organization of the Study

The study was encapsulated in five chapters. These have headings and sub-headings focusing on the topic under the study. The first chapter starts with the introduction. This focused on the background to the study, statement of the problem, purpose of the study, objectives of the study that are linked to research questions, significance of the study, limitations as well as operational definitions which were used in the study. The second chapter looked at the literature reviewed. This was categorized as global, African continent and Zambian perspective. It also included the theoretical and conceptual frameworks of the study. The third chapter looked at the methodology. This included the research design, target population, sample size, sampling procedures, research instruments, data collection procedures, data analysis and ethical considerations. The fourth chapter presented the findings of the research. These ere lated to the purpose of the study, research objectives and research questions of the study. Chapter five

II. Literature Review

1. Introduction

This chapter reviewed the relevant and related literature. This was contextualized as global, African and Zambian perspectives respectively and related to the research problem and objectives of the study.

Related Studies

The relevant and related studies that were reviewed have been contextualized as global, African and Zambian perspectives respectively.

Global Perspective

It is generally agreed that ICT enhances the quality and accessibility of education (Yusuf, 2005). ICT increases the flexibility of delivery of education so that learners can access knowledge anytime and from anywhere. It can influence the way students are taught and how they learn as now the processes are learner driven and not by teachers. This in turn would better prepare the learners for lifelong learning as well as to improve the quality of learning. It has been observed that with the help of ICT, students can now browse through e-books, sample examination papers, and can also have an easy access to resource persons, mentors, experts, researchers, professionals, and peers- all over the world. This flexibility has further heightened the availability of just-in-time learning and provided learning opportunities for many more learners who previously were constrained by other commitments (Young, 2002).

The teachers" positive attitude towards the teaching and learning process of computer studies plays a key role in the success of ICTs (Al-Zaidiyean et al, 2010 and Albirini, 2006). In addition, the study attempted to confirm Al-Zaidiyean et al (2010) and Albirini's (2006) findings that teachers" beliefs, attitudes and practices in teaching computer studies were important for understanding and improving educational process by exploring the matter using teachers of computer studies in Lusaka district. Globally, the level of ICT available to education differs from country to country. The important role of ICT in improving education is identified where nations have invested heavily in networking classrooms and increasing the number of computers in schools (Mofarreh, 2016). Furthermore, ICT has become an important requirement for participation in society and the workplace, hence 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.

In Kingdom of Saudi Arabia (KSA), the King Abdullah Project for General Education Development initiated by the Ministry of Education provided $2.4 billion to finance the advancement of selected public schools. The transformation focused on a "superior model of excellence in education at an internationally competitive standard.

Pelgrum and Pomp (1993) conducted a study at the University of Twente in Netherlands on the use of Computers in Education in 18 Countries. The study acknowledges that the 1980s saw a rapid increase in the infusion of new information technologies in most societies and that the notion that computers are playing an important role in life of every citizen is no longer debatable. The results of the study, in 1993, showed that in the past few years quite drastic changes have taken place in the number of schools equipped with the computers and in the number of computers available in schools. Despite this fact, in most educational systems computers were still used by a limited number of teachers, and mainly for teaching children about computers; the integration of computers in existing subjects was increasing quite slowly. The study concluded that the major problems that are experienced in schools deal with teacher time, the lack of sufficient software of high quality, and the training

of teachers. These findings, therefore, will help to assess whether or not the situation in Zambia, particularly in Kasama District, has passed these challenges.

Benzie (1997) as quoted by Merireng (2013) carried out a study in Malaysia in 1994 under the Malaysia smart school initiative, it was found that ICT policy plan had been evolved, but had not been fully integrated in various fields of school system. The study by Benzie (1997) was in line with the current study due to the fact that in 2006 Malaysian Ministry of Education launched the ICT policy and in the same year, the then Ministry of Education a Draft ICT policy on education and an implementation strategy by January 2007. Besides the ICT policy on education was still in its draft form. Hence, carrying out the research would inform educational planners, policy makers and education stakeholders on how ICTs were being used and introduced in the form of a subject as computer studies in junior secondary schools of Kasama district.

Csizmadia (2017) reviewed the question of computing in the curriculum: challenges and strategies from a teacher's perspective in United Kingdom. The work argues that computing is being introduced into the curriculum in many countries and teachers" perspectives enable us to discover what challenges this presents, and also the strategies teachers claim to be using successfully in teaching the subject across primary and secondary education. From the analysis of the data, extrinsic and intrinsic challenges were identified for both teachers and students. In addition, a variety of pedagogical strategies were recommended by teachers from their own practice. In categorizing approaches taken by teaching to support students five key themes emerged: unplugged type activities, contextualizing of tasks, collaborative learning, developing computational thinking, and scaffolding programming tasks. The sefulness of these findings to the current study lies in the fact that they are key in suggesting potential activities necessary in enhancing the teaching and learning of Computer Studies in schools in Zambia.

Currently, it is almost impossible to ignore the pervasiveness of information technology within education and that technology has become a valuable resource to educators (Ayas, 2006). Technology integration in the classroom has become an important aspect of successful teaching because it allows students to learn more in less time and allows schools to focus on global learning environments if used appropriately (Almekhlafi and Almeqdadi, 2010). According to Dawes (2010), the 21st century has witnessed tremendous advancements in technology which had led to far-reaching developments in the use of computer system. As a result, cost effective technology combined with the flexibility in learning activities was essential in enhancing efficiency. Furthermore, in a research done by Kawade (2012) it is reported that the use of ICTs in the field of education is regarded as an effective and efficient facilitator in creating, accessing, storing, manipulating and transmitting or sharing various forms of information, such as audio, visual and word formats due to the proactive environment presented by ICTs. Hence, ICTs comes in handy to provide technological innovations in computer studies in junior secondary schools.

In Ireland, the government evaluated how the implementation of ICT programs in schools was performing (Department of Education and Science, 2008).

An evaluation of the infrastructure, planning and use of information and communications technology in teaching and learning was conducted by the Inspectorate (2008) in primary and post- primary schools during the school year 2005/06. The objectives of the evaluation, among many others, were: to examine the extent to which ICT was used in the primary and post- primary schools; to evaluate the impact of ICT on teaching and learning. The findings established that the student-computer ratio (SCR) in Irish schools was 9.1:1 at primary level and 7:1 at post-primary level. Information available from the OECD suggests that countries that have taken the lead in the provision of ICT in schools are aiming for or achieving a SCR of 5:1. It is important to note that in Ireland this ratio is dealing with the total population of students in the entire school and not just those taking Computer Studies subject as the case may be in Zambia. The study further notes that lack of technical support and maintenance is a significant impediment to the development of ICT in schools. In terms of the recommendations, the study indicated that improvements in ICT infrastructure will need to be supported by the introduction of a national ICT technical support and maintenance system for schools. Additional guidance should be provided to schools and teachers of students with special educational needs so that the needs of learners may be matched more appropriately with the technology available. This study is important in that it helps in understanding the background information relating to Computer Studies in schools at global level. Thus, it adds value to the present study.

Miller (2004) assessed the introduction of computers in secondary schools in Jamaica. It has been stated that prior to 1990, about ten of the 146 public secondary schools in Jamaica, acting on their own initiative, had established computer laboratories to support instruction. The Jamaica 2000 Project was launched in 1992, which among other things, aimed at placing computer labs in each of the 145 secondary schools. This goal was achieved through the support of the government, Chinese donations, engagement of the private sector and other NGOs. At the same time, it has been argued, there are many questions that remain unanswered and should be the subjectof future investigations and these are: Which students have benefited most from the provision of computer labs? What is the frequency of the use of these Computer labs? How many teachers, and in what areas, have been able to utilize computer laboratories in their teaching? How effective is a 15- station computer lab in schools with over 1,000 students enrolled- the case of most secondary schools in Jamaica (Miller, 2004).

This research investigated on whether ICTs integration into junior secondary schools would impact a positive change in people's lives. The research went further to find out and understand the professional training junior secondary school teachers underwent in ICTs usage and how that training influence their attitude towards the subject (Lortie, 1975). Ball (1990) and Lortie (1975) reports that teachers tend to teach the way that they were taught. Hence, if we expect head teachers, computer studies teachers and Head of Departments in schools and junior secondary schools in particular to perform in their respective tasks using technology, we need to teach and train them using new technology (Vrasid and McIsaac, 2001). Ball (1990) and Lortie (1975) research was vital to the study because they addressed the issues of teacher

training in computer technology which has a very big impact on how the subject is taught in junior secondary schools of Zambia.

The work by Higgins (2000) cannot be ignored. This study was carried out in the United Kingdom and looked at whether or not ICT improves learning and teaching in schools. He acknowledges that in the UK there is heavy investment in Information and Communication Technology for use by teachers and pupils in schools. His study indicates that ICT can make a difference to pupil learning. This is because large studies have shown that there is a positive link between the provision or use of ICT resources and pupil attainment, but this link is weak.

Also, the work argues that more substantial gains in pupil attainment are achievable where the use of ICT is planned, structured and integrated effectively.

The work by Manaligod (2012) is relevant to this study. It examined the integration of ICT in selected public secondary education schools in Metro Manila, Philippines. The parameters that were used included(a) availability of ICT resources (b) levels of skills (c) extent of usage (d) problem inhibiting adoption, and (e) perceptions and goals. The major findings of the study included: the lack of hardware remains to be the most pressing and persistent problem. Relative to student population, the computer – to – student ratio is at 1:63. Access to computers is limited to those taking computer education subjects. Also, almost half of the teachers never attended ICT – related trainings. Trainings conducted were generally on computer literacy like basic operations, word processing, and spreadsheet. Therefore, the work concludes by stating that ICT integration remains to be learning about, rather than learning with ICT tools. A policy review is needed for equitable distribution of sparse ICT resources across all learning areas. This work is relevant to the present study in that it has highlighted some of the key elements relating to the question at hand, challenges and opportunities in introducing Computer Studies in selected schools. Therefore, it will help in providing information on how the situation is in Zambia in relation to other countries especially when it comes to the challenges, if any.

Windschitl (2002) reports that in the 21st century, the new vision of education is to make learning accessible to all, however achieving this goal using traditional methods proved to be hard. ICT comes into aid the achievement of this goal by making information easily accessible to students. Research studies about how best ICTs could be infused in education has been conducted globally. Selwood and Pilkington (2005) also reports that the general domain regarding ICTs in schools has gathered significant research momentum in the recent years. In Zambia there has not been much research specifically for computer studies in junior secondary schools. As of now research that has been done on ICT focuses on learning computers in schools without exploring the challenges and opportunities within the education sector. This research was relevant because it went into depth to provide the much needed information to further expand ICT education in junior secondary schools. It was trying to reduce the knowledge gap by focusing on the teaching and learning of computer studies in junior secondary schools.

African Perspective Miima (2014) investigated the topic on integration of information communication technologies in teaching and learning of Kiswahili language in public secondary schools in Kakamega County in Kenya. Her work acknowledges that the integration of technology in education is considered all over the world as a strategy of transforming the quality of education. She further argues that in recent times, considerable investment in computer based Information Communication Technologies (ICT) has been made by many countries with a belief that it will support and transform teaching and learning in the school systems. The findings of the study established that the teachers and learners" skills were low. Teachers needed to be trained in all the ICT skills and on how to integrate ICTs in their teaching and learning activities. The usefulness of this work to the current study lies in the fact that it explored the integration of information communication technologies in teaching and learning. This is the area of focus of the present study although the main subject here is the introduction of Computer Studies in schools in Zambia. Therefore, this work is insightful and helps in terms of providing the background information to the present study.

Mandoga et al., (2013) looked at the challenges and opportunities in harnessing Computer Technology for teaching and learning in Makoni East District in Zimbabwe. The study focused on ascertaining determinants of different levels of computer use at selected schools in Makoni East District in Zimbabwe and to find out whether teachers and heads appreciated the rationale behind establishment of computer studies in their schools. This study is relevant in that it will help with information for comparative analysis on challenges faced in Zimbabwe and stakeholder views on how we can enhance the provision of quality education through the introduction of Computer Studies as a subject in schools. Furthermore, Mikre (2011) work revealed that regardless of all the challenges characterizing the use of ICTs is of imperative to the benefits of learners and the education system in that it assists in providing the modern education system.

In a study aimed at understanding the challenges and opportunities of ICTs in Education: A casestudy of Malawi, it is reported that the future of Africa is dependent on the way and manner its young citizens are educated today. The use of ICTs in education has the propensity to improve the education sector and its outcomes by attracting those that are out of school, reaching those learners who are in remote and far to reach areas as well as improve educational content. Challenges and opportunities of ICTs in Education (Nleya; 2018). in a research done by Fashanu (2012) on Adoption of ICT and its Comparative Impact on Private and Public High Schools in Lagos State Nigeria, it is reported that for several decades now, ICT has been progressively infused into the Nigerian educational sector and has undoubtedly affected teaching, learning, and research. In the late nineties, there was paucity of ICTs in Nigerian schools. A federal policy to address the situation resulted only in the distribution of computers to some government secondary schools, which were largely unused due to lack of training for personnel and other limitations. Nigeria"s Policy on Education recognizes the need to integrate ICT into all cadres of education and government pledged to "provide necessary infrastructure and training" for same. Yet, Computer Education unlike Introductory Technology is stipulated as an elective rather than a core subject in secondary schools. Researchers later discovered that

computers are still lacking in ninety percent of all public schools and that most operations are still done manually. Initially ICT was deployed in high schools just to gain access to information but now it is used for collaborative and self-paced learning, office automation and social communication.

The work by Mingaine (2013) was important to this study. This looked at the challenges in the implementation of ICT in public secondary schools in Kenya. The results of the study indicated that limited supply of qualified teachers and high cost of infrastructure were impediments to implementation of ICT. Generally, power supply was not an impediment, while school leadership supported ICT. The work recommended that the cost of infrastructure should be reduced by adopting measures such as locally assembling as well as exploiting alternative technologies to avoid reliance on imported one. Qualified teachers with ICT skills should be employed and in-service courses designed to train the ones already in profession.

In a study carried out by Farrell and Isaac (2007) on ICT and education in Africa it was noted that some African countries had made efforts to integrate ICT in educational institutions. Waema (2002) observed that several African countries like Egypt, Mauritius, Rwanda and South Africa had developed comprehensive national policies and strategies to fully integrate ICT in various institution of learning. Studies by Waema (2002) Farrell and Isaac (2007) provided a firm foundation for this research. In 2006, the government of the republic of Zambia through the Ministry of Communication and Transport (MCT) launched a National ICT Policy which addressed several sections including Human Resource Development, agriculture; education; E-commerce and E-government. There was also need to state that it was the section on promoting ICT in education, Research and Development that had to set out the objective pertaining to ICT and education.

Mndzebele (2013) studied the challenges faced by schools when introducing ICT in Developing countries in Swaziland. The work noted that although ICT has the potential to improve the education system of every country to a great extent but this is not the case in some developing countries because of certain challenges

Ministries of Education setting out on the process of establishing computer education in Third World schools are typically under considerable pressure from various constituencies within their own countries. In seeking to respond to this pressure, they are aware that the resources needed are physical, in the form of appropriate hardware, software, space and reliable electrical power, and human, in the form of trained teachers and other staff. The physical resources can be imported or manufactured, with or without the aid of industrial nations, but the human resource must be trained, even in the few countries where many teachers are expatriates. There is no escape from the fact that putting computers in schools, within a support framework which allows them to be put to effective use, places a very heavy demand on the training system of the country carrying through the innovation (Hawkrige; 1993). He further reports that training needed is complex and the skills required to deliver it are scarce, even in the industrial nations. Those requiring training are not only the teachers who will deliver the revised curriculum. Other groups must be targeted, as points out teacher trainers within the country; principals of schools; those

who will revise the curriculum and develop new curriculum materials; those who will evaluate existing software and specify required software; those who will write new software, and those who will commission hardware and ensure that trained personnel are available to maintain it.Technologies allow students to work more productively than in the past, but the teacher's role in technology is more demanding than before. The aim of the study was to present a review of the state of ICT in the school system in a developing country,by evaluating the current use of ICT as well as the challenges encountered when introducing ICT in the classrooms. The study established that lack of resources within the educational sector is a hindrance in the implementation of ICT in developing countries. Because of limited resources then there will be lack of sufficient computer experience for the students and teachers. Therefore, schools needed to be provided with adequate facilities and resources for effective implementation of ICT. Had it not been for the commitment shown by the parents most of the computers in the schools would have long stopped functioning as a result of poor maintenance by government. Thus, responsible authorities have to try and overcome these barriers so that students can benefit.

According to Isaacs (2007) Botswana has made a commendable effort to provide resources for its junior secondary schools; however, many schools struggle with their effective use. Computers, while available in most schools, often are not connected to the Internet, precluding their use in cross-curricular instruction. While libraries exist in most schools, they do not have current collections and do not yet operate as vibrant centres of learning. In a study by Ziraba (2012) on the role of Information and Communication Technology which was far much different from the current study because looked at management of selected secondary schools in Central Uganda and the current one dealt with the challenges and opportunities of computer studies as a subject in a Zambian perspective. Furthermore, Ziraba's study looked at the use of available ICTs resources in communication in enhancing management and student's record keeping. His study was at least broader and it covered the entire central region of Uganda. The findings of Ziraba were that before introduction of electronic computing, report forms used to be marred with errors such as missing marks which led to problems in grading systems and determining promotions to the next level. That problem was attributed to the fact that marks obtained by each student were not put together but instead were put on separate piles of papers which ended up get missing.

Mbangwana (2008) looked at the introduction of ICT IN schools and classrooms in Cameroun. The work argues that the introduction of information and communications technologies (ICTs) in education reflects and responds to present and future needs of people functioning in an intensely changing and challenging intellectual environment.

The study reveals that the introduction and integration of ICT in Africa remains sporadic and without clear direction. Access to ICT by students and teachers has begun, yet its use supports traditional teaching rather than the shift to new roles and pedagogical practices. Policy implementations include the need to develop expertise within the nation, provide training opportunities, and encourage initiative and innovation on the part of teachers.

Angondi (2010) looked at the National Policy for using ICT to support teaching and learning in primary and secondary schools in East Africa. The study presented an overview of the national policies for using ICT to support teaching and learning in primary and secondary schools in Kenya, Tanzania, Uganda, Rwanda and Burundi. The work acknowledges that ICT is a principal driver of economic development and social change worldwide. The findings of the study indicate that although there are several strategies outlined in the East African ICT policies, those touching on the curriculum and training of teachers in ICT skills and pedagogical application of ICT seem to have been singled out as basic to the implementation of ICT. Also, the study notes that merely providing equipment is insufficient to promote educational change and the policies point to a desire for a nationally coo.

The National ICT Policy of Seychelles is cardinal to this study too. It looked at various policy objectives pertaining to the use of ICT in that country. It states that the importance of telecommunication as a service industry in itself as well as a critical support element for other service industries has been for the last few years and continues to be the subject of high level policy formulation in practically every country in the World and Seychelles is no exception. One of the five areas of the National ICT Policy is ICT infrastructure. It calls for the promotion of the provision of accessible, universal, affordable, reliable, modern and high quality levels of ICT facilities. The policy document also encourages the private sector to continue their role as an integral part of the development of ICT infrastructure. The work is important in that it will help with information on the levels of preparedness and commitment of the government of Seychelles in the provision of ICT facilitiesReporting on the challenges in the implementation of ICT in public secondary schools in Kenya Mingaine (2013) says, the government formulated national ICT policy on education in 2006 with a vision "A prosperous ICT-driven Kenya society" and mission "To improve the livelihood of Kenyans by ensuring the availability of efficient, accessible, reliable and affordable ICT services" (GOK, 2006). The policy highlighted that the government will encourage implementation and use of ICT by schools in order to improve quality of teaching and learning. He goes on to say implementation of ICT in schools has remained elusive since most of them are not connected to electricity grid, has no capacity to buy the required infrastructure, and has school leaders and teachers who are either computer illiterate or technology ignorant, though the current global technology changes put emphasis on digitalization and modernization of all sectors including schools. Despite the apparent benefits of the use of ICT in schools, research shows that many schools are not implementing it, thus depriving learners and the school community from accessing the potential of ICT.

Zambian Perspective

The growth of information and communication technologies (ICT) has dramatically reshaped teaching and learning processes in education. ICT for education is more critical today than ever before since its growing power and capabilities are triggering a change in the learning environments available for education. The use of ICT offers powerful learning environments and can transform the learning and teaching process so that students can deal with knowledge in an active, self-directed and constructive way. At present ICT is considered as an important means to

promote new methods of instruction (teaching and learning). It should be used to develop students' skills for cooperation, communication, problem solving and lifelong learning. Althoughcomputers and technology are prevalent throughout our society, developing countries are far from reaping their benefits because of certain barriers (Khan; 2012). He goes on to say that the use of ICT could improve performance, teaching, and administration, have a positive impact on education as a whole, and develop relevant skills in the disadvantaged communities - helping in liberation and transformation. The government of Zambia through the Ministry of General education should be of high quality effectively and efficiently delivered (Phiri and Mbobola; 2018). This is where e-learning which is one of the forms of information Communications Technology (ICT) comes into play. One of the modern ways in which education can be made available is through the use and implementation of ICTs and e-learning in the education sector as mentioned earlier. E-learning is a broad term that encompasses many teaching approaches, types of technologies and administrative.

The government of Zambia developed the ICT policy that aims to ensure children learn ICTs from primary to tertiary level. The move saw the introduction of ICT lessons in schools by the Ministry of General Education following the revision of the school curriculum. The initial implementation of the program was characterized by a lot of challenges in many learning institutions across the country. Among them being, not all schools in the country have access to electricity, while others have no computers to facilitate ICT lessons. Three years down the line in the implementation of ICTs in schools, Government is recording steady progress. Ministry of General Education Permanent Secretary Felix Phiri said learners are being taught the theory part of ICTs in all the schools countrywide. However, learners with access to computers and other ICT devices are also able do the practical part of the subjects. This means that pupils in schools without computers and ICT devices are not able to do the practical part. "The learners who have access to computers are also being examined, while the ones without access to computers and other requirements are not being subjected to examinations," DrPhiri said. According to the Ministry of General Education, children who master the theory part of ICTs find it easy to do the practical part when they come across computers and other required devices. "If children start

Learning ICTs early, we are sure of developing the country because of the advancement in technology which makes it possible," DrPhiri said (Zambia Daily Mail Newpaper, Sepetember 2018:10). The need for ICT integration in education is crucial, because with the help of technology, teaching and learning is not only happening in the school environment, but also can happen even if teachers and students are physically in distance (Ghavifekr and Athirah; 2015).

Teachers are seen as the key players in using ICT in their daily classrooms. This is due to the capability of ICT in providing dynamic and proactive teaching-learning environment. The National Policy on Education in Zambia was important to this study. This is because it is the only national guide on the provision of education in the country. It helps to provide us with a clear guide on the stance of the government and the Ministry of General Education in particular on the role of ICT in education. For example, on the goals of the education system, the National Policy on

Education states that one of the goals of education shall be to produce a learner capable of appreciating the relationship between scientific thought, action and technology on one hand, and sustenance of the quality of life on the other hand (MOE, 1996).

From this citation, it shows that those who were framing the National Policy on Education had it in mind that Computer Studies as a subject should be a priority area of study in future. In fact, at that time, it was observed that Zambia as a country did not have any coherent, comprehensive secondary school program in technology. It was clear at that time that everything that was on offer was essentially a general academic program, with some technical, practical or aesthetic areas patched on (MOE, 1996).

With aid from various international organizations such as the commonwealth of Learning (COL), the International Institute for communication and development (IICD), the United States Agency for International Development (USAID), the Ministry of General Education (MOE) together with the Ministry of Communications and Transport developed a National information and communication Policy (MCT, 2006) with a long vision „to enable all schools in Zambia to have access to ICTs by the year 2030" (UNESCO, 2016).

This aimed at providing lifelong education and training for all, making information easily accessible to all. The policy for ICT was formulated in line with the Firth National Development Plan. The Zambian government launched the ICT national policy in 2007 under the theme, ICTFor accelerated wealth and job creation.

The permanent secretary of the Ministry of Transport and Communication of Zambia, MisheckLungu, was quote during the official opening of a dissemination meeting of the findings of the 2015 survey on access and usage of ICT among households and individuals at Southern Sun Hotel in Lusaka saying, „ICTs are no longer a luxury in the process of economic progress but are an integral part of development", (The Post Newspaper, March 2016: 10). Implying that ICT has a key role to play in Zambian development hence it should not be a luxury but accessible to all.

The study by Mbozi (2017) was relevant to this study. His work looked at "Quality Assurance in the teaching of Computer Studies in selected schools in Livingstone District." The study sought to investigate whether the much needed resources were available and adequate in schools. In this study, it was established that most teachers of Computer Studies were still upgrading themselves in universities and colleges; teaching and learning materials were inadequate; and that financial constraints were a serious challenge hampering effective delivery of teaching and learning process. The relevance of this study lies in the fact that it will be used for comparative purposes with Kasama District.

In a research done by Kelso and D'Souza (2004) it was argued that having access to the technology does not necessary mean that they are used, and using does not necessarily mean they are used effectively. Balanskat, Blamire and Kefala (2006)

added that although educators did acknowledge the value of ICTs in school, difficulties continued to be encountered during the process of adopting the technologies. The current study was in line with a study conducted by ZICTA in partnership with Central Statistics Office (CSO) since it also looked at the available ICTs devices in selected secondary schools in Lusaka District. The study looked at the availability, challenges and opportunities of ICTs in junior secondary schools in Kasama District and determined whether or not Mathematics Head of Departments and teachers of computer studies used them effectively in the teaching and learning of computer studies so as to prove or disapprove the argument by Kelso and D'Souza (2004).

The study by Phiri and Phiri (2016) was paramount. These looked at the factors affecting ICT implementation in selected secondary schools in Chipata District of Zambia. The purpose of the study was to investigate and establish the challenges in implementation of ICT in selected secondary schools. It was established that the implementation of ICT in schools has been affected negatively due to lack of ICT teachers, computers, ICT books, and poor preparation by the government. The work recommended that the government should buy many computers for schools to cope with increase in enrolments; employ many ICT teachers; buy teaching and learning materials; and the government should upgrade the computer laboratories regularly to copy with the changes in technology.

In Zambia, according to Isaacs (2007), the Computers for Zambia Schools Trust, a partnership between the Ministry of Education, Zamnet Zambia, the Beit Trust, The British High Commission, HSBC, The British Council and Computers for Africa Schools Project, has provided 4,500 computers to 300 schools. This projected is coordinated in Kasama where computers are received, refurbished and distributed to schools and used in support of Computer Studies.

Isaacs (2007) further points out that the involvement of One World Africa too, an NGO which has a network of Education Support projects that involves volunteers in the development of teacher support materials has been a great achievement. In Zambia, among many other things, One World Africa has trained 35 secondary school teachers in basic computer skills. This, therefore, is an example of small but important initiatives that can really make a difference in supporting access to education in Africa. He goes on to report that the penetration levels of ICTs in Zambia's educational institution remained low with those schools that were equipped mostly utilizing second-hand and refurbished computers. He continued to state that the recent adoption of a national ICT policy for education and an associated implementation framework provided an enabling policy environment to promote far greater access and use of ICTs across all sectors of Zambia's education system.

Although Isaacs (2007) stressed that the recent adoption of a national ICT policy for education and an associated implementation framework provides an enabling policy environment to promote far greater access and use of ICTs across all sectors of Zambia's education system, the current research tried to probe on the challenges and opportunities of computer studies in junior secondary schools.

Lufungulo (2015) researched on primary schools which were under a pilot program. Her research provided a firm foundation for this research since her research tackled the challenges encountered in the use of ICT in schools at various grades. carrying out this research was essential since it wanted to find out the challenges and opportunities of using computer studies in education of rural junior secondary schools. As such some research findings might not be the same since these two researches were on different areas of study.

In a study conducted by Imasiku et al (2012) on the use of ICTs in education in selected urbanbased secondary schools in Kasama and the research by Chaamwe (2012) on ICTs for Zambia's Distance Education, it was concluded that the major challenges of ICTs in the education sector included teachers" inexperience and negative attitude towards the adoption of ICTs in the teaching and learning of computer studies. Besides, the state of ICT infrastructure-computer laboratories was pathetic. Lack of adequate funding, trained experts or lack of infrastructure is the main challenge in implementing ICTs education in junior secondary schools.

Kasanda"s (2009) work was equally important to this study. He wrote on Principles and Practice of Education for Value-Addition. Kasanda (2010) calls for learning beyond school and adding value to the world. He argues that learning for knowing rather than for value addition has a negative impact on prioritization and packaging of content and the manner in which it is taught and learned. This is because learning for knowing, which has been the trend for several decades, creates a situation whereby the fundamental value-laden vocabulary that nurtures and promotes human ingenuity, creativity, productivity and wealth multiplication, is either confined to some few subject areas or is left out for incidental or accidental discovery by the learner.

My Research Gap
It is not known whether Public schools are prepared to teach Computer Studies, therefore, the study attempted to establish schools" preparedness in the teaching of computer studies as well as challenges and opportunities.

III. Research Methodology

1. Introduction
This chapter gives a description of the procedure that were used in conducting the study. The chapter describes the research design, sources of data, target population, sample size, sampling techniques, research instruments, data analysis and interpretation as well as ethical considerations.

2. Research Design
The researcher employed the mixed research design using both the descriptive and quantitative methods. It has been argued that the mixed research method enables one methodology to support the other (Cresswell and Clark, 2009). This was important as data which could not be collected qualitatively was collected quantitatively thereby helping to validate the data. Therefore, the qualitative approach

allowed the researcher to get in-depth interviews in one to one interviews and questionnaires. Quantitative approach also made the researcher get data presented using frequencies and pie charts to illustrate and supplement data that was derived from   qualitative   methods.

3. Source of Data

The sources of data were largely the textbooks, journals, theses on school infrastructure, and various targeted respondents in both the in-depth interviews and questionnaires.

4. Target Population

The targeted population in this study was five (05) public secondary schools (GRZ) in Kasama District and the targeted sample included Head teachers, Subject Teachers and Pupils.

5. Sample Size and Sampling Techniques

The sample size for this study was Fifty- Two (50) respondents. These comprised Four (04) head teachers, six(06) Teachers and Forty (40) Pupils drawn from Four (04) public secondary schools (GRZ) in Kasama District. As Kasama District has eight zones, the study used random sampling to pick four zones from the eight zones and randomly selected one school per pair of two zones. Purposive sampling was used to collect data from the head teachers and subject teachers of Computer Studies because of the nature of their position in school. There is only one Head teacher in a given school and one or two Computer Studies teachers. The Pupils were randomly selected from their respective schools as these were many and this gave each Pupil an equal opportunity to participate in the study.

6. Instrumentation

The key research instruments in this study were the questionnaires and semi-structured interview guides that were used to collect data from the 50 purposively and randomly selected respondents.

Questionnaires

Twelve (12) self-administered questionnaires were used to collect data from the head teachers and Teachers based on the sample size. Open and closed questions were used to solicit for qualitative and quantitative data.

Semi-Structured Interview Guides

The study used semi-structured interview guides to collect data from the Pupils. This was important as it helped the researcher to solicit for more information in areas where head teachers and teacher questionnaires were unable to clarify. Also, interviews were better for the learners as there was need to interpret and expand certain concepts due to their level of understanding in order for them to respond in line with the objectives of the study.

IV. Conclusion and Recommendations

1. Introduction

This chapter provides the conclusion to the study and the main recommendations. The main purpose of the study was to investigate the challenges and opportunities of the introduction of Computer Studies in schools: the case of selected schools in Lusaka District. Therefore, it is from this background that this chapter proposes to make the conclusion and recommendations of the study. These are based on the statement of the problem, research objectives related to research questions and responses from the respondents sampled in the study.

2. Recommendations

Based on the statement of the problem, research objectives which were related to the objectives of the study and the findings of the study, the following were the recommendations:

- Head teachers should prioritize buying the teaching and learning materials for the Computer Studies subject in schools.
- Schools should also engage the private sector in what may be term as the Public-Private Partnerships. A number of companies can be brought on board to help cushion the challenges schools are facing in the teaching and learning of Computer Studies in schools. The target should be especially those companies in the communities where these schools are placed.
- The government should investment more in infrastructural development in schools and support towards furniture and computers. It should be noted that schools cannot do much on their own as they are facing serious financial constraints especially the schools in poor communities where parents rarely pay user fees.66.
- As a new subject, there is need to pay more attention to it so as to equip the teachers and pupils with the necessary tools, aids and equipment needed to teach the subject more effectively.

3. Conclusion

In conclusion, the study revealed that there were a lot of challenges in schools affecting the teaching and learning of Computer Studies as a Subject. The findings of the study from the head teachers and Teachers revealed that there were challenges. Also, based on the findings from the pupils, it is not all the pupils who were affected by these challenges. This, therefore, means that the question of challenges involving the teaching and learning of Computer Studies in schools affected pupils differently. But as the goal of the Ministry of General Education is to see to it that all pupils acquire knowledge, values and skills, this implies that there is need to see to it that various challenges affecting the teaching and learning of Computer Studies in schools are adequately addressed by various stakeholders involved in the provision of education. In terms of the kind of challenges that were being faced in the teaching and learning of Computer studies, the study identified; lack of teaching and learning aids; shortage of computers; shortage of chairs; teacher absenteeism; and weak teacher explanations.

Therefore, it can be argued that there is need by the various players in education provision to look into these challenges and where possible to formulate measures to help cushion the situation in schools.

On the question of Pupil to Computer Ratio, it was revealed that this was a challenge too. Based on the findings of this study, it was established that one of the schools had a Pupil to Computer ratio of three (3) to four (4) pupils against one (1) Computer. However, in the other school that was sampled in the study, the ratio was better as it was either 1:1 or 2:1. This, too, is an indicator that the question of pupil-computer ratio deserves an urgent intervention by all well- meaning stakeholders in the provision of education. On the question of the causes of these challenges, the study revealed that this was partly due to overcrowded classrooms. For example, the study showed 67. that while School A had 40 pupils, other Schools like B, C, and D had 60, 80 and 90 Pupils in Computer Studies Classes respectively. It should be noted that over- enrolments imply more pressure on the schools in terms of the need for more computers, more furniture, spacious computer laboratories, and more teaching and learning materials. In terms of specific causes of challenges, these included; overcrowded classrooms, late coming among teachers; and absenteeism among teachers, and shortage of computers, lack of funds to procure textbooks, chairs and computers, untrained teachers, and lack of concentration among the pupils.

In terms of the academic performance of the pupils in Computer Studies in the final examinations by the Examinations Council of Zambia (ECZ), generally, the study revealed that there was a decrease in terms of the academic performance of highly performing schools between the years 2016 and 2017 as well as a slight improvement in the poorly performing school. This general decrease in performance can to some extent be attributed to the increasing challenges the pupils are facing related to the factors discussed above. In ascertaining the measures that should be put in place to enhance the teaching and learning of Computer Studies in schools, the study revealed that teachers preparing adequately before going to teach and simplifying their work, buying more chairs and computers so as to address the challenge of over- enrolments, improving internet service in schools so as not to interrupt certain lessons which may need the use of internet, buying more textbooks and teaching aids, and making computer laboratories spacious so as to comfortably accommodate all the learners and help to promote concentration was paramount. In addition, recruiting more trained teachers and existing teachers" capacity building was cardinal too. The findings from the head teachers and Subject Teachers as well as those from the pupils on this question were not different. These shared similar views on the measures that should be put in place in order to enhance the teaching and learning of Computer Studies.

References

1. Albirini, A. (2006). Teachers' attitudes toward information and communication technologies: The case of Syrian EFL teachers. Computers & Education, 47, 373-398
2. Bransford, J., Brown, A. L., & Cocking, R. R. (2000).How people learn: brain, mind, experience, and school (2nd ed.). Washington, D.C.: National Academy

Press. https://www.msu.edu/~towlehje/How%20People%20Learn.pdf, Accessed20 April, 2012

3. Cox, M., Preston, C., & Cox, K. (1999). What factors support or prevent teachers from using ICT in their classrooms. Paper presented at the British Educational Research Association Annual Conference. http://www.apsce.net/ICCE2009/pdf/C6/proceedings808-815.pdf, Accessed 13 May, 2012

4. Drent, M., &Meelissen, M. (2007).Which Factors Obstruct or Stimulate Teacher Educators to Use ICT Innovatively? Journal of Computers &Education,51(1), 187-199

5. Ertmer, P. (1999). Addressing first-and second-order barriers to change: Strategies for technology integration. Educational Technology Research and Development, 47(4), 47-61.