

**TEACHERS' AND PUPILS' PERCEPTIONS OF INFORMATION COMMUNICATION
TECHNOLOGY (ICT) AS AN EXAMINABLE CURRICULUM SUBJECT IN
SELECTED SECONDARY SCHOOLS OF MAZABUKA DISTRICT, ZAMBIA**

BY

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**A Dissertation submitted to the University of Zambia in partial fulfilment of
the requirements for the award of the Degree of Master of Education in
Sociology of Education**

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Lusaka**

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DECLARATION

I, Siana Moono, do hereby declare that, this dissertation entitled; “Teachers’ and pupils’ perceptions of Information Communication Technology (ICT) as an examinable curriculum subject in selected secondary schools of Mazabuka District, Zambia” is my original work and has not been submitted to any institution before. All sources used have been thoroughly acknowledged.

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CERTIFICATE OF APPROVAL

This dissertation by **Siana Moono** is hereby approved as partial fulfilment of the requirements for the award the degree of Master of Education in Sociology of Education by the University of Zambia.

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ABSTRACT

The study interrogated teachers' and pupils' perceptions of Information Communication Technology (ICT) as an examinable curriculum subject in secondary schools of Mazabuka District, Southern Province of Zambia. In 2013, Ministry of General Education (MoGE) reviewed the National School Curriculum introducing ICT as an examinable subject at junior secondary school level. This development was however received with mixed feelings among different stakeholders across the nation. The study employed Davis' (1989) Technology Acceptance Model (TAM) theoretical framework to establish the teachers and pupils' perceptions of ICT as an examinable curriculum subject. In TAM two important constructs are; perceived usefulness and perceived ease of use of the technology (David, Foxall and Pallister, 2002). The descriptive research design was used to collect qualitative data from a sample of 36 participants who included school administrators, ICT teachers and pupils. Purposive and quota sampling were applied to select the participants. Data were collected using unstructured questionnaires, interviews and focus group discussions. The data were analysed thematically by the categorizing of major and sub-themes that emerged from the study.

The study showed that both the teachers and pupils had positive perceptions towards ICT as an examinable curriculum subject as majority of the participants strongly felt that the current times demanded for ICT knowledge in order for people to fit well in the modern world of technology. The study identified challenges secondary schools faced in the teaching and learning of ICT such as; lack of trained ICT teachers, inadequate computer hardware and software and irregular power supply. Various measures however, were employed in mitigating the challenges such as; community engagement, voluntary teaching, class splitting, use of alternative source of power and explorations of online resources. The study further established that ICT as a subject had bright prospects because of its viability, promising Government political will, ICT teacher qualifications improvement and ICT's critical role in social-economic development of a country.

The study recommends that the Ministry of General Education should maintain the policy position on ICT as a compulsory examinable subject at junior secondary school level. Government also should consider reduction of tax and tariffs on end-user consumer ICT products such as desk top computers, ipads, projectors and others.

DEDICATION

This work is dedicated to my adorable wife Memory Moono, my mother Elinah Simpuleti, my children Maluba, Malala, Malawo, Malelo and Malele for their diligent support during the period of writing this dissertation.

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ACRONYMS AND ABBREVIATIONS

ADCOME	Association for Development, Communication and Environment
BOG	Board of Governors
CAZ	Communication Authority of Zambia
CIAC	Computer and Internet Access Centres
CPD	Continuous Professional Development
DEBS	District Education Board Secretary
DVDS	Digital Video Discs
GOP	General Post Office
HOD	Head of Department
ICT	Information Communication Technology
ICTs	Information Communication Technologies
IBM	International Business Machines
LCD	Liquid Crystal Display
MDGs	Millennium Development Goals
MOCT	Ministry of Communications and Transport
MoGE	Ministry of General Education
PPP	Public Private Partnership
PTA	Parents Teachers Association
RA	Reasoned Action
RE	Religious Education
SNDP	Sixth National Development Plan
TAM	Technology Acceptance Model
TV	Television set
UNESCO	United Nation Education, Scientific and Cultural Organization
UNZA	University of Zambia
WWW	World Wide Web
ZAMTEL	Zambia Telecommunications Limited
ZESCO	Zambia Electricity Supply Corporation
ZICTA	Zambia Information and Communications Technology Authority

CHAPTER ONE

INTRODUCTION

1.1 An overview

This chapter outlines the background to the study, the statement of the problem, the purpose of the study, the objectives of the study, the research questions and the significance of the study. It also covers the theoretical framework, limitations, delimitation of the study and the operational definitions of the terms.

1.2 Background to the study

The world we live in today has never been the same since the advent of Information Communication Technology (ICT). The ways we live and do things have greatly been modified by the ICTs. In homes, schools and industries computers are steadily replacing the human presence. Researchers have observed that ICTs should no longer be looked upon as a luxury. The current times demand for the integration of ICT in education so as to create new learning and teaching possibilities (Sichone, 2011).

Zambia, just like many other countries has embraced the use and integration of ICTs in the delivery of education. The use of ICTs is becoming inevitable in educational institutions globally and Zambia is not an exception (Phiri, 2016). A lot of research has shown that the use of ICTs in educational institutions generally improves delivery of education and academic performance of pupils. In support of this view, Voogty and Knezeck (2008) postulate that ICTs facilitate the shift from “traditional pedagogy” to modern methodologies which are centred on the learner and based on the learner’s activity. In agreement to the above, Phiri (2016) quotes Annan (2003) the former United Nations Secretary General who said that if properly harnessed, ICT had the potential to improve all the aspects of social, economic and cultural life.

Realising the importance and dawn of ICT in the education system, the Zambian Government instituted various measures as early as 1990s. The Telecommunication Act of 1994 placed Zambia in a leading role as an African country in the use of ICT in Africa at the time. Following the Act, the Communication Authority of Zambia (CAZ), which is now known as Zambia Information and Communications Technology Authority (ZICTA) was formed. The formation of ZICTA enhanced

ICT activities in the country making Zambia one of the forerunners of internet in the Sub-Sahara region in the 1990s (Ministry of Communications and Transport, 2006).

Furthermore, the Government through the Ministry of General Education (MoGE) put huge investments in the education sector so as to ensure equity, quality and mastery of essential competences required for National development as provided for in the *National education policy, Educating Our Future of 1996*. The Government of Zambia took another step in 2007 by formulating and adopting the National ICT policy. The national ICT policy puts emphasis on integration of technology in education (UNESCO, 2013). Further, the Government of Zambia through the Ministry of General Education in 2013 made a remarkable move by reviewing the school curriculum so as to bring it to be in line with ICT demands of the country. The revised 2013 school curriculum rolled out ICT as a compulsory examinable curriculum subject in all schools at junior level but left it optional at senior level.

Following the successful revision of the school curriculum in 2013, the first ever ICT Grade nine (9) examinations were held in all Government schools in 2015. This showed the Government's commitment to materialise the adoption of ICT in the Zambian education system. However, it should be mentioned that the initial ICT examinations were characterised by a number of challenges such as lack of computers, unqualified ICT teachers and non-availability of electricity in rural areas (Phiri, 2016). Kandimba (2015) adds that implementation of ICT was a challenge, because in some schools pupils had never touched nor seen a computer in all their life time. Worse still, the schools were not even connected to the national electricity grid.

In spite of the global acknowledgement of the importance of ICT integration in education, very little is known regarding the perceptions of teachers and pupils towards ICT as an examinable curriculum subject in Zambian secondary schools. Moreover, teachers and pupils are the major stakeholders in the teaching and learning of ICT. The successful adoption of ICT in education needed to interrogate the views of teachers and learners. It is from this background that an investigation on teachers and pupils' perceptions of ICT as an examinable curriculum subject was deemed necessary.

1.3 Statement of the problem

In 2013, the Ministry of General Education (MoGE) reviewed the National school curriculum introducing ICT as an examinable compulsory curriculum subject at junior secondary school level in Zambia (Kandimba, 2015). This development was however received with mixed feelings among different stakeholders across the nation that included educationalists and pupils. The cause of the mixed feelings on ICT as an examinable curriculum subject is not clearly established, thus prompting this study on teachers' and pupils' perceptions of ICT as an examinable curriculum subject in secondary schools in Zambia. Globally, studies have been conducted on the use of ICTs in education though these tended to concentrate on the availability and effectiveness of the utilisation of ICT facilities in teaching and learning (Okeh and Opone, 2007; Ofojebe, 2006; Lopez, 2003 and Yusuf, 2000). This study endeavoured to fill the knowledge gap by investigating teachers and pupils' perceptions of ICT as an examinable curriculum subject in selected secondary schools of Mazabuka District of Southern Province.

1.4 Purpose of the study

The purpose of this study was to investigate the perceptions of both teachers and pupils towards ICT as an examinable curriculum subject in selected secondary schools of Mazabuka District of Southern Province.

1.5 Specific objectives

The objectives of the study were to:

- 1) Investigate teachers and pupils' perceptions of ICT as an examinable curriculum subject in secondary schools.
- 2) Establish challenges and prospects of ICT as an examinable curriculum subject in secondary schools as perceived by teachers and pupils.
- 3) Explore measures employed by secondary schools in mitigating challenges of ICT as an examinable curriculum subject in secondary schools.

1.6 Research questions

The research questions were as follows:

1. How do teachers and pupils perceive ICT as an examinable curriculum subject in secondary schools?
2. What are the challenges and prospects of ICT as an examinable curriculum subject in secondary schools?
3. What measures have been employed by secondary schools in mitigating challenges of ICT as an examinable curriculum subject in secondary schools?

1.7 Significance of the study

Ng'andu (2013) explains that significance of the study shows the relevance and implications of the study for researchers, practitioners and policy makers in the country. Thus, the study was done in anticipation to provide empirical research findings on teachers and pupils' perceptions of ICT as an examinable curriculum subject in selected secondary schools of Mazabuka District. It was hoped that the findings of the study might influence policy direction on the new national curriculum framework designed by the Ministry of General Education (MoGE). Curriculum developers, educational administrators and educational practitioners might also use the findings of the study in their quest to improve the education system in the country by considering the recommendations.

The study also hoped to contribute to the existing body of knowledge or available literature on ICT in education by establishing the prospects, challenges and mitigation measures employed by secondary schools. Furthermore, the study anticipated to create a base for future research on ICT in the education sector.

1.8 Theoretical framework

This study was guided by the Technological Acceptance Model (TAM). The Technology Acceptance Model is a theoretical model that explains how users come to accept or adopt and use a technology. Originally TAM was proposed by Davis in 1989. The model suggests that when a user is presented with a new technology, a number of factors influence his decision regarding how and when he would use it. This includes its perceived usefulness and its perceived ease of use.

This model adopts a well-established causal chain of beliefs, attitude, intention, actual behaviour, which was developed from the theory of Reasoned Action (RA) by social psychologists. In the model, two important constructs are identified; perceived usefulness and perceived ease of use (David et al., 2002). These perceptions predict attitudes toward the system adoption. Then the attitude develops the intentions to use and the intentions cause actual system usage. In many recent studies regarding technology, TAM is adopted extensively and has contributed to the prediction of individual usage of technology (Fishbein and Ajzen, 1989).

The researcher proposed to use TAM so as to understand teachers and pupils' perceptions of ICT as an examinable curriculum subject based on perceived usefulness of ICT, the degree to which a person believes that using a particular system would enhance his or her performance and perceived ease of use of ICTs, and the degree to which a person believes that using a particular system would be free of effort. Furthermore, David et al. (2002) explains that perceived ease of use has a direct effect on perceived usefulness and both determine the consumer's attitude towards use, which leads to behavioural intention to use the system and actual use of the system.

In this study, TAM was modified so as to determine participants' perceptions of ICT as an examinable curriculum subject in addition to the two constructs of perceived ease and perceived usefulness, perceived interest was added. Participants were asked whether ICT as an examination subject was easy, whether the subject was interesting and whether it was useful. The responses from participants were aligned with three domains of affective, cognitive and behavioural so as to establish the overall perceptions.

1.9 Limitations of the study

According to Mugenda and Mugenda (2003), the limitation of the study is some aspects of the study that the researcher knows may negatively affect the findings or generalisation of the results over which the researcher has no control. These mostly have to do with the sample size, length of the study and or data collection procedures.

The constraints of this study were that some participants returned incomplete questionnaires due to the technical nature of some questions on ICT. However, the problem was solved by triangulation of the tools. The same people that answered the questionnaires were again subjected

to interviews. Furthermore, the study was done only in three selected secondary schools of Mazabuka District with a sample size of 36 thereby restricting the generalisation of the findings.

1.10 Delimitation

Delimitation of the study draws lines and borders on content and study coverage area. It addresses how the study would be narrowed in scope (Kombo and Tromp, 2006). In this study, the focus was on teachers and pupils' perceptions of ICT as an examinable curriculum subject in three selected secondary schools of Mazabuka District, Southern Province. Mazabuka was chosen for the study because all the eleven (11) secondary schools in the District had implemented the 2013 reviewed curriculum as it was a mandatory national policy and both urban and rural secondary schools were easily accessible.

1.11 Operational definitions

It is important from the outset to identify and define key words or terms used in the study so that the reader understands their contextual meaning (Mulima, 2014). The following therefore, were the key terms used:

- ***Examinable subject*** -a subject in which learners are subject to assessment at national level at the end of the year before advancing to the next grade.
- ***ICT subject*** -Information Communication Technology or Computer studies at junior secondary school level in which learners are taught the use of ICTs.
- ***Untrained ICT teachers*** -Secondary schoolteachers teaching computer studies (ICT) but without any specialised professional training in ICT.
- ***New curriculum*** -2013 reviewed national school course outline that launched ICT as an examinable subject.
- ***Perceptions*** -observable behavioural feelings and interpretation of a phenomenon.
- ***Pupils*** -male and female pupils doing their 8th and 9th grade at secondary school level.

- *School administrators* -head teachers, deputy heads, heads of departments and guidance teachers.
- *Volunteer ICT teacher*-professionally trained teacher in other subject teaching ICT.

1.12 Summary of the chapter

Chapter one has highlighted the importance of Information Communication Technology (ICT) in today's society. Globally, ICTs has taken centre stage in our lives starting in homes, schools and industries thus integration of ICT in education system is no longer an option but something inevitable. In view of this, the Zambian Government formulated and adopted the ICT policy in 2007 and reviewed the national school curriculum in 2013 rolling out ICT as a compulsory examinable curriculum subject at junior secondary school. In 2015, the first ever ICT grade nine (9) examinations were held countrywide though they were characterised by numerous challenges. The introduction of ICT as a compulsory examinable curriculum subject at junior secondary school was received with mixed feelings among different stakeholders thus prompting this study on teachers' and pupils' perceptions towards ICT as an examinable curriculum subject in Mazabuka District of Southern Province of Zambia. The next chapter reviews literature related to the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 An overview

This chapter reviews the literature related to Information Communication Technology (ICT) in education in general. The review is categorised into seven (7) broad areas namely; background of ICT in Zambia, the importance of perception in education, ICT facilities available in schools, teachers' perceptions of ICT in schools, pupils' perceptions of ICT in schools, benefits of teaching and learning ICT, challenges to ICT teaching and learning in schools. At the end of the chapter a summary of the reviewed literature is given.

2.2 Brief history of ICT in Education

Parson (2017) explains that technology in education started in the 1600s when the modern library, the pencil, the slide ruler, hornbook and the magin Catacoprico were used to enhance learning in the classroom. By 1700, the Jacquard loom that used punch cards as controls was born in France. That marked the Modern day computer programming. Slates, chalk and blackboards followed in 1800s. In 1822, Charles Babbage introduced the calculating machine that lead to digital computing. This was followed by Christopher Sholes's QWERTY key board typewriter in 1873. The early 20th century saw the coming of the stereoscope, film projector and the radio in the education sector. By Mid 1900s, the overhead projector and mimeograph were introduced. The slide ruler, video tapes, photocopier, Microfilm, calculator, scantron and the Public Broadcasting System (PBS) appeared in the late 20th century.

White (2008) adds that in 1974 Vint Cert discovered internet and he was able to transfer files and post information for public perusal leading to emergency of email and news services. Internet remained a realm of the military and NASA till mid-20th century. According to Parson (2017), in 1977 Apple released ii desktop computer and IBM (International Business Machines) a personal computer. This was followed by the development of the World Wide Web (WWW) by Robert Caillian and Tim Berners- Lee in Switzerland. Post 2000, Google, Wikipedia, Myspace, Facebook, and Twitter appeared on WWW including productive software such as World, excel Power Point and the like. Schools, colleges and universities around the world have since developed various educational websites.

2.3 Background of ICT in Zambia

Zambia's history in ICTs dates back to pre-independence times when the first manual telephone exchange was installed in 1913 by the General Post Office (GPO) in Livingstone the then Northern Rhodesia Capital. This was followed by opening of a radio station in Lusaka in 1941 by the colonial government. Since then the provisions of the ICTs were monopolized by the state until 1991 liberalization of Zambia's economy (Habeenzu, 2010, MOCT, 2006 and Ebizguides.com, 2006). ICT activities in Zambia were then enhanced by the 1994 telecommunications Act saw the formation of Communications Authority of Zambia (CAZ) now Zambia Information Communication Technology Authority (MOCT, 2006). The enactment of 1994 Telecommunications Act saw spread of ICT activities across various Government ministries. In 1998, the Ministry of Education started introducing computer studies in selected secondary schools with a view of spreading to all schools (MOCT, 2006). In 2001, the government embarked on formulation of the national ICT policy that was completed in 2005 (Mulima, 2014). In 2007 the National ICT policy was enacted with emphasis on integration of technology in education. (UNESCO, 2013). In 2013 the Ministry of Education reviewed the school curriculum to include ICT as an examinable compulsory subject at junior secondary school (Kandimba, 2015).

2.4 Importance of perception in education

Mangal (2001) in Mulendama (2007) defines perception as a highly individualised psychological process that an organism experiences in organising and interpreting the complex patterns of sensory stimulation for giving the necessary meaning to initiate behavioural reaction. The teachers and pupils' behaviour in any subject is a sum total of their perception. Alusa (2000) argues that perceptions are very important to an individual as they play a pivotal role in the way they see the world around them and how they feel about what they meet and experience in our day today endeavours. Perception is an active process and not a passive one. Expectations, experiences and culture are important aspects of perceptions.

In any form of education, perception is an important aspect as it forms the bases for interpreting and giving meaning to situations and objects. An individual's perception for instance determines one's behaviour and effort put in learning a particular subject. Understanding of perception in education is thus very essential if education was to achieve its ultimate goals (Mwamwenda, 1996).

The importance of the study of perception in education can be seen from a number of studies that have been done globally on it in different subjects including ICT.

2.5 ICT facilities available in schools

In teaching and learning of ICT the availability of the facilities plays a vital role since ICT is a practical subject that should not be learnt in abstract. Various researchers have identified the computer to be the most common ICT facility available in learning centers. Mulima (2014) looked at the perceptions of teachers and learners on the role of ICTs in teaching Religious Education (RE) in selected secondary schools in Kabwe District, Zambia and found that schools had a variety of ICT facilities both hardware and software. Among the common ones were desk computers, laptops, overhead projectors, scanners, printers, DVDs (Digital Video Discs), TV sets, internet routers, Microsoft packages, among others. However, the study noted that the facilities in the three selected schools were as good as e-wastes as most of them were broken down and outdated.

In another study Lufungulo (2015) found that the widely used ICT facilities in schools piloting e-learning were ipads, Laptops, earphones, projectors and audio speakers. Although the study revealed that the ICT facilities were available in the schools, the quantities were not clearly stated. Ang'ondi's (2013) study done in Kenya noted that computers, laptops, LCD (Liquid Crystal Display) projectors and printers were the most common ICT tools available in schools. However, the facilities were not enough to cater for both teachers and pupils. The study reported that teachers took their own personal computers to schools to curb the problem of shortage of computers. These findings were similar to Mulima (2014) and Lufungulo (2015) who postulated that the computer and laptops are among the most common ICT facilities in schools.

2.6 Teachers' perceptions of ICT

Albugami and Ahmed (2015) study on success factors for ICT implementation in Saudi secondary schools showed that many developed and developing countries had invested heavily in the ICT sector in education. Saudi Arabia was one of such countries. However, despite massive investment in the ICT sector in education, the progression has often been disappointing resulting in a number of unanswered questions for decision-makers and educators alike. Thus, Albugami and Ahmed (2015) interrogated factors that affect the successful implementation of ICT in schools from the participants' perspective. The study was qualitative in nature and qualitative data was collected

using semi-structured interviews from two ICT directors, four headmasters, four teachers and four students, in Saudi secondary schools. The results generally showed that participants had positive views and attitude towards integration of ICT tools in the education. ICT was perceived as an important tool in improving performance, collaboration, learning experience and learning outcomes in school. However, the study also showed that some head teachers lacked leadership due to various barriers experienced in ICT use and implementation. Albugami and Ahmed (2015) study did not clearly tell who was more positive towards ICT between the ICT directors, head teachers, teachers and students. The exact barriers experienced by head teachers in use of ICT and implementation were also not clearly stated.

In India, a study was done by Padmavathi (2013) in Puducherry, where he surveyed secondary school teachers' perception, competency and use of computer. The aim of the study was to bring out secondary school teachers' perception and competency in relation to actual use of computers in the classroom teaching. The findings from the survey revealed that teachers in India actually had a favourable perception towards use of computers. Teachers did not have any major challenges and enjoyed using ICTs in teaching. The participants who took part in this study were teachers in urban and semi-urban schools in the union territory of Puducherry and the outcome might have been different if participants from rural schools were included. The study was also confined to randomly selected teachers working in secondary schools in Puducherry giving the study strength. The use of random sampling gave participants equal chance for inclusion in the study thereby reducing biasness.

The study also by Rajasekar and Raja (2007) on computer knowledge and attitude towards computers of 670 higher secondary school teachers in Cuddalore District of Tamilnadu revealed that 60.4% of the teachers had relatively a positive attitude towards computers. In another study by Narasimhan (2012) on the attitude of secondary school teachers of English in Srikakulum District of Andhra Pradesh in India equally showed a positive attitude of teachers towards ICT. The majority of the respondents indicated that they were in support of using Information Communication Technology in the teaching of English. The findings of the study were in agreement with a study conducted by Lau and Sim (2008) in Malaysia who indicated that teachers held a reasonably positive attitude towards ICT adoption in schools.

Kiptalam (2010) in Kenya investigated the accessibility and utilisation of ICTs among secondary school teachers and suggested that teachers had a positive attitude towards ICTs and appreciated its use in teaching and learning. These findings were also in agreement with Lau and Sim (2008) in Malaysia who made a number of interesting observations in the use of ICTs in education. In Malaysia for example, 75% of teachers said that they used ICTs for teaching and 71% considered their ICT competences to be excellent or good in word processing. Teachers agreed that ICT use made their work more effective by 80% and the majority of the respondents showed that they would like to integrate ICT in their teaching but they had limited knowledge to make full use of ICTs.

Kiptalam's (2010) study applied a cross sectional descriptive survey using quantitative approaches for data collection, analysis and reporting which gave the study a very good strength. However, the sample size and sampling method is questionable. Out of 468 sampled schools from a population of 6,566 secondary schools with 43,016 teachers only 11 secondary schools connected with internet were selected giving 132 participants with 74.2% response rate. The sample size used should have been bigger so as to give much more representative findings. Schools that had no internet should have been included also because ICT is not only about internet. The research should have also considered ways of reducing the percentage of non-responsiveness that stood at 25.8%. There is a high likelihood that if the sample was increased and non-responsiveness improved, the results would probably have been different due to wide representation of views.

Nganji j., Kwemain R. & Taku C. (2010) study in Cameroon evaluated one of the pioneer projects, the Computer and Internet Access Centres (CIAC) project, implemented by the Association for Development, Communication and Environment (ADCOME) a non-governmental organization working to help bridge the digital divide through various projects that implements ICT in secondary schools. The study indicated that although there were overwhelming impact of new technologies globally, developing countries still had challenges in bridging the digital divide. Cameroon is one of these countries as for several years has been trailing in the employment of Information and Communication Technologies (ICTs) to facilitate learning and teaching in schools. Nganji et al. (2010) found that school administrators and teachers supported the project by providing well protected rooms for computer laboratories. Teachers participated in computer science induction courses and continued to network afterwards and shared the experiences. The

CIAC project was highly supported by teachers in secondary schools as they relentlessly submitted the reports to the project coordinators and many schools were singing up for the project.

Another study by Boit et al. (2012) was undertaken to evaluate the implementation of ICT learning, teaching, school administration and use of E-communication between cooperating rural secondary schools in Western Kenya. The study was conducted in two selected rural schools namely: Anin secondary school (Keiyo County) and Cheplaskei secondary school (Uasin-Gishu County) under a Finnish project “Enabling rural Western Kenyan schools to exploit information technology”. A case study research design was adopted for this study where interviews, observation, open-ended questionnaires and document analysis were used to collect qualitative data. The respondents interviewed in each school were mainly head teachers, ICT instructors, ICT technicians, teachers, students, Board of Governors (BOG) and Parents Teachers Association (PTA) members. The findings indicate that the school Head teachers, teachers and management were receptive, friendly and supportive. They exhibited readiness and willingness to accommodate new ideas and innovation. This was demonstrated through positive attitude among the administrators and teachers in adoption of new technology. However, the study did not come out clearly on what basis participants were supportive of the ICT project in the two schools.

Mulima’s (2014) study in Kabwe, Zambia on teachers and learners’ perceptions on the role of ICT in Religious Education (RE) sampled participants from three schools within Kabwe and majority of them supported the use of ICT in learning of RE. The study showed that teachers had a positive perception of ICT because it promoted ambience transformation in class, motivation, higher retention and increased learner participation in the learning process. Mulima (2014) further noted that ICTs enhanced and promoted increased learner engagement and concentration in the teaching and learning processes. Most RE teachers interviewed pointed out that, ICTs played a major role in improving the efficiency of RE lessons and broadened access to quality in preparation and lesson delivery in schools.

The findings in Kabwe clearly showed that most of the respondents agreed that ICTs were important in teaching and learning processes. However, the positive perceptions on application of ICTs in schools came from one subject area and only in three schools. These schools were probably responding based on environment obtaining in their schools which would have been different in other schools.

On the contrary, Ang'ondi (2013) reveals that in Kenya the Government rolled out an ICT project aimed at equipping 1050 schools with ICT infrastructure and capacity building of teachers in areas of ICT integration. The Government wanting the project to be a success, appointed technical support teachers who were referred to as ICT champions. These worked with the teachers in the implementation of the project. The study interrogated the views of ICT champions on the teachers' perception and attitudes on integration of ICTs in schools. The study brought very stunning results. It came out clearly that the majority of teachers did not bother to use ICTs in teaching and learning some even absconded the in-service trainings they were given to improve their skills in ICTs. The administrators also lacked commitment in seeing that ICTs were integrated in learning. The teachers were of the view that using ICT in teaching was a waste of time since it was not an examinable subject. Yet others were of the view that ICTs should be optional or if anything better for commercial colleges and not secondary schools. The pessimistic view was compounded by the fact that there was no clear policy in Kenya on how ICT was supposed to be taught. The findings of Ang'ondi (2013) clearly gave a negative perception towards ICT integration in secondary schools. However, the findings of his study were based on an online survey where the questionnaire was sent on Google group's forum on which the ICT champions exchanged ideas and reflected with each other regularly. It is thus possible that the outcome could have been greatly influenced by the regular communication and ideas shared on ICT champions' Google group. There is a high likelihood that if another methodology was employed that controlled shared interests, possibly the results would have been different.

Another study by Nchunge, D. M., Sakwa, M., & Mwangi, W. (2012) revealed that ICT adoption in both public and private secondary schools in Kenya was characterized by complexity perceptions. A number of factors for the unclear view were attributed to inadequate information technology literacy levels and lack of psychological and technological readiness by the teachers. Nchunge et al. (2012) observations that there were insufficient ICT policy guidelines in Kenya were in agreement with Ang'ondi's (2013).

Lufungulo (2015) also highlighted that as much as the majority of people appreciated the teaching of ICT, the subject was problematic to the young generation. The fear was that in ICT classroom pupils could easily go beyond the lesson to even access websites that were not suitable. ICT interaction posed a risk to learners such as engaging bullying by posting sensitive messages and

pictures, surfing unsuitable content like violent and pornographic materials. This view made some teachers to have reservations towards ICT integration in schools.

2.7 Pupils' perceptions of ICT in schools

Deaney, R., Ruthven, K. and Hennessy, S. (2003) study on exploration of the pupils' views on the use of Information and Communication Technology within subject teaching and learning showed that pupils valued ICT as it enabled them to carry out academic tasks easily, rapidly and reliably, yielding results of high quality hence making ICT generally appreciated. Going by the Technological Acceptance Model (TAM) theoretical background, it can be argued that learners showed positive perception (acceptance) of ICT because of the perceived usefulness and ease that it brought in their academic work. Foxall and Pallister (2002) postulate that the most important constructs in Davis' theory is perceived usefulness and ease of use. Thus, the learners in all six English schools perceived the learning where technology was in use as interesting. The study was however only limited to six schools and the longitudinal method used could have had influence on the findings.

Nganji et al. (2010) study in Cameroon entitled closing the digital gap in Cameroonian secondary schools through the CIAC project revealed that ICT learners had a favorable attitude towards ICT learning. It was found that the CIAC has had a positive impact on students in schools where it was implemented such that the attendance at computer science lessons was very good and pupils at many instances asked for additional time to remain in the computer laboratories so as to access the ICT facilities. The situation was similar to that of Kenya (Wims and Lawler, 2007) in Nganji et al. (2010) where the students considered technology classes more interesting than other disciplines. Generally learners in developing countries are positive towards ICT use as they consider it useful in life.

The study by Mbah (2010) in Cameroon investigated the impact of Information Communication and Technology (ICT) on students' study habits. The research was conducted mainly to investigate students' familiarity and attitude towards ICTs and to examine the possible relationship students' use of ICTs and study habits. The findings were that more than 81% of the respondents had a positive attitude towards ICTs as it facilitated learning. The study showed that students at University of Buea used computers and the internet on daily basis mainly to communicate through

e-mail and chat, and also for research and studying. The study recorded a positive attitude towards the use of ICT but it did not disclose whether the majority of respondents used computers for research and study or just communication via internet. There was need also to focus on actual use of ICT in the learning process.

Mulima's (2014) study in Kabwe however found that learners were able to understand the RE lessons better when ICTs were used. The ICTs made it easier for learners to grasp and understand the concepts in detail. Participation levels were raised in learning of RE with the application of ICT. The learners said they found answers to questions through seeing pictures and videos online that were related to the topic. Learning was more interesting and meaningful. The learning of concepts was much easier to understand. The use of ICTs increased concentration, participation, motivation and retention. The ICTs additionally greatly contributed to critical thinking among the learners. As a result, learners had a favourable perception of applying ICT in RE learning.

The study concluded that the ease in learning made the learners to have a favourable perception towards application of ICTs in RE learning. However, the study did not provide the extent to which participation, understanding, creativity and learning ambiance were elevated.

2.8 Benefits of teaching and learning ICT

Studies indicate that new technologies in the classroom provide opportunities for students to learn to live in the information age as the twenty-first century was a century of the information era. Yelland (2001) points out that the traditional educational environments did not prepare learners to be productive in today's workplaces in society. Thus, application of ICTs in schools enables learners to acquire computer skills needed in this century. Grimus (2000) adds that the relevance of teaching and studying of ICT in schools, especially at the basic school level cannot be overemphasized as it prepares learners to cope with the demands of the current century. ICT prepared learners for future tasks in which the job market demands a computer literate workforce. Grimus (2000) affirms that technology in education further, prepares learners for workplace where ICTs, particularly computers and internet technologies are very pronounced in this global market. Boit J, Menjo, D. and Kimutai, J (2012) adds that technology is important as it plays an important role in the future of any economy and therefore demands its own place in the curriculum of the school. The introduction of ICT in schools means well for the students as they would not require

to undertake costly ICT training in commercial colleges after completing their secondary school education.

Furthermore, ICT learning in institutions helps to improve the quality of education system in general. Boit et al. (2012) and Nganji et al. (2010) argues that computer science helps in teaching and learning of other subjects. Actually it was noted that ICT students performed better even in other subjects such as Mathematics, Physics, Biology, Economics, and languages within the school curriculum as they were able to seek information and knowledge from internet than their counterparts the non ICT students. ICT also encourages e-learning, blended learning and open and distance learning. Through ICT a motivating learning environment where learners are given an opportunity to engage with instruction within the school system is made possible.

Jhuree (2005) argues that ICT is beneficial as it is a necessary tool for economic and social development. ICT plays a crosscutting role in developmental issues and once properly applied can lead to broader achievement of national development goals such as the United Nations Millennium Development Goals (MDGS) now Sustainable Development Goals (SDGs). Technology such as Information and Communication Technology (ICT) is a potent force in driving economic, social, political and educational reforms. Countries, particularly developing ones, cannot afford to stay passive to ICT if they are to compete and strive in the global economy.

2.9 Challenges of ICT teaching and learning in schools

A number of researchers such as (Albugami & Ahmed, 2015; Becta, 2004; Boit, et al., 2012; Lufungulo, 2015; Nganji et al., 2010 and Pelgrum; 2001) have observed that ICT teaching and learning has a number of challenges especially in developing countries. These challenges are both extrinsic and intrinsic barriers. Extrinsic barriers are organizational barriers that include access, time, support, resources and training. Lack of resources, training and time were the commonest organizational barriers in ICT learning developing countries. For instance Nganji et al. (2010) found that in Cameroon there was an average of 50 ICT students per computer while Boit et al. (2012) revealed that in Western Kenya two schools had 12 and 10 computers to be used by 325 students in Anin and 180 in Cheplaskei respectively while Bingimlas (2009) in Nganji et al. (2010) there were four to five students on one computer in Saudi secondary schools. Furthermore, Albugami and Ahmed (2015) found that Saudi secondary school lacked trained ICT teachers.

Similarly Boit et al. (2012) noted that in Kenya there was a shortage of professionals qualified in ICT in secondary schools. Grewan and Day (2003) in Nganji et al. (2010) adds that Africa's ICT industry is stifled by shortage of appropriated or experienced personal. Sicilia (2005) also noted that lack of access and effective training in ICT pedagogical skills was problem in ICT teaching in developing nations. Teachers needed not just knowledge on how to use ICT tools but skills on how to teach ICT. Pelgrum (2001) worldwide survey conducted of nationally representative samples of schools from 26 countries also found that teachers' lack of knowledge and skill was a serious obstacle to using ICT in primary and secondary schools. Lack of time was also a common problem in ICT education. Researchers such as Albugami and Ahmed (2015) and Sicilia (2005) point out limitations and difficulty in scheduling enough computer time for classes as a hurdle. According to Sicilia (2005) the most common challenge faced by all teachers was lack of time to plan technology lessons, explore internet sites, or look at various aspects of educational software. Albugami and Ahmed (2015) adds that in Saudi secondary schools teachers had no sufficient time to prepare for ICT lessons.

The Intrinsic barriers are individual barriers that include attitudes, beliefs, practices and resistance. According to British Educational Communication Agency (BECTA), (2004) lack of confidence was a major intrinsic barrier to uptake of ICT by teachers in the classroom. The lack of confidence emanated from the fear of failure; limitations in teachers' ICT knowledge making them feel anxious about using ICT. BECTA (2004) concludes that many teachers who did not consider themselves to be well skilled in using ICT felt anxious about using it in front of a class of children who might know more than them. The lack of teacher competence in developing countries is attributed to lack of training in ICT. Boit et al. (2012), found that only 50% of teachers had confidence in applying ICT to instructions and management of class activities in two rural Western Kenyan schools. The lack of knowledge and skill resulted into another barrier of resistance to change. Teachers resist change to new technology especially when they did not feel the need to change their professional practice. Sometimes rejecting the need for change was due to lack of sufficient knowledge in accepting the change and unclear opportunities of the new technologies (Becta, 2004; Gomes, 2005).

Lufungulo's (2015) study in Zambia on primary school teachers' attitude towards ICT integration in Social Studies in Lusaka and Katete District found that scarcity of ICT equipment and lack of

internet in primary schools was a major problem. Still those who managed to access internet had a challenge in browsing because it was time consuming. The other challenge observed was the lack of electricity in schools especially those in rural areas. Hennessy et al. (2010) in Lufungulo (2015) argued that lack of electricity was a major problem that hampered the integration of ICT in most developing countries. This was a big challenge especially to the schools that entirely depended on hydro- electric power.

The major challenge in ICT learning in developing countries was insufficient ICT resources due to financial limitations, breakdown of refurbished computers, unreliable internet connectivity, frequent and unexpected electric power cuts, lack of standby generators that could keep the computers running even after power cuts schools not connected to national electricity grid, crowded computer laboratories, lack of educational software and hardware, (Boit et al. 2012; Lufungulo, 2015 and Nganji et al., 2010).

The literature review on challenges on ICT integration in the education system outlined the organizational and individual barriers hampering ICT development in the education system but no sufficient measures were outlined in alleviation of the challenges. This study endeavored to bring out the mitigation measures employed by secondary schools in mitigation of challenges hampering ICT learning in secondary schools.

2.10 Summary of the chapter

The foregone chapter has indicated that ICT is a necessary and vital practical subject in this era of information age. Countries globally have embraced and integrated ICT in the education system. Successful integration of ICT in education goes with availability of various electronic gadgets especially the desktop computer. The literature has also shown that most developing countries have poor and inadequate computer hardware and software in schools. The major challenges among others in ICT teaching and learning in schools included organisational barriers such as access, time, support, resources and training and individual barriers such as attitude, beliefs, practices and resistance .However, teachers and pupils have a favourable attitude towards ICT integration in the education system in developing countries. The next chapter discusses the methodology applied in this study.

CHAPTER THREE

METHODOLOGY

3.1 An overview

This chapter discusses the research methodology the researcher applied to investigate the teachers and pupils' perceptions towards ICT as an examinable curriculum subject in secondary schools. The chapter presents the research design used, target population, sample size, sampling techniques and data collection instruments employed in the study, characteristics of participants, data collection procedure, data analysis process and the ethical considerations. At the end of the chapter a summary on the methodology is given.

3.2 Research design

Kombo and Tromp (2006) explain that the research design is an arrangement of conditions for collection and analysis of data in a manner that aims to combine relevance to the research purpose. In other words, a research design is a plan or a blue print that guides and shows how the study would be conducted. This entails all the procedures by which the research problem is tackled to arrive at the findings. The research design is important as it directs and guides the researcher during the research process.

This study was qualitative in nature. Qualitative research has an advantage over quantitative approach in studying human behaviour because it allows the researcher to go beyond the statistical results. Human behaviour is best explained by observing qualities of behaviour such as attitudes and other emotions (Mugenda and Mugenda, 2003). Descriptive research design was employed so as to precisely capture the respondents' views and opinions. Mugenda and Mugenda (2003) define descriptive research as a process of collecting data so as to answer questions concerning the current status of the subject in the study. Descriptive study is advantageous because it determines and reports the way things are. It describes possible behaviour, attitudes, values and characteristics. Mandyata (2015) adds that descriptive design is reflective and accommodative to the human mind. The design was appropriate in the investigation of teachers' and pupils' perceptions of ICT as an examinable curriculum subject because it could be used for collection of information about people's attitudes, opinions, and feelings and in addressing various social and educational related problems (Kalabula, 2001).

The phenomenological approach was used to collect qualitative data. Phenomenological approach was well placed in this study because it focuses on real life experiences of respondents (Creswell, 2009). Understanding of how teachers and pupils' perceived ICT as an examinable curriculum subject had to be approached from the way they saw and felt their experiences about the phenomenon. The study was conducted in the participants' natural environment without any treatment in line with the approach.

3.3 Study site

The study was conducted in three (3) selected schools of Mazabuka District in Southern Province of Zambia. The three schools were geographically picked from urban, peri- urban and rural area. Mazabuka District has a total population of 221,893 people with an annual growth rate of 4%. Out of the total population, 109,876 (49.5%) are males and 112,017 (50.4%) are females. The district holds about 14% of the total provincial population and about 2% of the national total (Central Statistical Office, 2012). The district has eleven (11) public secondary schools and several private ones.

3.4 Target population

The target population is an entire group of persons or elements that have at least one thing in common (Chabala, 2014). The target population for this study was composed of all secondary schools, school administrators, teachers and pupils at junior secondary school level in Mazabuka District of Southern Province.

3.5 Sample size

A sample is a smaller group obtained from the accessible population. Each member or case in the sample is usually known as a subject. Sometimes subjects may be termed as 'respondents' or 'interviewees' (Mugenda and Mugenda, 2003). The sample size for this study included twenty-seven (27) grade eight (8) and grade nine (9) pupils, six (6) school administrators who included Head teachers, Deputy head teachers and Head of Departments (HODs) and three volunteer (3) ICT teachers. In total, the sample size comprised of 36 respondents. Sandelowski (1995) points out that determining adequate sample size in qualitative research is ultimately a matter of judgment and experience on the part of the researcher, and researchers need to evaluate the quality of the

information to be collected in light of the uses to which it will be put. Below is the table on distribution of the participants.

Table 1:1 Distributions of participants

School/ location	Administrators	ICT teachers	Pupils	Total
A (Urban)	2	1	9	12
B (Peri -urban)	2	1	9	12
C(Rural)	2	1	9	12
TOTAL	6	3	27	36

The study comprised 6 (17%) school administrators, 3 (8%) ICT teachers and 27 (75%) pupils. More pupils and teachers than administrators were drawn in the sample as they were the key informants for the study.

3.6 Characteristics of the sample

The research included the collection of the bio- data and characteristics of the participants. This included the interrogation of the informants' gender, age, and marital status, the highest academic qualification and length in service as shown below.

3.6.1 Gender of participants

Both females and males took part in the study as indicated below in table 1.1.

Table 1:2 Gender of participants

GENDER	FREQUENCY	PERCENTAGE (%)
Female	16	44
Male	20	56
TOTAL	36	100

The study was gender sensitive as indicated in the table above. The majority of the participants were males, 20 (56%) while females were 16 (44%). There were more males who participated in the study than the females because secondary schools in Mazabuka were male dominated.

3.6.2 Age range of participants

The researcher also looked at the ages of the participants in the study. The youngest respondent was aged 12 and the oldest was 56. Table 1.2 below shows the grouped distribution of the ages of the participants.

Table 1:3 Age range of participants

AGE	FREQUENCY	PERCENTAGE (%)
12-20	27	75
21-29	2	5.5
30-38	4	11
39-47	2	5.5
48-56	1	3
TOTAL	36	100

The majority 27 (75%) of the participants were in the age range of 12-20 years. This was so because more pupils were drawn in the sample than were administrators and teachers.

3.6.3 Marital status of participants

Only the marital status of administrators and teachers was sought as the rest were pupils who were not expected to be married. Table 1.3 below shows the distribution of the participants' marital status.

Table 1:4. Marital status of participants

STATUS	FEMALE	MALE	TOTAL
Married	1	6	7
Unmarried	1	1	2
TOTAL	2	7	9

Out of the nine (9) participants seven (7) were married, six (6) males and one (1) female. The other two (2), one (1) male and one (1) female were not married.

3.6.4 Qualifications of administrators and ICT teachers

The researcher also considered the qualification level of secondary school administrators and the ICT teachers in secondary schools. The findings are tabulated below in table 1.4.

Table 1:5 Qualifications of participants

QUALIFICATION	ADMINISTRATORS	ICT TEACHERS	TOTAL
Degree	5	1	6
Diploma	1	2	3
TOTAL	6	3	9

The qualification levels varied between the school administrators and the teachers. Out of six (6) administrators five (5) were degree holders and out of the three (3) teachers only one (1) was a degree holder. However, none of the participants had qualifications to teach ICT.

3.6.5 Duration in service for administrators and ICT teachers

The researcher further looked at the duration in service for secondary school administrators and ICT teachers in secondary schools in Mazabuka District. The table below shows the number of years participants have been teaching;

Table 1:6 Participants duration in teaching service

S/N	POSITION	CODE	SEX	YEARS IN SERVICE
1	Urban Head teacher	Admin -1	M	21
2	Rural Deputy Head	Admin- 2	M	15
3	Peri- urban Head	Admin- 3	F	12
4	Urban HOD	Admin -4	M	25
5	Rural HOD	Admin- 5	M	18
6	Peri-urban HOD	Admin- 6	M	14
7	Urban teacher	ICT tr- 1	F	12
8	Rural teacher	ICT tr- 2	M	7
9	Peri-urban teacher	ICT tr -3	M	4

The table above shows that the longest period in service an administrator had was 25 years and the shortest was 12 years. On the teachers' side, the longest period in service was 12 years while the shortest was 4 years.

3.7 Sampling procedure

According to Mugenda and Mugenda (2003) sampling is the process of selecting a number of individuals for a study in a way that individuals selected are representative of the larger group. When a sample is representative then a researcher can gain information about the population which is the entire group of individuals having common observable characteristics. The study being qualitative in nature, non-probability sampling techniques were used to come up with the sample size. Quota sampling was applied to select three (3) schools out of eleven (11) in Mazabuka District, one (1) from urban, one (1) Peri-urban and one (1) from rural. Purposive sampling was employed to select six (6) school administrators, and three (3) ICT teachers. Lastly twenty-seven (27) ICT pupils were selected from three (3) schools purposively.

3.8 Instruments for data collection

The following tools were used to collect data from participants in the field; unstructured questionnaire, interview guide, Focus Group Discussion (FGD) guide and a voice recorder. The

researcher used the unstructured questionnaire and interview guide for both school administrators and ICT teachers. The questionnaire was more appropriate for administrators and ICT teachers because it is flexible for people with busy schedules. The focus group discussions were used for pupils as key informants because of being participative. FGDs are also advantageous in qualitative research because varied opinions on the topic can be obtained from the respondents. The structured interviews were used because they gave reliable and quality information as the researcher was allowed to probe and get clarifications where necessary. Kombo and Tromp (2009) add that, structured interviews are reliable and quality information can be obtained because each informant is subjected to similar questions with others. The voice recorder was used to record all the interviews and discussions so as to get the verbatim from the participants.

3.9 Procedure for data collection

The researcher was first cleared by the University of Zambia (UNZA) before proceeding to Mazabuka for data collection. Then permission was sought from the District Board Education Secretary (DEBS) in Mazabuka and from the selected school administrators before any work was done. Having been granted the permission to carry out the study, the researcher tested the instruments by doing a pilot study. Preliminary analysis of the findings from the pilot study was done and the instruments were adjusted a bit.

Consent from the participants in the research was sought to assure confidentiality and trustworthiness before the main study commenced. This was followed by distribution of the questionnaires to school administrators and ICT teachers, conducting of interviews with school administrators and ICT teachers and focus group discussions with the pupils. The questionnaires and interviews were administered to six (6) school administrators and three (3) ICT teachers from the three selected secondary schools in Mazabuka District. Three (3) focus group discussions were held with the pupils at each school during the third term of the school session calendar. It took one month for the researcher to gather all the data from the field. Afterwards, the answered questionnaires, recordings of all interviews and focus group discussions were collected in readiness for data analysis.

3.10 Reliability and Validity

Reliability and validity are measures of the relevance and correctness in the research process. Reliability is the degree to which the research instruments can yield consistent results or data after repeated trials (Creswell, 2009). Reliability is mainly influenced by random error which is deviation from true measurement due factors that may have not been effectively checked such as wrong coding, poor instructions, biasness or fatigue during research. If random error increases, reliability reduces. Validity refers to the accuracy and meaningfulness of inferences based on the research findings. In other terms validity is the degree to which the results obtained from the analysis represent the phenomenon under study (Mugenda and Mugenda, 2003).

In order to ensure the reliability of the findings, the researcher had to select appropriate informants and a pilot study was done in order to pre-test the instruments. The purpose of pre-testing the instruments was to assess the clarity of the instruments and ensure that they had the same meaning to all respondents. The items that were not clear in the instruments were reworked on after the pilot study was done. Validity was obtained by standardising the data collection instruments and triangulation where the school administrators and ICT teachers were subjected to both the questionnaire and the interviews.

3.11 Data analysis

Mugenda and Mugenda (2003) guides that data analysis is the process of bringing order, structure and meaning to the mass of collected information. Yin (2009) points out that the researcher should study the output from the field so as to see whether there is any meaningful pattern coming out. Creswell (2009) also adds that a reflection should be made on the general meaning of the overall information when analysing data.

Having gathered the data from the field, the scripted information from questionnaires were read through and through so as to be familiar with the data. Responses from the questionnaires were put in categories and given themes. The transcription of the recordings of the interviews with ICT teachers, school administrators and focus group discussions with pupils was done taking note of the key information that emerged from the participants. Main ideas that repeated themselves throughout the data were labelled with a single word or phrase. After all the information was coded, patterns or themes that emerged were put into major and sub-themes. The themes were then

renamed and put according to the research questions and those which were unnecessary were discarded. Lastly, conclusions were drawn based on the findings according to each objective of the study.

3.12 Ethical consideration

The names or any form of identity of participants was concealed in this study as lack of confidentiality and mishandling of the information provided in a research may cause the respondents physical or psychological harm (Mugenda and Mugenda, 2003). Permission was sought from all relevant authorities and stakeholders before the interviews or any information was collected from respondents. Furthermore, the participation was on voluntary basis and participants were free to discontinue without giving any reason.

3.13 Summary of the chapter

This chapter has outlined the methodology of the study. The study was qualitative employing the descriptive research design with phenomenological approach. The study site was done in Mazabuka District of Southern Province of Zambia with a sample size of 36 participants; 6 school administrators, 3 ICT teachers, and 27 pupils. The sample was selected using non-probability techniques. Data collection tools included unstructured questionnaire, FGD guides, interview guides and a voice recorder. The instruments were pre-tested in pilot study and data analysis was done thematically. The next chapter presents the findings of the study.

CHAPTER FOUR

PRESENTATIONS OF THE FINDINGS

4.1 An overview

The previous chapter presented the methodology of the study. This chapter presents the findings of the study on the perceptions of teachers and pupils towards ICT as an examinable curriculum subject at junior secondary school in Mazabuka District, Southern Zambia. The following codes have been used for identification of the participants. Admin-1 (Urban Head teacher), Admin-2 (Rural deputy Head teacher), Admin-3 (Peri-urban Head teacher) , Admin-4 (Urban HOD), Admin-5 (Rural HOD), Admin-6 (Peri-urban HOD), ICT tr-1 (Urban ICT teacher), ICT tr-2 (Rural ICT teacher), ICT tr-3 (Peri-urban ICT teacher), FGD1 (Urban discussion group), FGD2 (Rural discussion group) and FGD3 (Peri-urban discussion group).The research being qualitative, the data is presented in various categories of themes in line with the objectives of the study. Verbatim responses are provided so as to show the actual feelings of the participants.

The study was guided by three (3) research questions as follows:

1. What are the teachers and pupils' perceptions of ICT as an examinable curriculum subject in secondary schools?
2. What are the challenges and prospects of teaching and learning ICT as an examinable curriculum subject in secondary schools?
3. What measures have been employed by secondary schools to mitigate the challenges in teaching and learning of ICT as an examinable curriculum subject?

4.2 Perceptions of teachers and pupils towards ICT as an examination curriculum subject in secondary schools

Research question number one was on the teachers and pupils' perceptions of ICT as an examinable curriculum subject in secondary schools in Mazabuka District. In order to establish the perceptions of teachers and pupils towards ICT as an examinable curriculum subject at junior secondary school, a series of questions were asked on ICT implementation, benefits, experiences and examination of ICT as a subject.

4.2.1 Implementation of ICT as a subject

The participants were asked whether the introduction of ICT as an examinable curriculum subject at junior secondary was a good move by the Ministry of General Education. All participants strongly agreed that the introduction of ICT as an examinable curriculum subject was a positive move and step in the right direction. One male Deputy Head teacher from a rural school in the age range of 43-53 passionately explained during the interviews that;

“I feel the coming of ICT as a subject at junior secondary school is a welcome move and step in the right direction because the world we live in is now highly computerized. Computers are all over out there, each learner must know how to operate a computer no matter what the cost can be. Looking at the times we are living in, it is impossible to live without computer knowledge like we did in the past. Everything needs computer knowledge starting from TVs in homes, the phones and the industry out there. In the past years, it was possible to live without these gadgets but not nowadays.”
(Admin-2: September, 2016).

A follow up question was asked on how well prepared the schools were to start teaching ICT as an examinable curriculum subject at junior level .Four (4) secondary school administrators and two (2) ICT teachers from two of the three selected schools said they were hardly prepared at all. It was explained that the schools had no ICT facilities specifically computers for pupils to use for learning ICT. There were also no ICT text books and no one was particularly trained to teach ICT at the schools. One male rural participant said;

“ICT is a good and necessary subject but its introduction as an examinable subject at grade Nine (9) levels was rushed. The Government through the Ministry of Education was supposed to have provided all ICT facilities in schools especially rural areas before making ICT a compulsory subject. This is the reason why the 2015 exams were a mess especially for us here.”
(ICT tr-2: September, 2016).

In the similar view, the HOD with 12 years of experience in the teaching service from a peri-urban school said;

“As a school, we were not prepared at all! Our school was just being upgraded from a basic school to a secondary school. We were told to start teaching computers at a time we had no one who was qualified to teach and we had only one computer in the head’s office. A lot of things were not yet put in place...handling the first ICT exams was almost impossible.” (Admin-6: October, 2016).

On the contrary, two (2) of the six (6) school administrators pointed out that they had computers long before, hence the introduction of ICT was welcome. At one school, they had actually a Japanese volunteer who was teaching computers to pupils who were interested before ICT was rolled out as a curriculum subject. As a result, when Government introduced ICT as an examinable curriculum subject the school was somewhat prepared. The only challenge was that ICT was now a compulsory subject and that more qualified ICT teachers were needed. The female ICT teacher in age range of 21-31 from the same school added;

“I can say we were fairly prepared as a school because we were already teaching ICT to our pupils even before ICT was made a curriculum subject. We had 25 computers bought from Camara organisation at a low cost. By the time ICT was made compulsory and examinable our pupils already knew what a computer was and were able to do the basics. We had hired a person who was teaching them in the afternoons after classes.”
(ICT tr-1: September, 2016).

The participants from the three schools appreciated the introduction of ICT as an examinable subject in secondary schools because they felt that schools needed to move with time as the present times demanded ICT knowledge. It was explained that we were living in the time of computers and all people needed to know how to use a computer and that’s the reason ICT was introduced in secondary schools as an examinable curriculum subject. It came out clearly that the computers were now found everywhere and as a result it was the duty of secondary schools to produce learners who were computer literate. However, participants observed that implementation of ICT as an

examinable subject was a good idea, except that it was rushed as schools were not adequately prepared. This was evident in numerous challenges that the schools faced in the first practical ICT examinations held in 2015.

4.2.2 Benefits of ICT as a curriculum subject

The researcher asked how beneficial ICT learning was. The participants pointed out that ICT learning empowered the learners with skills needed to earn a meaningful living in the modern world. They argued that the world was becoming more and more scientific and computer alert. The computer industry was growing rapidly and people were demanding increased computer services world over. One male participant during an interview emphasized that;

“True education should empower learners through acquisition of life skills. Learning of ICT gives such skills one can use to survive in life after school. It’s my duty as an ICT teacher to equip the learner with ICT skills so as to prepare them with the necessary skills needed in life. ICT can help the learner in life after school. Some may become ICT engineers and work in big companies. Even those who drop out at grade nine level, with ICT knowledge they can still find something to do to earn a living such as working in an internet café or can start own small business in printing and photocopying.” (ICT tr-2: September, 2016).

The novice male ICT teacher with four (4) years in service further observed that ICT learning at junior secondary school was welcome because it prepared learners for tertiary education. He had this to say;

“ICT or computer knowledge is needed at the college and university level. The earlier the pupils learn it the better it is because they will have an advantage at tertiary level where the ICTs are mainly used in doing the academic work. It will be easier to use these computers because of the earlier exposure, unlike in the past when one would go up to college without even the knowledge on how to start a computer.” (ICT tr-3: October, 2016).

In addition, a female pupil explained that ICT learning was necessary and important at secondary school level. This is what she argued;

“I can say learning ICT is a good thing because we are taught how to operate a computer during computer studies. We are also taught how to type and print some work. Computers also help us to get information on internet and know things we don’t know.”
(FDG1: September, 2016).

Participants felt that the coming of ICT was beneficial because it imparted the much-needed life skills for surviving in the modern technological world.

4.2.3 Teachers and pupils’ views on ICT as an examinable curriculum subject

In order to explore views on whether ICT was supposed to be an examinable curriculum subject in secondary schools, participants were subjected to a number of questions that interrogated their affective, cognitive and behavioural aspects towards ICT as a subject. The responses from the participants are summarised below.

4.2.3.1 Whether ICT is an interesting subject

Participants were asked whether ICT was boring or interesting as a subject. The responses are shown below in the figure;

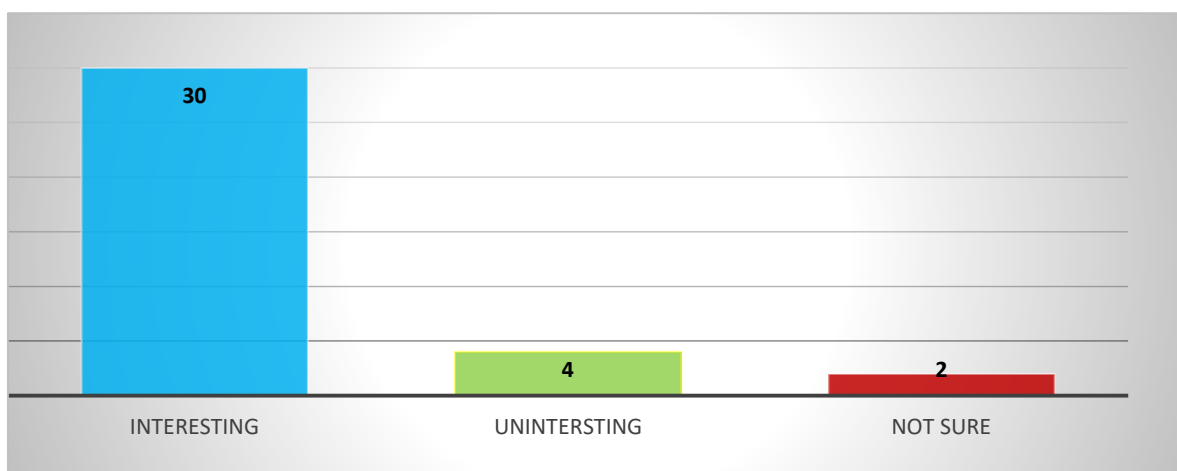


Figure 1:1. Responses on whether ICT was an interesting subject or not.

The figure above shows that 30 out of 36 (83%) participants said ICT was an interesting subject, 4 out of 36 (11%) were of the view that ICT was a boring subject and 2 out of 36 (6%) could not tell whether ICT was a boring or an interesting subject.

A follow up question was asked as to what made the participants think ICT was an interesting subject. One grade Nine (9) boy during the focus group discussions excitedly explained that;

“ICT is good and interesting because the subject is easy to learn and not difficult like Science and Mathematics. The subject is practical and allows us to interact with computers and you know pupils enjoy touching, touching the computers during the lessons. The only part that I find boring is the theory part anyway...”
(FGD3: October, 2016).

More than half of the pupils during the focus group discussions explained that they liked ICT because it was an easy and interesting practical subject. On the other hand, a few of the participants, 4 out of 36 (11%) found ICT to be boring. One female grade 8 pupil explained that;

“The ICT ‘thing’ is boring for me. I wish there was a choice I can do something else. I don’t like the way we rush and push one another during computer lessons.” (FGD2: September, 2016).

4.2.3.2 Whether ICT was an easy or a difficult subject

The participants were asked whether ICT was an easy or a difficult subject at secondary school level. The responses are shown below in the figure;

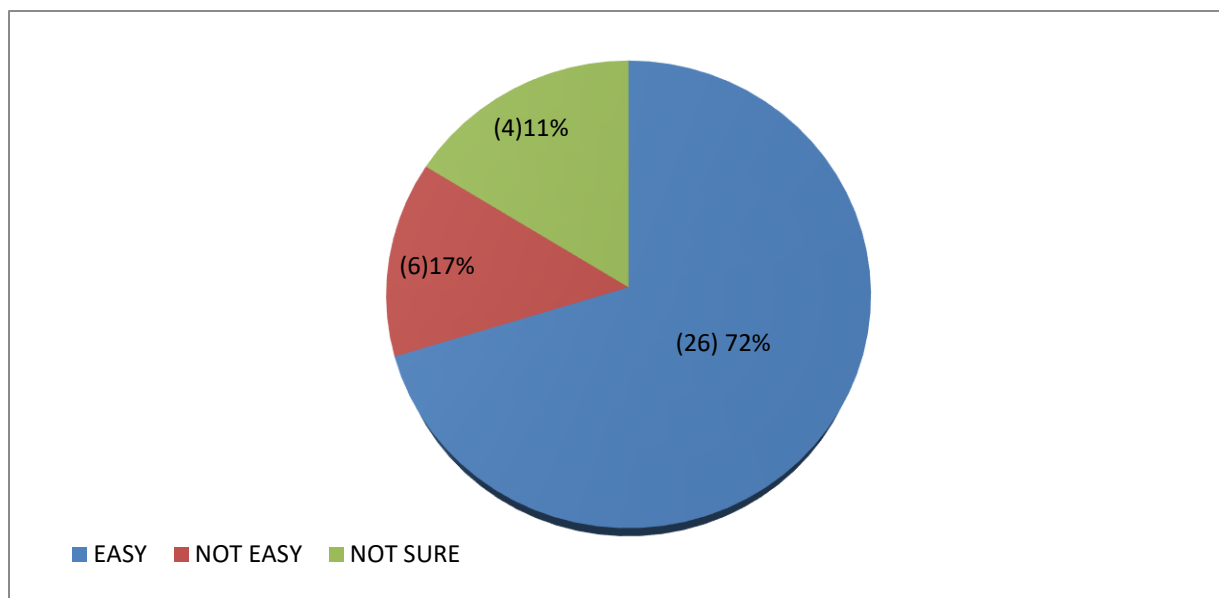


Figure 1:2. Responses on whether ICT was an easy or difficult subject.

As shown from the figure above 26 out of 36 (72%) of the participants said ICT was an easy subject, 6 out of 36 (17%) felt that ICT wasn't an easy subject and 4 out of 36 (11%) were neutral as they couldn't tell whether ICT was easy or not. One male participant from an urban school had this to say;

"ICT is a very easy subject. It is not 'hard' like Maths and Science. I always get high marks in ICT and it will be one of my best six in the exam." (FGD1: September, 2016).

In affirmative teachers also indicated that ICT teaching was not very demanding. A Peri- urban school teacher explained that;

"As a teacher, I can say ICT or computer studies is fairly an easy subject to handle. Pupils usually do well in practical subjects like ICT. Even those pupils that come to see the computer for the first time in their life at secondary school easily learn how to operate a computer." (ICT tr-3: October 2016).

Furthermore, an urban HOD added that;

“To be honest, ICT is not a difficult subject. This is very true because as a school we recorded 100% pass in 2015 and this year (2016) the same will happen.” (Admin-4: September, 2016).

On the other hand, 4 out 36 (11%) could not tell whether ICT was an easy or a difficult subject. One rural teacher had this to say during the interviews;

“I can’t say ICT is an easy or difficult subject because the subject largely depends on availability of computers and other gadgets. Pupils in schools where there are enough of these usually do well and the opposite is the case where there are none especially in rural areas.” (ICT tr-2: September, 2016).

The general perception was that ICT was an easy subject for both the teachers and pupils in secondary schools.

4.2.3.3 ICT as a compulsory examinable curriculum subject

Another question was asked whether ICT ought to be a compulsory examinable curriculum subject in secondary schools and the responses from participants are given below;

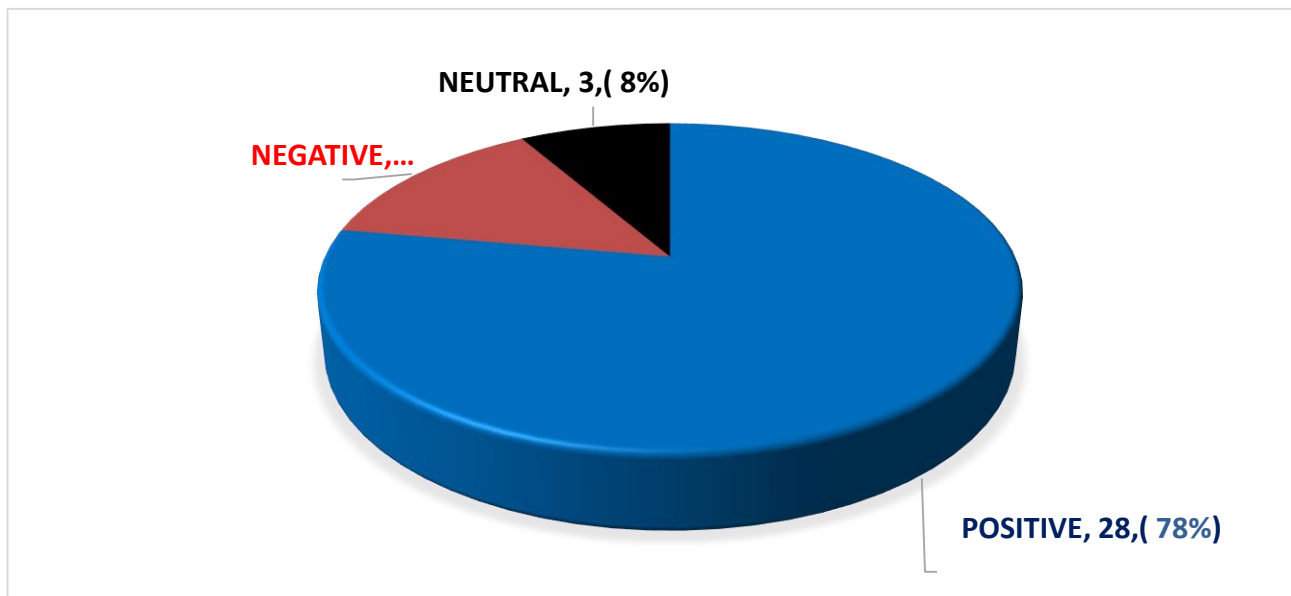


Figure 1:3. Responses on whether ICT should be a compulsory examinable curriculum subject. 28 out of 36 (78%) participants submitted that ICT should be a compulsory examinable curriculum subject, 5 out 36 (14%) were against and 3 out 36 (8%) were neutral.

A back up question was asked why participants felt ICT ought to be a compulsory examinable subject at junior secondary school. One rural male teacher during the interview submitted that;

“Let ICT be taught to all learners because we are in the times of the computers. It is unfair to make such an important subject optional. Let all learners study ICT both those in towns and those in rural areas. These learners in rural areas one day they will be in town where there are computers, if they are not introduced to them now how are they going to fit in society days to come..... The subject should be examined so that the learners can be evaluated whether they have understood or not. After all, if ICT is not examined then pupils may think it is not an important subject.”
(ICT tr-2: September, 2016).

One male rural pupil during focus group discussions in affirmative said;

“ICT should be a compulsory subject so that we can all know how to use a computer whether in town or in a village. When we grow up and start work some of us we want to be using computers so if we don’t learn it now it will be difficult for us... ICT should also be examined because that is the only way we can take the subject serious, you know! Without the exams then we can just learn ICT for fun and studying it would be waste of time.”
(FGD2: September, 2016).

Another grade 9 girl during the discussions from an urban school strongly argued that;

“ICT should be compulsory because the subject teaches how to use electronic machines such as computers and phones. The subject also helps to understand technology and communicate with other people for example through facebook and whatsapp. ICT is also important to learn in secondary schools because it will be needed when we go to the university.”(FGD1: October 2016).

A few, 5 out of 36 (14%) were however against the idea of ICT being a compulsory examinable curriculum subject at junior secondary school. One rural male HOD during the interview argued that;

“ICT should be optional and studied only by those who intends to continue with ICT related studies such Business Management or Software Engineering after school..... after all computers are too expensive and as schools we are working under pressure to have these facilities in place.” (Admin-5: September, 2016).

Generally participants however, expressed favourable perceptions towards ICT as an examinable curriculum subject in secondary school in Mazabuka District. It was felt that ICT learning was inevitable in today’s modern technological world. However, participants held a common feeling that the subject was rushed on schools as they were not yet prepared to start teaching ICT as an examinable subject.

4.3 The challenges and prospects of ICT as an examinable curriculum subject in secondary schools

The second research question was on the challenges and prospects of teaching and learning ICT as an examinable curriculum subject in secondary schools. With regards to the second research question, the following were the views obtained from participants;

4.3.1 Challenges of ICT teaching and learning in secondary schools

The sampled schools had various challenges in teaching and learning of ICT as an examination subject. The following came to light during interviews and focus group discussions.

4.3.1.1 Lack of ICT specialized trained teachers

The study established that in all three sampled secondary schools in Mazabuka District there were no specialised trained ICT teachers. ICT was taught by those teachers who had interest in computers and had basic knowledge in computers. One newly deployed ICT teacher during the interview said;

“I’m not a trained ICT teacher but I teach ICT out of interest. I am instead a Business Studies teacher trained from Evelyn Hone

College, while at college we did a component of ICT and that's how I developed interest in ICT.” (ICT tr-3: October, 2016).

The researcher during interviews with administrators noted that they lacked adequate computer knowledge and skills thus compromising their supervision of ICT lessons.

4.3.1.2 Inadequate computer hardware and Software

Availability of facilities for teaching and learning ICT in secondary schools was a big challenge. The only and common tool available to pupils and teachers was the desk top computer. However, the schools still did not have enough computers for the learners to do their practical lessons in a smooth manner. A female teacher during the interview lamented that:

“We have only 20 computers against a class of 43 learners, worse still not all the 20 computers you see are functional. During lessons, we are only able to use 12 of these. As a result, the class is split into two groups but still the PCs are usually over crowded. How I wish we had even a projector...” (ICT tr-1: September, 2016).

The problem of inadequate teaching and learning materials manifested itself in all the three secondary schools. One male participant for instance complained that;

“The only problem we face is that during practicals we share computers. One computer can be used by six or eight people at the same time. You find that all of you want to hold the mouse...” (FGD2: September, 2016).

4.3.1.3 Irregular power supply

Power interruption due to load shedding was another problem that was identified. As a result, the practical lessons had to be discontinued in an event of power outage. In most cases teachers failed to find time to make up for the interrupted lessons. The power outages during ICT lessons were frustrating in secondary schools. One male participant during the interviews explained that;

“ICT lessons have a practical component that cannot be taught without electricity. As a teacher, I have had challenges to teach

practicals because sometimes power would go amidst the lesson....”
(ICT tr-3: October, 2016).

The problem of power supply outages was common in all three selected secondary schools in Mazabuka District.

4.3.1.4 Shortage of ICT text books

Lack of ICT text books was another challenge in secondary schools in Mazabuka District. The researcher did not see any copy of an ICT text book either for grade 8 or grade 9 in all three selected schools. A female participant from one of the schools noted that;

“We have very few ICT text books for teaching at junior secondary school level. In fact, from the time I came to this school I have not seen any grade 9 ICT text book though we have a few copies of grade 8s.” (ICT tr-1: September, 2016).

Another participant, a female pupil from a peri-urban school complained that;

“...we are not given ICT text books for us to study on our own. The only thing the teacher does is to write notes on the black board... In the library, there are no ICT text books.” (FGD3: October, 2016).

The researcher went on to find out what school administrators were doing with regards to shortage of ICT text books and other facilities in secondary schools. The response was that they were still in the process of acquiring the ICT learning and teaching materials.

4.3.1.5 Lack of computer laboratories

Out of the three (3) sampled secondary schools only one had a complete computer laboratory although it was poorly furnished. The other two schools had improvised some rooms as computer laboratories stocked with a few pieces of old desk top computers. Participants lamented that lack of proper computer laboratories was a serious challenge in ICT learning in secondary schools. One rural Deputy Head teacher had this to say:

“One major challenge we have as a school is the lack of computer lab. However, we have improvised a room into a computer lab. We

are just waiting to put enough furniture so that ICT practicals can be done without much difficulties.” (Admin-2: September, 2016).

4.3.2 Prospect of ICT as an examinable curriculum subject in secondary schools

4.3.2.1 Viability of ICT as a subject

The participants were of the feeling that ICT was a viable examinable subject in secondary schools. The subject was said to be easy and interesting to both the teachers and the pupils. Both teachers and the pupils said ICT was a fair subject and would love to continue with it. One male participant during a focus group discussion meeting said;

“ICT is a good subject. I like it because I always get good marks in ICT. I think even in the exam it will be one of my best six.” (FGD3: October, 2016).

Both teachers and pupils considered ICT as a fair subject thereby viewing it viable. One male teacher for example argued that;

“In the past (2015) Nation examinations my pupils did extremely very well in ICT. No one failed and that gives me pride as a teacher to continue with ICT.” (ICT tr-3: October, 2016).

4.3.2. 2 ICT as a vehicle for Socio- economic development

About half of the participants were optimistic that ICT as a subject was much more needed for the socio-economic development of Zambia as a country. It was argued that ICT should be embraced seriously for Zambia to attain national development in this information age. One female Head teacher during the interview submitted that;

“All developed countries are technologically advanced and ICT plays a major role in development. It is through the use of ICT that Zambia will develop into a modern society.” (Admin-3: October, 2016).

In affirmative on the role of ICT in development, one participant had this to say;

“Education should aim at fostering development in any case. If we are to progress as a nation then ICT learning should be taken

seriously or else even the issue of Zambia becoming a middle income country will remain a farfetched dream.” (ICT tr-2: September, 2016).

4.3.2.3 Political will from the Government

The administrators and teachers noted that the Government through its agencies and the Ministries had put sufficient means of integrating ICT in Zambian education system such as the ICT policy and other National development plans that embraces ICT. Participants further argued that Government was repositioning its support on ICT education in Zambia thus giving the teaching and learning of ICT as an examinable curriculum subject in secondary schools a bright future. One male urban Head teacher during the interview argued that;

“The government’s interest is to attain the vision 2030 and this includes making Zambia a technological nation. With this policy in place I see a bright future for ICT teaching. I foresee secondary schools receiving all the necessary requirements from Government for them to produce computer literate citizens. The interest of any government in the world is economic development and there cannot be economic development without ICT. The schools in rural areas can easily be supplied with gen sets and solar panels to use for ICT teaching. The Government can’t fail to do that; it’s just a matter of priority and I believe this is the case.” (Admin-1: September, 2016).

4.3.2.4 Improving ICT teacher qualification in the country

All administrators and teachers in Mazabuka observed that ICT had a bright future because the Government and the private sector had come on board to train specialised ICT teachers in colleges and universities across the country. It was argued that teachers were now getting Diplomas and Degrees in ICT teaching thus the critical shortage of ICT teachers would be a thing of the past in no time. One female peri-urban Head teacher observed that;

“The current challenges faced such as shortage of teachers handling ICT is but a temporal situation as more and more teachers are being trained in ICT field now. Some of them have actually been

since deployed in schools across the country.” (Admin-3: October, 2016).

One teacher during the interview said that;

“Am planning of going to school next year and upgrade my qualification so that I can become a full time computer science teacher. The only challenge is the issue of sponsorship.” (ICT tr-3: October, 2016).

In spite of numerous limitations that were unearthed in teaching and learning of ICT as an examinable curriculum subject in secondary schools, more than half of the participants were optimistic that ICT was a promising examinable curriculum subject in secondary schools in Mazabuka District of Southern Zambia.

4.4 Measures employed to mitigate challenges in teaching and learning of ICT

In an effort to explore measures employed by secondary schools in mitigating challenges faced in teaching and learning of ICT as an examinable curriculum subject in Mazabuka, six (6) secondary school administrators and three (3) ICT teachers were subjected to a number of questions on each challenge identified during the interviews and discussions.

4.4.1 Community engagement

A question was asked on how the secondary schools acquired the hardware and software materials for teaching and learning of ICT. Two of the three schools explained that they engaged the local communities such as Parents Teachers Association (PTA) and any other interested stakeholders. The other school indicated that apart from working with the local community, the managing agency helped them acquire good second-hand computers from Camara international organisation, The Old boys’ and Girls’ associations were also very instrumental in cushioning the problem of the shortage of computers and lack of computer laboratories in secondary schools in Mazabuka District. One male urban HOD teacher explained that;

“The computers we have are good second hand bought from Camara. We were helped by our managing agency to buy them at a very reasonable price.” (Admin-4: September, 2016).

In all of the three secondary schools, community participation was mentioned as a way that helped in alleviating the challenges of overcrowding in computer laboratories more especially through the donations of desk top computers that were critical in ICT learning.

4.4.2 Class splitting

With regards to the shortage of computers in secondary schools, the researcher wanted to find out how practical lessons were conducted. In two of the three schools, ICT practical lessons were a big a challenge. One class had to be split into two or sometimes up to four sessions of practicals taken by one teacher. During the interview, an ICT teacher explained that;

“ICT is a practical subject and each pupil needs to sit on a computer during practicals but computers are not enough. So as a teacher, I am forced to divide the class into two or three groups attended to at different times...” (ICT tr-2: October, 2016).

Class splitting initiative gave chance to each learner to practice on the computer and overcrowding was minimised.

4.4.3 Volunteer teaching

The researcher asked on how the schools managed to teach ICT since there were no specialized trained ICT teachers in secondary schools in Mazabuka. One urban school Head teacher explained that;

“The lack of trained ICT teachers is indeed a big challenge at our school even in the whole district. However, as a school, we have teachers who have volunteered to teach ICT and so far, they are doing fine.” (Admin-1: September, 2016).

The finding was that through the use of the volunteer ICT teachers in Mazabuka District, secondary schools have managed to down scale the problem of lack of trained ICT teachers.

4.4.4 Use of alternative sources of energy

A question was posed on how the schools mitigated the problem of inconsistent electricity supply due to frequent power outages that were being experienced throughout the country.

One of the female participants had this to say;

“ICT teaching is greatly affected by load shading. You find that power goes half way the practical lesson. At that point, you have to wait for the school office orderly to switch on the gen set or abandon the class and wait for power to come back.” (ICT tr-1: September, 2016).

Participants further noted that use of thermal generators greatly helped during final ICT practical examinations though it was costly.

4.4.5 Online service aid

The researcher went on to look into the issue of the shortage of ICT teaching and learning materials such as text books and wanted to know what was done in this regard. The administrators and ICT teachers all in affirmative responded that ICT books for teachers and pupils were not readily available in schools. The participant from one of the schools explained that;

“We have very few ICT text books for teaching at junior secondary school level. I use the internet to get the notes and present them to my class. The only problem is that sometimes internet is slow...” (ICT tr-1: September, 2016).

Another participant had this to say;

“The shortage of ICT books is real but a teacher has to be resourceful. In my case I just go to the syllabus check the topics and then go on net to look for notes that I give to my pupils. I even encourage my pupils to use internet as a study tool.” (ICT tr-3: October, 2016).

Teachers explained that exploration of online sources such as the internet was an excellent way of getting teaching and learning materials for ICT in secondary schools though it was expensive.

4.5 Summary of the chapter

This chapter has presented the findings from the participants on the teachers’ and pupils’ perceptions of ICT as an examinable curriculum subject at junior level in selected secondary

schools of Mazabuka District, Zambia. Participants argued that implementation of ICT as an examinable curriculum subject was a good move though it was rushed as schools were not yet prepared to start teaching ICT in Mazabuka District. The subject has been said to be very beneficial and ought to be compulsory as it imparted life skills in learners. The challenges outlined were; lack of ICT specialised trained teachers, inadequate computer hardware and software, irregular power supply, shortage of ICT text books and lack of computer laboratories. Prospects of ICT as an examinable curriculum subject in secondary schools are in the viability of ICT as a subject, ICT's role in socio-economic development, promising political will and improving ICT teacher qualification in the country. Measures employed by secondary schools in mitigation of challenges in ICT teaching and learning are community engagement, class splitting, volunteer teaching, use of alternative sources of energy and online service aid. The next chapter discusses the findings according to the themes.

CHAPTER FIVE

DISCUSSIONS OF THE FINDINGS

5.1 An overview

The foregoing chapter presented the findings of the study on the teachers and pupils' perceptions of ICT as an examinable curriculum subject at junior secondary schools in Mazabuka District of Southern Province. This chapter focuses on the discussion of the findings under the sub-themes that emerged in line with the objectives of the study. References are also made to the literature reviewed so as to authenticate the findings.

The following were the objectives that guided the study:

- 1) Investigate teachers and pupils' perceptions of ICT as an examinable curriculum subject in secondary schools.
- 2) Establish challenges and prospects of ICT as an examinable curriculum subject in secondary schools as perceived by teachers and pupils.
- 3) Explore measures employed by secondary schools in mitigating challenges of ICT as an examinable curriculum subject in secondary schools.

5.2 Perceptions of teachers and pupils towards ICT as an examinable curriculum subject

Objective number one was to investigate teachers and pupils' perceptions of ICT as an examinable curriculum subject in secondary schools. In order to establish the participants' perceptions, the study focused on ICT implementation and participants' views based on three domains namely affective, cognitive and behavioural.

5.2.1 ICT implementation in secondary schools

Teachers and pupils were excited with the rolling out of ICT as an examinable curriculum subject in secondary schools in Mazabuka District because they felt that was one way of promoting information and knowledge based society that would bridge the digital divide. Participants observed that ICT was imperative for production of the much-needed deficit ICT skilled Human resource in Zambia's development as a nation. MOCT (2006) in affirmative states that Zambia has

a critical shortfall in ICT skills required for development of information and knowledge economy that would facilitate national development.

In view of the above, secondary schools felt that they had an obligation of producing learners with ICT skills who would easily fit in a modern information technology society as the current times demanded for ICT knowledge. However, all the participants in the three selected secondary schools of Mazabuka District were of the view that ICT implementation as an examinable subject was rushed. Schools explained that they had no human resource, proper hardware and software materials for the initial teaching and learning of ICT as an examinable subject. The problem was compounded by 2014 MoGE directive that demanded for immediate teaching of ICT as a compulsory examinable subject at junior level in all schools across the nation when there were no qualified ICT teachers and computers to use in schools. This came out strongly during the interviews with the school administrators. For instance, one administrator of the newly upgraded secondary school had this to say; *“Our school was just being upgraded from a basic school to a secondary. We were told to start teaching computers at a time we had no one who was qualified to teach and we had only one computer in the Head’s office...”* As a result of the rushed introduction of ICT as an examinable curriculum in secondary schools, school administrators had no option but to work under undue pressure to source basic ICT facilities such as desk top computers and look for teachers who would volunteer to take up ICT classes immediately. Teaching of ICT started with the volunteer teachers though school had no ICT books and other necessary ICT teaching and learning materials.

5.2.2 Participants’ interest in ICT as an examinable subject

The study endeavoured as much as possible to establish participants’ views on ICT as a compulsory examinable curriculum subject by considering the three domains that could determine feelings of participants. Albrini (2006) observed that attitudes are indicated by affective, cognitive and behavioural domain. Sahin-kizil (2011) points out that the best way to understand a person’s attitude is to consider all the domains.

The affective element was established from the interviews with the participants. Through the conducting of interviews and focus group discussions (FDGs) the researcher was able to weigh the passion and emotions from the observable reactions of participants. ICT teachers and pupils in all

three selected secondary schools expressed positive attitude towards ICT as an examinable curriculum subject. The participants explained that they liked and enjoyed ICT because it was a practical subject and the presence of computers excited the pupils greatly. This finding is in line with Nganji et al. (2010) who argued that attendance during computer lessons has been very good actually pupils asked for more to remain and access the computer laboratory. This observation was similar to that of Kenya (Wims and Lawler, 2007) in Nganji et al. (2010) where students considered ICT more interesting than other disciplines.

Generally the study established that participants had considerable interest in ICT as a subject. This was in consonance with Albugami and Ahmed (2015) study Saudi Arabia that showed that participants had positive views and attitude towards integration of ICT tools in the education as they perceived ICT as an important tool in secondary schools. Nganji et al. (2010) in Cameroon also found that school administrators and teachers supported the CIAC project in teaching and learning of ICT by providing well protected rooms for computer laboratories. Teachers participated in computer science induction courses and continued to network afterwards and shared the experiences. Another study by Boit et al. (2012) undertaken to evaluate the implementation of ICT learning, teaching, school administration and use of E-communication between cooperating rural secondary schools in Western Kenya conducted in two selected rural schools namely: Anin secondary school (Keiyo County) and Cheplaskei secondary school (Uasin-Gishu County) indicate that the school Head teachers, teachers and management were receptive, friendly and supportive. They exhibited readiness and willingness to accommodate new ideas and innovation. This was demonstrated through positive attitude among the administrators and teachers in adoption of new technology.

5.2.2.2 ICT level of difficult as a subject

The cognitive aspect of participants was established based on the ICT knowledge and skills observed during interviews and discussions. Participants were asked to give opinions on how they viewed ICT as a subject in terms of the level of difficult in teaching and learning.

Majority of the participants 26 out of 36 (72%) found ICT to be an easy subject at junior secondary school level. ICT teachers claimed that they had no difficulties in preparations and teaching of ICT as an examinable subject in secondary schools. The finding is similar to that of Kenya (Boit et al.,

2012) who found that 50% of teachers had confidence in handling ICT instructions and class management during lessons in Western rural Kenyan secondary schools. This is a clear indication ICT was not a very difficult subject. Lifungulo (2015) also postulated that it was easy to work with ICTs in the education system because the use of the ICTs in teaching and learning were enjoyable and worthwhile to both the teacher and the pupil.

The teachers further explained that an ICT lesson preparation was not only easy but required less time than other subjects. This finding is however in contrast with Albugami and Ahmed (2015) and Sicilia (2005) who found that a lot of time was required to plan and prepare an ICT lesson but teachers in developing countries had no time for that.

The study established that teachers had inadequate skills in handling ICT as examinable curriculum subject at junior secondary school level due to lack of specialized training in ICT teaching. However, it was surprising to note that despite not having any specialized training in ICT the volunteer teachers had confidence in the subject and positive attitude. They claimed not to have had any major difficulties in ICT lesson preparations and teaching except for scarcity of the teaching and learning materials. The finding was that majority of teachers were positive and expressed satisfaction in the manner they handled ICT lessons. However, Lufungulo (2015) argues that lack of training results in teachers having a negative attitude towards ICTs innovations. Becta (2004) and Pelgrum (2001), also affirms and allude that teachers in developing countries lack knowledge, competence and confidence to handle ICT as a result many teachers did not consider themselves well skilled to handle ICT in front of a class.

The confidence and positive attitude expressed by volunteer ICT teachers in handling of ICT as an examinable curriculum subject in secondary schools could not be substantiated. The participants could have exaggerated their attitude towards ICT. What was evident however, is that the schools have no adequate ICT teaching and learning materials in general in spite of the favorable attitude expressed by participants.

5.2.2.3 ICT as a compulsory examinable curriculum subject

The behavioural element of participants was interrogated both during interviews and focus group discussions so as to bring out the participants' views on ICT as a compulsory examinable curriculum subject in secondary schools. The behavioural aspect was also visible from the level of

excitement the presence of computers in the computer rooms thrilled the participants. When asked on whether ICT was supposed to be a compulsory examinable subject at junior secondary school level 28 out of 36 (78%) participants agreed. Participants perceived that learning of ICT at junior secondary school level was good and advantageous because those who could not proceed to senior secondary school level would still find something to live on with ICT skills attained, such as running an internet cafe.

Participants further argued that learning of ICT in secondary schools was inevitable because the world was becoming more and more scientific and technologically advanced each day that passed by. If ICT learning was not seriously considered in secondary schools, then the pupils would be a misfit in today's knowledge and information based society. The need to have ICT as a compulsory examinable curriculum subject was emphasised by one of the volunteer teacher who submitted that; *"True education should empower learners through acquisition of life skills. Learning of ICT gives such skills one can use to survive in life after school. It's my duty as an ICT teacher to equip the learner with ICT skills so as to prepare them with the necessary skills needed in life."*

The argument was that learning of ICT would enable the learners to acquire necessary life skills needed for living a meaningful life in the modern society. The proposition is in agreement with Lufungulo (2015) study that observed that the world was now largely influenced by technology hence use of ICT was the way to go. Sichone (2011) also adds that gone are the days when ICTs were the preserves of the elites; ICT was no longer a luxury but a necessity to be acquired by everyone. This is the reason the education system should seriously integrate ICT so that sound human resource might be produced for nation development.

On the contrary, a few of the participants, 5 out of 36 (14%) argued that the significance of ICT in secondary school education was exaggerated as much as it was an important subject. The participants explained that teaching and learning of ICT as an examinable curriculum subject was a problem especially for rural schools. They argued that the subject was expensive to administer as schools were required to purchase the computers that were costly. They submitted that ICT was supposed to be optional and taught only to those learners that would like to study ICT at tertiary level. The subject should also be taught only by those schools who could afford to buy computers. The schools without the capacity to buy the computers were supposed to be excused from teaching ICT as a compulsory examinable subject more especially at junior secondary school level.

This argument is supported by Ang'ondi's (2013) study in Kenya argued that ICTs should be discrete or if anything better for commercial colleges and not secondary schools. Nchunge et al. (2012) adds that participants in Kenya had reservations towards ICT integration in secondary schools due to insufficient ICT policy guidelines and teachers also feared that ICT would be problematic to the pupils as they would use ICT to access websites that were not suitable such as pornographic and violent materials. However, the study established that the negative perception of ICT by the few participants in Mazabuka, cannot be attributed to lack of ICT policy guideline nor fear of unpalatable sites but the overwhelming challenges experienced in teaching and learning of ICT as an examinable curriculum subject such as; inadequate training in ICT, lack of teaching and learning materials and the strenuous grade nine (9) practical final examination process encountered in 2015 where some schools were ending their examinations after midnight. The situation was however made better in 2016 as the practical ICT examinations have since been spread to run for three (3) days.

The study further established that both teachers and pupils had favourable perceptions of ICT as an examinable curriculum subject in Mazabuka District. Participants viewed ICT as a very useful and easy subject to handle in secondary schools. The findings are in tandem with Davis' (1989) theoretical framework (TAM) that explains that technology acceptance depends on how the user perceives technology usefulness and perceived ease of use. If the user believes that the technology (ICT) is useful and easy to use; then the attitude or in this case the perception will be positive. This was the case with the study, both the teachers and pupils in all three sampled schools in Mazabuka District said ICT was a useful and an easy subject to handle despite the limitations encountered. Participants also explained that ICT was a fair subject as pupils performed better compared to other subjects in the school curriculum. To confirm the fact, it was found that all the three schools in the study had scored 80% to 100% in the previous national ICT examination in 2015. In affirmation of the above one of the school administrators said that; *"ICT is not a difficult subject. This is very true because as a school we recorded 100% in 2015 and this year 2016 the same will happen."* The participants argued in spite of numerous challenges encountered in administration of the first ever ICT examinations the performance of pupils was excellent because ICT was quite a fair subject even to pupils who were seeing the computer for the first time in their lives did perform well. The teachers were actually optimistic that even 2016 ICT final examination results would be excellent.

David et al. (2002) adds that in TAM, perceived ease of use has a direct effect on perceived usefulness and both determine end result behaviour of the consumer of the technology (ICT). In this study participants agreed that ICT skills were easy to acquire and apply in real life situation thus making the subject favourable. It was argued that ICT as a subject was very useful in transforming Zambia into information and knowledge based society. This is supported by MOCT (2006) that envisage Zambia to be transformed into an information and knowledge based society and economy supported by consistent development of ICTs by 2030.

The study established that both the teachers and pupils had positive perceptions of ICT as a compulsory examinable curriculum subject at junior secondary in Mazabuka District. ICT was seen as an inevitable subject in this era of information age and knowledge society. This is in consonance with MOCT (2006) observation that ICT is an enabler to build an information centred society where everyone can access, utilize and share information and knowledge leading to greater productivity, greater competitiveness and sustainable economic growth, a precondition for poverty reduction.

5.3 Challenges and prospects of ICT as an examinable curriculum subject in secondary schools

With regards to the second objective of the study, the researcher sought to establish the challenges and prospects of ICT as an examinable curriculum subject in secondary schools of Mazabuka District, Southern Province of Zambia.

5.3.1 Challenges of teaching and learning ICT as an examinable curriculum subject in secondary schools

A number of challenges in teaching and learning of ICT as an examinable curriculum subject in secondary schools were unearthed from interactions with participants. Amongst the most prominent ones were the following;

5.3.1.1 Lack of qualified ICT teachers

Zambia has a shortage of not only ICT teachers but also in other subjects like Science and Mathematics. The shortage of teachers in the country remains a serious challenge despite public and private colleges and universities graduating teachers each year.

In 2016 the MoGE employed in excess of 4000 teachers across the nation so as to improve the teacher pupil parity. Out of the teachers that were deployed very few had specialised training in ICT. Mazabuka for instance, had not even one trained ICT teacher sent to the district making the shortage of ICT teachers still a big challenge a year after the subject was rolled out. As a result grade 8 and grade 9 ICT classes in secondary schools are handled by non-ICT trained teachers on voluntary basis. Pelgrum (2001) rightly observed that in developing countries teachers lack knowledge and skills in using the ICTs. The above observation is in line with what the school administrators brought out in the three secondary schools regarding ICT teacher crisis. One of the administrators during the interviews had this to say; *“The lack of trained ICT teachers is indeed a big challenge at our school even in the whole district...”* The critical shortage of ICT qualified teachers to teach ICT in developing countries is rampant. This, as a result has hampered the integration of ICT in the education system.

Lack of staff training is one of the commonest organizational barriers in ICT learning developing countries. Albugami and Ahmed (2015) found that in Saudi secondary school lacked trained ICT teachers. Similarly Boit et al. (2012) noted that in Kenya there was a shortage of professionals qualified in ICT in secondary schools. Grewan and Day (2003) in Nganji et al. (2010) noted that Africa’s ICT industry is stifled by shortage of appropriated or experienced personal. Sicilia (2005) also observed that lack of access and effective training in ICT pedagogical skills was problem in ICT teaching in developing nations. Teachers needed not just knowledge on how to use ICT tools but skills on how to teach ICT.

5.3.1.2 Lack of adequate ICT teaching and learning materials

Acquiring adequate ICT text books and computer hardware and software is a serious challenge in the teaching and learning of ICT in secondary schools. The shortage of hardware and software facilities especially the desk top computer make teaching and learning of the practical part of ICT almost impossible. Schools are overwhelmed with the high cost of ICT books, computer hardware, software and the installation charges. The observation made by Isaacs (2007) that penetration and availability of ICTs in Zambian education institutions remains low cannot be disputed. MOCT (2006) adds on to say among the challenges Zambian education system, especially public schools faced was the high opportunity cost of deploying the ICTs.

At one school for instance, only 20 desk top computers were available against a class of 43 learners. Worse still not all the 20 PCs were functional but instead only 12 pieces could be used per practical session. As a result, the functional PCs were usually crowded and disorderly as pupils fought for the mouse and keyboards during the lessons. Furthermore, there were no projectors, scanners, printers or copiers available to ICT learners in secondary schools except at one school though the facilities were restricted from use.

The computer crisis in secondary schools is not only in Zambia, Nganji et al. (2010) found that in Cameroon there was a critical shortage of computers such that on average there were 50 ICT students per computer. The revelation is similar to Ang'ondi (2013) study that established that schools in Kenya had no enough computers to cater for both teachers and learners forcing the teachers to carry their own personal computers to schools. Similarly, Boit et al. (2012) revealed that in Western Kenya two schools had 12 and 10 computers to be used by 325 students in Anin and 180 in Cheplaskei respectively while Bingimlas (2009) in Nganji et al. (2010) there was four to five students on one computer Saudi secondary schools. The quality of these computers in schools were also a matter of concern as most of them were refurbished pieces with high attrition. As a result of computer crisis in schools computer classes are usually crowded thereby compromising effectiveness and efficiency in delivery of ICT lessons.

Developing countries are however, making every efforts to curb the shortage of computers in schools. Boit et al. (2012) explains that in Kenya the numbers of computers has been increasing steadily through initiative of parents, community and politicians. Some computers in school are actually a donation by well-wishers. The Kenyan Government also made computers and their associated accessories tax free in 2006 in an effort to increase the numbers of computers in secondary schools.

Apart from lack of computers, secondary schools had a challenge of ICT text books for both teachers and ICT pupils in Mazabuka District. Grade 8 and grade 9 ICT text books were not readily available in schools despite being the major resource material for ICT learning in secondary schools. One volunteer teacher complained that; *“From the time I came to this school I have not seen any grade 9 ICT text book”* The researcher also was not availed any copy of the ICT text books in spite of the schools claiming to have handful copies. The school administrations in all the three secondary schools however, indicated that they had completed all the process of purchasing

the ICT text books for both grade 8s and grade 9s and they were just waiting for the supplier to deliver the books. However, separate interviews with teachers disputed the administrators' claim as mere rhetoric as no such arrangement existed on purchasing of books. The school administrators did not actually come out clearly on this matter as they sugar coated their responses.

5.3.1.3 Irregular power outages

The rationing of power by Zambia Electricity Corporation (ZESCO) negatively impacted on the teaching and learning of ICT in secondary schools in Mazabuka. Power supply was usually cut for at least six (6) hours or beyond each day from Monday to Friday. The outages sometimes were without notice making it difficult to schedule ICT lessons. As a result, schools were compelled to look for alternative sources of power amidst a practical ICT lesson. Mainly, thermal generators were used, however, not all schools had thermal generators. One teacher complained that; *“ICT teaching is greatly affected by load shading. You find that power goes half way the practical lesson. At that point, you have to wait for the school office orderly to switch on the gen set or abandon the class and wait for power to come back.”*

In most cases thermal power was of less help because even those schools which had gen sets usually were found that they had no fuel in most cases. Worse still, when they had the fuel it was mainly used for powering the administration block or the Head teacher's office and not the computer rooms. Thus, the common practice was to abandon the practical lesson for theory or break up class and wait for a make-up lesson on a different day when the teacher would be free and power available. Unfortunately, in many instances make up ICT practical classes interrupted by power supply were overlooked by teachers or were reluctantly taken on.

Boit et al. (2012) and Nganji et al. (2010) affirms ICT development in developing countries is greatly hampered by irregular supply of reliable electric power. There is usually frequent and expected electric power cuts. Hennessy et al. (2010) in Lufungulo (2015) agrees that lack of electricity is a major problem that limits the integration of ICT in most developing countries especially for schools that depended entirely on hydro-electric power as the case in Zambia. As a matter of fact, irregular power supply is a big challenge in ICT teaching and learning in secondary schools as teachers and pupils are usually frustrated by frequent power outages during ICT practical lessons.

5.3.1.4 Lack of computer laboratories and internet facilities

Out of the three selected schools in Mazabuka only one school had a well-established computer laboratory. The other two schools had just improvised rooms as computer laboratories. The improvised rooms had inadequate furniture and were poorly ventilated. Electricity wiring system was not ideal for computer and the computers were connected to non -power surge adaptors. This compromised the safety of the users and of the computers.

The improvised computer rooms were not even connected to the internet which is very much needed in ICT learning and teaching. Boit et al. (2012) study in Kenya confirms that developing countries lack reliable internet connectivity. Lufungulo (2015) found that schools in Zambia lacked access to internet and its usage was time consuming. This greatly discouraged both the teachers and pupils to an extent of looking at ICT as a burden. Pupils also complained that they had no access to computers on their own while at school as the computer rooms were under lock resulting into no time for pupils to practice on the computers.

There is an urgent need to solve ICT challenges at organizational and individual level in secondary schools for ICT to stand as an examinable curriculum subject. However, in spite of the challenges that were unearthed, the participants in the study were optimistic that ICT had a bright prospect as an examinable curriculum subject at junior secondary school level in Mazabuka District.

5.3.2 Prospects of ICT as an examinable curriculum subject

The following prospects were evident from the interrogation of the participants during the interviews and focus group discussions;

5.3.2.1 The viability of ICT as a subject

ICT as an examinable curriculum subject had a bright future in secondary schools because the teachers and pupils liked the subject very much. The subject was said to be easy, interesting and very useful at school and after school life. The finding fits well with the Davis' Technological Acceptance Model (TAM) that postulates that when a new technology (ICT) is perceived to be easy and useful the user develops a positive attitude towards the technology. In this case, in addition to the ease of use, usefulness the aspect of interest was engrossed in TAM.

Participants indicated that ICT was an easy, useful and interesting subject. Both teachers and pupils considered ICT to be an interesting and a fair subject at junior secondary school level. All the three sampled schools had excellent performance in ICT in the previous national examinations in 2015, in spite of initial examination administration challenges that were encountered. The pass percentage range was between 80% and 100% in all three secondary schools. The schools were in fact more confident that 2016 ICT results would be better than those of 2015 especially with the stretching of the practical period from one day to three days during the final examinations.

Apart from that ICT was said to impart life skills in pupils that would enable them to earn a living even without formal training in modern technological world. With ICT knowledge and skills, grade 9 dropouts could work in internet cafes or could start their own small business in printing and photocopying. Furthermore, participants argued that ICT learning in secondary schools was welcome because it set the foundation for tertiary education where ICTs were in great use at colleges and universities. Boit et al. (2012) argues that the introduction of ICT in secondary schools means well for the students as they would not require to undertake costly ICT training in commercial colleges after completing their secondary school education. At tertiary level, ICT was said to offer a wide range of career prospects to the learners such as computer programming and electronic and software engineering.

From the above it's evident that ICT is a viable examinable curriculum subject in secondary schools as established by participants' positive attitude towards the subject.

5.3.2.2 ICT an ingredient for socio- economic development

Many scholars have positioned ICT as an ingredient in socio- economic development of a nation. Kwaku and Kwame (2010) and MOCT (2006) agree that ICT is the bedrock and enabler of social-economic development through promotion of information and knowledge based modern society as the basis for wealth creation and subsequent poverty reduction. The role of ICT in national development makes the teaching of ICT as an examinable curriculum subject in secondary schools imperative. The importance of ICT in socio-economic development of a nation is clearly visible in its inclusion in Zambian Government development policy documents starting with the Fifth National Development Plan, 2006-2010 (FNDP), Sixth National Development Plan, 2011-2015 (SNDP), Seventh National Development Plan, 2016-2020 (7thNDP) and Vision 2030. All the

policy documents have but one common agenda and that is to see Zambia turn into an information society where information based economy will thrive with sound e-commerce and e-government. In order to achieve this, ICT should be embraced by government and all stakeholders.

However, it should be noted that learning ICT only in its self is not enough to attract Socio-economic development to a nation because development goes beyond ICT literacy. This is in congruent with the Zambian ICT policy document that states that Government is fully aware that ICTs alone cannot have an appreciable impact on Zambia's development prospects unless the use of ICTs in the society and economy is done within the framework of poverty reduction and other programmes that can address a number of critical success factors at central and local government levels (MOCT, 2006).

Furthermore, participants observed that the world was becoming more and more integrated into a global village through the expansion of ICT. Globalisation has made ICT to take the centre stage in the world economic activities. Connectivity between and within nations has increased by removal of the obstruction of time and spatial separation resulting in integration of markets. ICT is said to be a potential tool that could narrow the digital divide within the context of globalisation thus giving people an opportunity to take part in the global economic development. Through ICT a country is offered an opportunity to join the global village via e-commerce and trade enabling the people to take part in the global economy thereby progress socially and economically. Jhurre (2005) adds that ICT is a tool necessary for economic and social development. The health of economy of any country, rich or poor, developed or developing depends on quality of education. Once properly applied ICT has potential for economic growth. Thus, the critical role of ICT in development and globalisation makes the teaching of it as a subject unavoidable. Boit et al. (2012) adds that technology is important as it plays an important role in the future of any economy and therefore demands its own place in the curriculum of the school.

5.3.2.3 Political will by the Government

The study established that the Government was keen in turning Zambia into information and knowledge based society. One measure taken by government is the integration of ICT in Zambian education system. The government has put sufficient policy steps in promoting ICT activities in the nation. In 2007 the National ICT policy was put in place to guide the ICT activities in Zambia (UNESCO, 2013). This was followed by the reviewing of the nation school curriculum in 2013

launching ICT as an examinable curriculum subject at junior level in all schools. Having reviewed the curriculum MoGE implemented the first ever ICT examination at grade 9 country wide in 2015.

The Sixth National Development Plan (SNDP) and Seventh National Development plans (7thNDP) and Vision 2030 have also prioritised enhancement of ICT usage in quest to transform Zambia into a middle-income country. Apart from the above, Government through ZICTA is donating computers in schools especially those in rural areas so as to cushion the challenges of ICT teaching and learning.

All these activities are in one way or another, directly or indirectly in support of ICT learning as an examinable curriculum subject in secondary schools in Zambia. However, the MoGE need to be proactive for this to be realised.

5.3.2.4 Improving ICT teacher qualification

The other prospect of ICT as examinable curriculum subject in secondary schools is in the current improvement in ICT teacher qualifications and deployment. Through Government effort, private and public colleges and universities have started training specialised ICT teachers that would be deployed countrywide to mitigate the ICT teacher crisis. Some serving teachers have also embarked on advancing their ICT skills via fast track training and distance programmes. In no time the shortage of ICT teachers will be a thing of the past. From the afore-said it is evident that teaching and learning of ICT as an examinable curriculum subject in secondary schools has overwhelming support and good prospects.

However, as much as there appear to be overwhelming support for improving ICT teacher qualifications in Zambia, the reality is different from what is perceived. Take for instance those teachers who are advancing or would want to improve their ICT qualifications. They have not been supported by the Government in terms of sponsorship and leave clearance. Furthermore, there is no professional development programmes that have been put to equip school administrators and in-service teachers with ICT skills within the secondary schools.

5.4 Measures employed by secondary schools in mitigation of challenges in ICT teaching and learning

The study established that secondary schools in Mazabuka District faced various limitations in teaching and learning of ICT as an examinable curriculum subject at junior secondary school level. The commonest challenges were lack of qualified ICT teachers, inadequate teaching and learning materials (hardware and software) and frequent power outages. The schools in response to the afore-said challenges employ various means to address the situation. Below are some of the initiatives employed:

5.4.1 Community partnership

The study found that schools in Mazabuka worked with the different stakeholders within the local communities and international organisations such as Camara in alleviating the challenges faced in teaching and learning of ICT as an examinable curriculum subject. In two of the three schools sampled, the computers they were using in teaching and learning of ICT were a donation from the community through PTAs and Old boys and girls' associations. Participants observed that without the community gesture of aiding the schools acquire the computers the challenge of scarcity of computers in these schools would have been unbearable. MOCT (2006) the Government policy document on ICT supports the initiative to work with various stakeholders through Public Private Partnership (PPP).

However, it was noted that community participation was quite low especially in rural secondary schools. The other limitation was that the donations of computers were mostly in urban grant-aided schools through the help of their managing agencies. In some cases, the numbers donated were few to make significant impact on the teaching and learning of ICT. Worse still the quality of the donated computers was no better than white elephants in some cases. This observation is in affirmative with Mulima (2014) who noted that most of the computers in schools were near e-waste materials.

The immense dependence on the Western world donors for second hand ICT facilities in the country has made Zambian schools to become a dumping place for electronic wastes. This is why our schools are littered with outdated and poor quality electronic gadgets that cannot be put to any use.

5.4.2 Class splitting

The critical shortage of computers in secondary schools as earlier discussed is a major problem in Mazabuka District. The ICT teachers were however, doing everything possible to minimise the challenges. One initiative being employed was the splitting of classes in smaller segments during ICT practical lessons. The measure has greatly helped to reduce overcrowding of the pupils on computers during practical lessons. Through class splitting initiative, each pupil is given chance to practice on the computer. However, it should be noted that the initiative gives extra work on the part of an ICT teacher. Sometimes one class has to be split into three or four sessions taken by one teacher at different intervals or even days. This meant working for more hours than what is timetabled for an individual teacher.

From the interaction with ICT teachers and school administrators it was clear that the class splitting initiative was not a favourable option amongst the ICT teachers in secondary schools. In most cases, ICT teachers did shun or less practical lessons with the pupils as they did not fully approve the class splitting initiative.

5.4.3 Volunteer teaching

The study further found that ICT was rolled out as an examinable curriculum subject at a time when most of the secondary schools in Mazabuka District were not yet prepared for the subject, especially in the area of subject teachers. In fact, Zambia as a nation has had a shortage of teachers with ICT skills in schools (MOCT, 2006). As a result of the critical shortage of the qualified ICT teachers, secondary schools in Mazabuka had no option but to use non-ICT specialised teachers to handle grade 8 and grade 9 ICT classes. The teachers who had interest and knowledge in computers within the secondary schools and outside the schools were asked to help in the teaching of ICT at junior secondary school level. One teacher had this to say during the interview; *“I’m not a trained ICT teacher but I teach ICT out of interest. I am instead a Business Studies teacher trained from Evelyn Hone College, while at college we did a component of ICT and that’s how I developed interest in ICT.”* Teaching of ICT was purely voluntary by teachers who had interest in ICT although they had no special training as ICT teachers. The use of the volunteer teachers greatly helped in handling of ICT in secondary schools. Without the volunteer teachers coming on board, ICT teaching would have been a non-starter.

The researcher noted that the volunteer ICT teachers in secondary schools were actually novice teachers in the teaching profession who had just done a component of ICT at college level. They volunteered to teach ICT out of excitement rather than competence. Teaching is a profession and those who are called upon to join the career must have the command of the knowledge or expertise in their subject area. Thus, the competence levels of the ICT volunteer teachers were questionable due to lack of special training in ICT teaching methods. Sicilia (2005) observes that lack of effective training in ICT pedagogical skills was a problem and that having knowledge on how to use ICT tools is not the same as having skills on how to teach ICT. The situation was made even more complicated by lack of ICT knowledge by secondary school administrators to effectively and efficiently supervise the non-ICT trained teachers. Most Head teachers in secondary schools could barely turn on and off the computer.

5.4.4 Use of alternative sources of power

The erratic supply of electricity in schools was another major challenge that was identified in the teaching of ICT as an examinable curriculum subject in secondary schools in Mazabuka District. In order to mitigate the challenge schools were using thermal generators so as to facilitate ICT learning. ICT teachers explained that the use of thermal generators greatly helped in alleviating the problems of power outages due to load shading. The schools were able to handle practical ICT lessons using thermal power even during examinations times. However, the school administrators complained that the use of thermal generators increased the school running costs as they did not have enough resources. This finding is in line with Boit et al. (2012), Nganji et al. (2010) and Pelgrum (2010) that developing countries lack resources to enhance ICT penetration in education sector. A few participants however, were of the view that using of solar power probably would be cheaper than both hydro- electricity and thermal power.

5.4.5 Explorations of ICT online resources

In order to mitigate the scarcity of teaching and learning materials for ICT in secondary schools in Mazabuka District, teachers resorted to use of internet sources to get ICT notes for learners. The commonest teaching resources found in these schools were the ICT syllabus and the 2013 curriculum frame work with which teachers had to use in interacting with the internet. The surfing

of internet and use of other online sources greatly helped to alleviate the challenges emanating from inadequacy of the ICT teaching and learning materials.

The researcher however, noted that as much as the internet was a very useful and powerful resource, most of the secondary schools had limited access to internet especially schools in peri-urban and rural areas. Urban schools had internet connected to their schools but its use was dependant on the discretion of the school administrators. Teachers and pupils complained that they could not use the facilities freely at their disposal but with restrictions. Apart from that the internet was extremely slow and usually unavailable at most times. This was sometimes as a result of non-payment of the costly internet service by the schools or due to lack of the signal from the service providers. Hennessy et al. (2010) in Lufungulo (2015) rightly indicates that integration of ICTs in education in developing countries is easier said than done due to limited technology infrastructure, particularly internet access, bandwidth, hardware and software provision.

All in all, measures employed in mitigation of challenges in ICT teaching in secondary schools includes community engagement, class splitting, volunteer teaching, use of alternative sources of power and exploration of online sources.

5.5 Summary of the chapter

The foregoing chapter has presented the discussions of the findings on teachers' and pupils' perceptions of ICT as an examinable curriculum subject in secondary school in Mazabuka District of Southern Province. The discussion looked at implementation of ICT as an examinable curriculum subject in secondary schools in Mazabuka District, challenges faced, prospects, and mitigation measures. Participants indicated that implementation of ICT as an examinable curriculum subject was rushed as schools were not yet prepared for the subject. Among the common challenges unearthed were ; lack of qualified ICT teachers, lack of adequate ICT teaching and learning materials, irregular power outages, lack of computer laboratories and internet facilities. Some prospects identified were that ICT was a viable examinable curriculum subject because of high interest expressed by teachers and pupils in the subject, its critical role in socio-economic development and the improving ICT teacher qualification due to political will. Measures employed in mitigation of challenges in ICT teaching and learning included community

partnership, class splitting, volunteer teaching, use of alternative sources of power and exploration of online resources. The next chapter presents the conclusion and recommendations of the study.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.1 An overview

The foregoing chapter discussed the findings of the study on the perceptions of teachers and pupils of ICT as an examinable curriculum subject at junior secondary school in Mazabuka District of Southern Province. This chapter presents the conclusions and recommendations of the study based on the findings.

6.2 Conclusion

The study showed that both the teachers and pupils had positive perceptions of ICT as an examinable curriculum subject in secondary schools in Mazabuka District of Southern Province. The majority of the participants from the three sampled secondary schools strongly welcomed the roll out of ICT as a compulsory examinable curriculum subject in secondary schools by the MoGE. Participants argued that bridging the digital divide and modernisation of Zambia into an information and knowledge based society was through embracing of ICT. The findings were consistent with Davis' (1989) TAM model that affirms that attitude of the user of a new technology (ICT) was based on the perceived ease of use and perceived usefulness of the technology (ICT). This study established that teachers and pupils found ICT to be an easy, interesting and a very useful practical subject in society nowadays than it was in the past.

The study further unearthed the challenges and prospects of ICT as an examinable curriculum subject in secondary schools as perceived by teachers and pupils. The common challenges were; lack of trained ICT teachers, inadequate computer hardware and software, irregular power supply and lack of proper computer laboratories. The prospects identified included the viability of ICT as a subject, the critical role of ICT in social economic development, the promising political will and the improving ICT teacher qualifications in the country. The study further outlined the measures employed by secondary schools in mitigating the challenges in the teaching and learning of ICT as an examinable curriculum subject in Mazabuka District. The measures among others included community engagement, class splitting initiative, use of voluntary teachers, use of alternative sources of energy and explorations of ICT online resources.

As much as the study revealed that teachers and pupils had a favourable perception of ICT as an examinable curriculum subject in secondary schools a lot is still needed to be done both at organisational and individual level in order to minimise the challenges being experienced in the teaching and learning of ICT as an examinable subject. At organisational level secondary schools ought to purchase enough ICT text books for grade 8 and grade 9 pupils, source adequate and quality computers and have standard computer laboratories. However, the situation was concealed by the participants especially the school administrators who pretended that all was well in the teaching and learning of ICT in secondary schools. For instance, the school administrators claimed that they had completed the process of purchasing all necessary facilities in the teaching and learning of ICT. Nevertheless, this was disputed by the teachers. At individual level the major challenge was the questionable competence of volunteer ICT teachers in secondary schools. Worse still, secondary schools had no Continuous Professional Development (CPD) programmes for the untrained ICT teachers and none of the in-service teachers were studying to upgrade their ICT qualifications. As a matter of fact, volunteer teachers' competence in handling ICT was questionable despite their claim of command of the subject. Competence in any field comes with training and years of experience thus volunteer teachers' claim of competence in ICT teaching was exaggerated as most of them were novice in the teaching fraternity. The lack of trained ICT teachers in secondary schools should be seriously considered as an urgent matter by MoGE.

Without this study researchers, education practitioners and policy makers would have no empirical information on perceptions of secondary school teachers' and pupils' of ICT as examinable curriculum subject. Furthermore, the prospects of ICT as an examinable curriculum subject at junior secondary school, challenges faced and mitigation measures employed would not have been established. This study could also not have come at the right time than now when the world was going digital and integration of ICT in the education system was being prioritised in an effort to bridge the digital divide in this information era.

6.3 Recommendations

The following recommendations were made based on the findings of the study:

1. The study established that ICT was key in bridging the digital divide in today's information age; it is therefore being recommended that MoGE should ensure that all pupils at junior secondary school take ICT as a compulsory examinable curriculum subject.
2. Secondary schools in Mazabuka District also indicated that acquiring the ICT teaching and learning materials was a big challenge thus the Government should consider reduction or removal of tax and tariffs on end-user consumer ICT products such as desk tops computers, laptops, ipads and projectors.
3. The study further found that school administrators lacked basic ICT skills; it is therefore being recommended that the MoGE should put a deliberate policy to promote in-service training and CPDs for school administrators so as to equip them with necessary skills for efficient and effective supervision of ICT learning in secondary schools.
4. The study also noted that schools incurred extra costs to generate thermal power to run computers when there is power outage; thus it is being recommended that schools should consider using solar energy as an alternative source of power for the computer laboratories as it would be probably cheaper than both thermal and hydro- power.
5. The study also established that teachers who volunteered to teach ICT came from different departments within the school; it is therefore being recommended that MoGE should consider creating a stand-alone ICT department in secondary schools so as to effectively and efficiently teach ICT.

6.4 Recommendations for future research work

The following is being suggested for possible research;

1. ICT learning in Zambia : major challenges and opportunities in secondary schools
2. Impact of the level of teacher qualification in ICT on performance of pupils in ICT as a subject at secondary school level.
3. The role of ICT education in socio-economic development of a country.
4. Attitudes of primary school teachers in teaching of computer studies at primary school level.
5. A model for effective and efficiency evaluation of ICT learning in secondary schools.

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APPENCES

APPENDIX A: FOCUS GROUP GUIDE FOR PUPILS

Interviewer: _____

School: _____.

Date: _____

Place: _____

Start Time: _____

1. What is ICT?
2. What do you learn in ICT?
3. Do you think ICT is an interesting subject to learn in your view?
4. How different is ICT from other subjects?
5. Is ICT difficult or easy compared to other subjects? Explain?
6. Why do you think learning ICT as a subject is important?
7. Should ICT be compulsory and examinable?
8. How often do you study ICT on your own?
9. Would you continue studying ICT at senior level?
10. What problems do you face in learning of ICT and how do you think they can end?
11. What suggestions do you have on learning of ICT?

End Time: _____

Thank you for your time and participation in this study.

APPENDIX B: FACE TO FACE INTERVIEW GUIDE FOR ICT TEACHERS

Interviewer: _____ Interviewee: _____ Sex () School: _____

Date : _____ Place: _____ Start Time: _____

Please note that this is a purely academic study which seeks to investigate the perception of teachers and learners towards ICT as an examinable curriculum subject in selected secondary schools in Mazabuka District.

1. When and where did you train as an ICT teacher?
2. How long have you been teaching ICT?
3. What are your views on introduction of ICT as an examinable subject?
4. How prepared were you as a school to start teaching ICT as a curriculum subject?
5. What ICT facilities are available at your school?
6. How difficult is ICT as a subject?
7. In your view, how would you describe the performance of your pupils in previous national ICT examinations compared to other subjects?
8. Should ICT be a compulsory and an examinable subject? Give reasons
9. What benefits do you think come with ICT learning in secondary schools?
10. What challenges do you face in teaching of ICT and how are you mitigating them?
11. Is ICT an interesting subject to teach?
12. What do you perceive to be the future prospect of ICT in secondary schools?
13. Do you have any suggestions to make towards the teaching of ICT in secondary schools?

End Time: _____ Thank you for your time and participation in this study.

APPENDIX C: INTERVIEW GUIDE FOR SCHOOL ADMINISTRATORS

Interviewer: _____

Interviewee: _____ Sex () School: _____

Date: _____ Place: _____ Start Time: _____

Please note that, this is a purely academic study which seeks to investigate the perception of teachers and learners towards ICT as a curriculum subject in secondary schools in selected in Mazabuka District. The information you give will not be used against you or the school in any way.

1. How long have you been in service?
2. What are your views on introduction of ICT as an examinable subject?
3. How well prepared were you as a school to start teaching ICT as curriculum subject?
4. What kinds of ICTs facilities are available in your school?
5. How did you acquire the computers and other tools for ICT teaching?
6. Should ICT be a compulsory and examinable subject? Give reasons
7. How was the performance of the learners in ICT in the previous national examinations?
8. What benefits do you think come with ICT learning in secondary schools?
9. What challenges do you face in teaching of ICT and how are you mitigating them?
10. Is ICT an interesting subject to teach and what makes it so if yes?
11. What do you perceive to be the future prospect of ICT in secondary schools?
12. Do you have any suggestions to make towards the teaching of ICT in secondary schools?

End Time: _____

Thank you, Sir/Madam, for taking some time off your busy schedule to participate in this interview.

APPENDIX D: QUESTIONNAIRE FOR SECONDARY SCHOOL ADMINISTRATORS

THE UNIVERSITY OF ZAMBIA

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY, SOCIOLOGY AND SPECIAL EDUCATION

Dear Sir / Madam,

I am a Post graduate student at the University of Zambia, carrying out a research on teachers and pupils' perceptions towards ICT as a curriculum subject in Mazabuka District.

You are among the few officers purposively selected from secondary schools in Mazabuka to participate in this study. The information you will provide is in confidence and for anonymity's sake, you are not required to indicate your name on the questionnaire.

I would appreciate your co-operation and truthful responses to this questionnaire.

Siana Moono

University of Zambia

School of Education

P.O. Box 32379

Lusaka.

E-mail: sianamoono@yahoo.com

INSTRUCTIONS

You are required to tick the responses that are in agreement with your opinion in the brackets given. In some cases you have to write your responses in the spaces provided.

Please answer all the questions.

SECTION A. BIO DATA

1 Gender

1. Male

☐

2. Female

☐

2 Age

Below 25	<input type="checkbox"/>
25 and 35	<input type="checkbox"/>
36 and 45	<input type="checkbox"/>
46 and 55	<input type="checkbox"/>
56 and 65	<input type="checkbox"/>

3 What is your marital status?

1. Single	<input type="checkbox"/>
2. Married	<input type="checkbox"/>
3. Divorced	<input type="checkbox"/>
4. Widowed	<input type="checkbox"/>

4 What is your level of education?

1. Certificate	<input type="checkbox"/>
2. Diploma	<input type="checkbox"/>
3. Degree	<input type="checkbox"/>
4. Masters	<input type="checkbox"/>

Other specify_____

5 How long have you been in service?

1. Less than 20 years	<input type="checkbox"/>
2. Between 21 and 30 Years	<input type="checkbox"/>
3. Above 31 years 40	<input type="checkbox"/>

6. What is your substantive position?
 (Indicate)_____

7. What is your highest academic qualification?
 (Indicate)_____

SECTION B: TEACHERS' AND PUPILS' PERCEPTIONS TOWARDS ICT AS A CURRICULUM SUBJECT

8. What is your position on the introduction of ICT as an examinable curriculum subject at grade 9 level?

9. Does your school have qualified and competent ICT teachers? If not who teaches ICT?

10. How prepared were you as a school to start teaching ICT as an examinable curriculum subject?

11. In your opinion, should ICT continue to be taught as an examinable curriculum at grade 8 and grade 9 level? Give reasons.

12. What are the administration challenges and obstacles does your school encounter in teaching and learning of ICT as an examinable subject?

13. What measures have you put to mitigate challenges identified in question 14 above?

14. What are the prospects of ICT as an examinable curriculum subject in the education system?

15. What are the benefits or rewards of teaching and learning ICT? Explain briefly

16. What would you like to see with regard to teaching and learning of ICT in secondary schools as an administrator? Explain briefly

Thank you for your co-operation.

APPENDIX E: QUESTIONNAIRE FOR SECONDARY SCHOOL ICT TEACHERS

THE UNIVERSITY OF ZAMBIA

SCHOOL OF EDUCATION

DEPARTMENT OF EDUCATIONAL PSYCHOLOGY, SOCIOLOGY AND SPECIAL EDUCATION

Dear Sir / Madam,

I am a Post graduate student at the University of Zambia, carrying out a research on teachers and pupils' perceptions towards ICT as a curriculum subject in Mazabuka District.

You are among the few officers purposively selected from secondary schools in Mazabuka to participate in this study. The information you will provide is in confidence and for anonymity's sake, you are not required to indicate your name on the questionnaire.

I would appreciate your co -operation and truthful responses to this questionnaire.

Siana Moono

University of Zambia

School of Education

P.O. Box 32379

Lusaka.

E-mail: sianamoono@yahoo.com

INSTRUCTIONS

You are required to tick the responses that are in agreement with your opinion in the brackets given. In some cases you have to write your responses in the spaces provided.

Please answer all the questions.

SECTION A. BIO DATA

1 Gender

1. Male

☐

2. Female

☐

2 Age

Below 25	<input type="checkbox"/>
25 and 35	<input type="checkbox"/>
36 and 45	<input type="checkbox"/>
46 and 55	<input type="checkbox"/>
56 and 65	<input type="checkbox"/>

3. What is your marital status?

1. Single	<input type="checkbox"/>
2. Married	<input type="checkbox"/>
3. Divorced	<input type="checkbox"/>
4. Widowed	<input type="checkbox"/>

4. What is your level of education?

1. Certificate	<input type="checkbox"/>
2. Diploma	<input type="checkbox"/>
3. Degree	<input type="checkbox"/>
4. Masters	<input type="checkbox"/>
Other specify_____	

5. How long have you been in service?

1. Less than 20 years	<input type="checkbox"/>
2. between 21 and 30 Years	<input type="checkbox"/>
3. above 31 years 40	<input type="checkbox"/>

6. What is your substantive position?

(Indicate)_____

7. What is your highest academic qualification?

(Indicate)_____

SECTION B: TEACHERS' AND PUPILS' PERCEPTIONS TOWARDS ICT AS A CURRICULUM SUBJECT

8. When and where were you trained as an ICT teacher?

9. What is your position on the introduction of ICT as an examinable curriculum subject at grade 9 level?

10. How prepared were you as a school to start teaching ICT as an examinable curriculum subject?

11. In your opinion, should ICT continue to be taught as a compulsory and examinable curriculum at grade 8 and grade 9 level? Give reasons.

12. How easy is ICT as a subject from your experiences as a teacher?

13. What are the administration challenges and obstacles does your school encounter in teaching and learning of ICT as an examinable subject?

14. What measures have you put to mitigate challenges identified in question 14 above?

15. What are the prospects of ICT as an examinable curriculum subject in the education system?

16. What are the benefits or rewards of teaching and learning ICT? Explain briefly

17. What would you like to see with regard to teaching and learning of ICT in secondary schools as an administrator? Explain briefly

Thank you for your co-operation.

APPENDIX F: INFORMATION SHEET

Researcher: Siana Moono. Computer No. 2015130687

I am a Masters Student in School of Education, (Sociology of Education) at the University of Zambia. I am undertaking a study on the perceptions of teachers and learners towards ICT teaching/learning as an examinable curriculum subject in secondary schools.

The University requires that informed consent be obtained from participants. Thus am inviting administrators, teachers and learners to participate in this study. Participants will be interviewed face to face and also observed. Should any participants feel the need to withdraw from the study, they may do so without giving any reason at any time.

Responses collected will form the basis of this research study and will be put into a written report on an anonymous basis. It will not be possible for you to be identified personally. Only grouped responses will be presented in this report. All material collected will be kept in confidence.

The raw data will only be accessible by my supervisor, Dr. Kalimaposo K. whereas the report findings will be submitted for marking to the School of Education and consequently deposited in the University Library as per university requirement. However, one or more articles based on the information obtained may be submitted for publication in scholarly journals.

For any questions or further information about the study, please contact me on 0977894840 or my supervisor, Dr K. Kalimaposo, in the School of Education, The University of Zambia, and P.O Box 32379, Lusaka.

SIANA MOONO

Signed: _____

APPENDIX G: INFORMED CONSENT TO PARTICIPATE IN RESEARCH FOR TEACHERS

My name is Mr. Siana Moono. I am from The University of Zambia, Great East Road Campus from the Department of Education (Sociology of Education).

Your participation in this study is entirely voluntary. Please read the information below and ask questions about anything you do not understand, before deciding whether or not to participate. We are asking you to take part in the research study because we are trying to learn about your perceptions towards ICT teaching as an examinable curriculum subject in secondary schools.

1. Participation in this study is voluntary and there are no monetary or rewards in any form.
2. There are no risks in taking part in this study.
3. If you feel like not taking part in this study, no one will be upset with you or even if you accept and decide to change your mind later and want to stop.
4. You can ask any questions that you have about the study. If you have a question later that you didn't think of now, you can call me on

+260977894840 or ask me next time.

5. Signing your name at the bottom means that you agree to be in this study.

Name and signature of participant

Date: _____

APPENDIX H: INFORMED CONSENT TO PARTICIPATE IN RESEARCH-PUPILS

My name is Mr. Siana Moono. I am from The University of Zambia, Great East Road Campus from the Department of education (Sociology of Education).

Your participation in this study is entirely voluntary. Please read the information below and ask questions about anything you do not understand, before deciding whether or not to participate. We are asking you to take part in the research study because we are trying to learn about your perceptions towards the teaching and learning of ICT as a curriculum subject in selected secondary schools of Mazabuka District.

1. If you agree to be in this study we shall ask you questions about how you learn ICT.
2. There are no risks in taking part in this study except in some cases the research may take a few photos and record the discussion.
3. If you feel like not taking part in this study, no one will be upset with you or even if you accept and decide to change your mind later and want to stop you still do so.
4. You can ask any questions that you have about the study. If you have a question later that you didn't think of now, you can call me on +260977894840 or ask me next time.
5. Signing your name at the bottom means that you agree to be in this study.

_____ Date: _____