An Investigation on The Challenges of Introduction of Compulsory ICT Education in Schools
(Case Study on Chitambo District).
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ABSTRACT

This paper discusses the impact of the introduction of ICT as a compulsory subject in the Education system especially in rural districts of the country. It is commonly known that most of the provinces in the country are made up of districts that are vastly rural and the country in its quest to achieve the MDG which focuses at providing universal education, introduced an ICT education movement in all primary schools regardless of their geographical position under the new curriculum (Kadimba,2015). This is a good initiative as it is promoting ICT literacy in the country and that the current times demands for integration of ICT in education so as to create new learning and teaching possibilities (Sichone, 2011). The ministry of general education being the major factor in the provision of education has been in a quest to respond to the millennium development goals and its main focus is the achievement of universal access to quality primary education and promotion of gender equality and women empowerment. In trying to achieve these goals, the ministry introduced Free Basic Education (FBE) in 2002. In recent years, the ministry of General Education has been working on improving the Zambian Educational Curriculum and which lead to the change in its approach on one of the issues which have raised some concerns in the past years concerning ICT by introducing compulsory ICT Education in all primary schools (MOGE, 2013).

The study employed a cross-sectional research design. It also involved stratified, purposeful and convenient sampling strategies. Secondary data collection was used by the method of analysis of documents and primary data collection on the other hand was used to collect data directly from the field through observation, self-administered questionnaires, and interviews. Questionnaires and interview guide were used as research instruments.

CHAPTER ONE

INTRODUCTION/ BACKGROUND

ICT play a very important role in our everyday life in terms of learning, communication, business, entertainment and governance among others and this is the main reason why teaching of ICT is imperative in our modern education (Mikre, 2011). In 2013, Ministry of General Education (MOE) revised the national school curriculum Introducing ICT as an examinable subject at junior secondary school and made it compulsory in all schools (Kandimba, 2015). This reform let to the introduction of computer studies as a compulsory subject and part of the new vocational subjects (ZIPAR, 2018). This was due to an increasing demand in the use ICTs in our modern world including the education system. Even if teaching of ICT was greatly welcomed by the ministry under the new curriculum, the teaching of ICT still remains a daunting assignment in rural and community schools because most schools have no infrastructure, equipment to use and teaching staff (Chanda, 2015). Chitambo District is therefore not exceptional in this case even after many have been made to overcome the challenges faced by most schools in the country. The district is known to be one of the new districts that are vastly rural and a lot has to be done in order to develop most of the infrastructure which include schools. The district still faces a number of challenges in implementing this policy because most schools are still being developed at a very slow pace, very few schools have received qualified ICT teachers and equipment and three quarters of the schools are not connected to national electricity grid. It is for this reason that the penetration level of ICTs in Zambia's education institutions ha still remained low and the integration of ICTs in learning and teaching practice has been limited, although the introduction of computer studies as a study subject has begun to change this perspective (Nyanja, 2019)

STATEMENT OF THE PROBLEM

Despite the enormous advocacy of ICT education being compulsory in all Zambian schools, investment and donation of ICT equipment to MOE and higher institutions training more ICT teachers, Chitambo District Education System still faces challenge in transforming students learning process in order to provide students with the skills to function effectively in this dynamic, information rich and continuously changing environment (Kandimba, 2015). The cause of concern is that unless this problem is addressed, efforts being made by the implementers of the compulsory ICT education policy are going to be put to waste and improvement in the quality of teaching and learning is going to be sluggish. This may lead to the ministry of education failing to achieve its mission and produce school leavers who are not ready for the world of work which is increasingly reliant on an ICT aided generation and dissemination of knowledge. In view of this inconsistency, hence this study focused on investigating the particular challenges faced by school in the implementation of compulsory ICT education.

AIM

To investigate the challenges posed by introduction of compulsory ICT education in schools of Chitambo District.

OBJECTIVES

1. To examine the challenges of the introduction of compulsory ICT education to learners
2. To find out the challenges faced by different schools in implementing ICT education policy

3. To study the challenges faced by the District Education Board Office (DEBO) in implementing the ICT education policy.
4. What measures have been taken in overcoming the challenges imposed by the challenges of Introduction of compulsory ICT education?

RESEARCH QUESTIONS

1. What are some of the challenges, learners face due to compulsory ICT education?
2. State the challenges faced by your school in implementing compulsory ICT policy
3. What challenges does your office face in implementing the compulsory ICT policy?

RESEARCH HYPOTHESIS

The study was guided by the following hypothesis:

1. Shortage of ICT teachers affects students learning in almost all the schools in the district.
2. Accessibility of ICT resources affects students learning in almost all the schools in the district.
3. Availability of electrical power supply affects the implementation of ICT skills on student's learning in schools.

SCOPE

This case study specifically focused on determining the challenges faced by schools and the DEBS office in implementing of ICT compulsory education in all the schools so as to help policy makers to come up with ways in which the can help in overcoming these challenges that may hinder the successful implementation of such policies.

SIGNIFICANCE

The study should be of great importance to the policy makers in the ministry of education, helping them to appreciate the usefulness of ICT in learning so as to come up with policies that promote ICT in learning. It will also help the government know the challenges which most rural districts are facing in implementing the compulsory ICT education policy and come up with ways that will help to overcome these challenges. The researcher hopes that result of the study will be useful to future researchers with interest in examining further the challenges that may be faced on ICT education. This may lead to the generation of new ideas for the better implementation of ICT into learning process.

CHAPTER TWO

LITERATURE REVIEW

ICT plays a very important role in our modern world in almost all areas of life and one of them is education. Although ICT has the potential to improve the education system of every country to a great extent but this is not the case in some of the developing countries because of certain challenges; technologies also allow students to work more productively than in the past, but the teacher's role in technology is more demanding than before and even though ICT has the potential to transform the nature of education, most developing countries face a number of challenges (. Mndzebele,2013). In 2013, Ministry of General Education (MOE) revised the national school curriculum Introducing ICT as an examinable subject at junior secondary school and made it compulsory in all schools (Kandimba, 2015). This move was received with mixed feelings among different stakeholders across the nation looking at the different challenges which most schools would face in implementing the curriculum such as shortage of teachers, inadequate ICT teaching resources and irregular power supply (Moono, 2017).

Several measures were put in place to mitigate the challenges which included; employing voluntary teachers, class splitting, providing alternative power, supplying computers in schools and training of ICT teachers. (Kandimba, 2015) also added that, Implementation of ICT was a challenge because in some schools, pupils have never seen nor touched a computer in all their life time. This is still the case in Chitambo District where only a few schools have received computers and worse still most of the schools are not connected to national electricity grid (Albugami and Ahmed, 2015) interrogated the factors that affect the implementation of ICT education in schools and they showed that participants and teachers had positive views toward ICT regardless of the challenges they were facing in the implementation process.
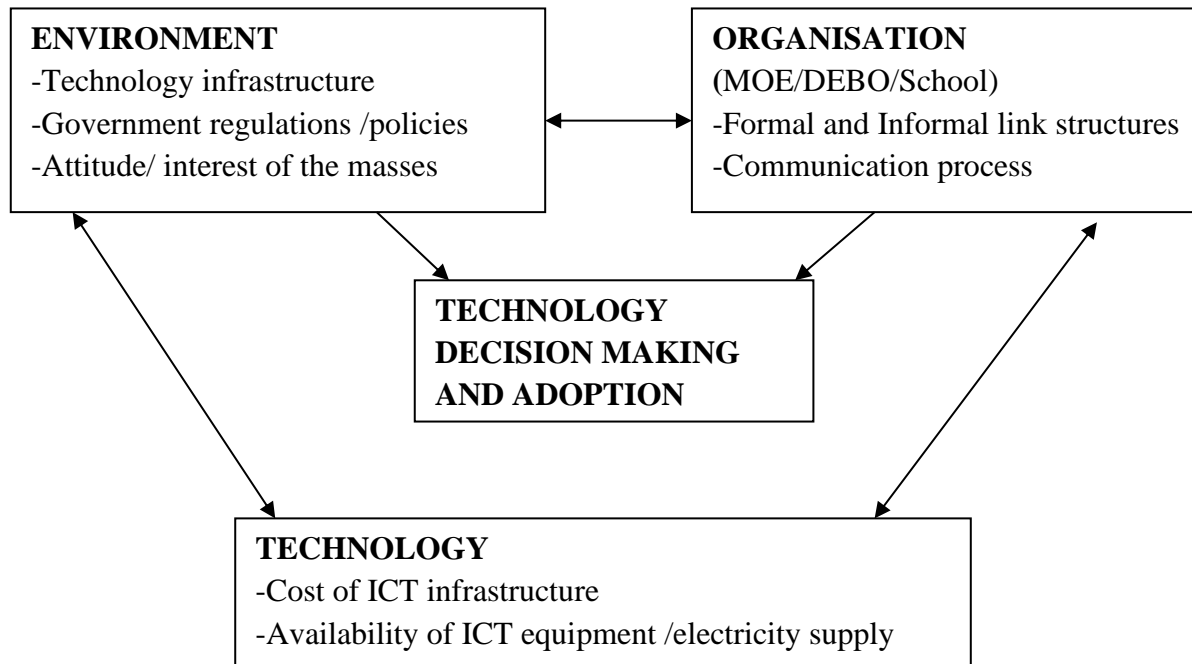
This shows that ICT education is an important move worldwide and it should embrace but a lot has to be done in order for it to be implemented successfully (Kiptalam, 2010). Integrating ICT into the educational system of Zambia requires financial and human resource investment and in addition, the cost of implementation of technologies and the expansion of existing infrastructures, such as internet service and electricity, should not be overlooked (Ghavifekr et al, 2016). The initial implementation of the program was characterized by a lot of challenges in many learning institutions across the country; for example, not all schools in the country have access to electricity, while others have no computers to facilitate ICT lessons (Mengo, 2018). She further indicated that, "We are appealing to Government to start the modernization process of rural schools to ensure that every child has access to ICT facilities. Failure to do so will disadvantage the learners in peri-urban and rural areas." It is for this reason that Zambia is one of the African countries whose level of technology penetration is low because of policy and Infrastructure gap; Lack of training facility and trained maintenance personnel; limited community participation; gender related issues and ICT access issues (Wanger, 2001).
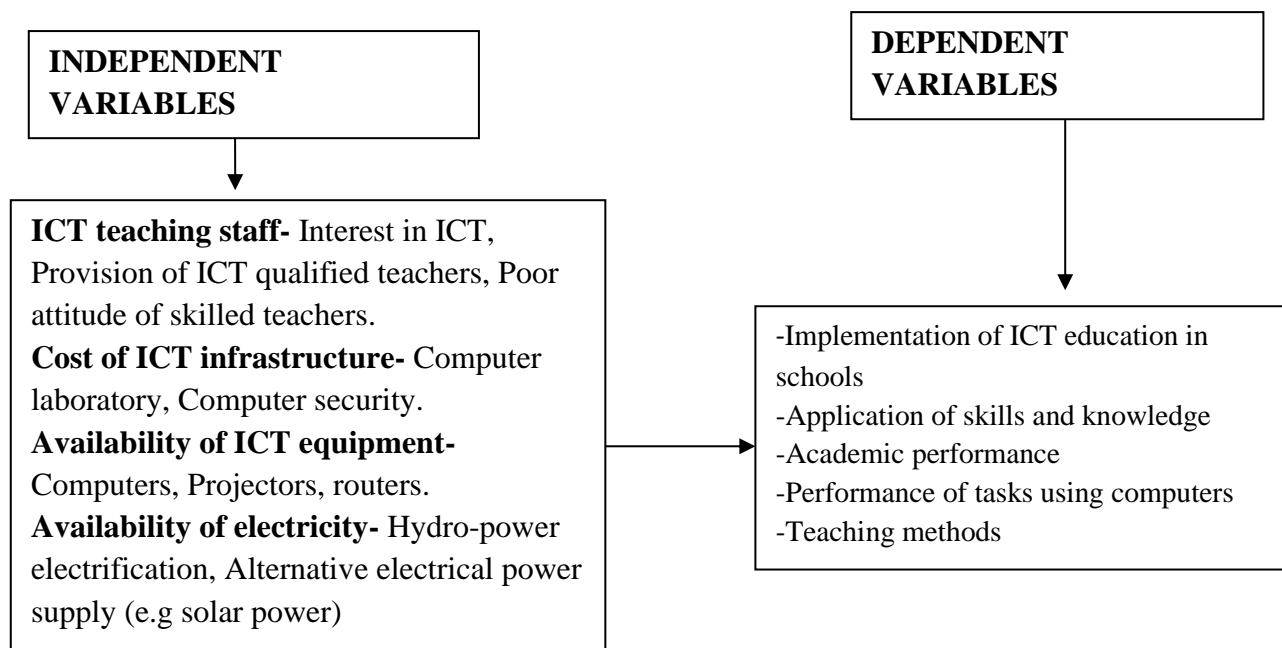
In order to compete in the global competitive economic environment, a highly skilled and educated workforce with aptitude and skill in the application of Information and Communication Technology (ICT) is essential and it is important that all sectors of the education understand the benefits of investing in ICT and the infrastructure that is required for introducing ICT; additionally there is a need for government to partner with private sector for resource mobilization to fund the use of ICT in education (.Mndzebele,2013).

Theoretical Framework

This paper adopted the Technology Organization and Environment (TOE) model that was developed by (Oliveira and Martins 2011). They stressed on internal and external features of an organization that drives an organization to adopt a given technology. Below is the breakdown of the theoretical framework of this paper in line with TOE model

ENVIRONMENT
-Technology infrastructure
-Government regulations /policies
-Attitude/ interest of the masses

ORGANISATION
(MOE/DEBO/School)
-Formal and Informal link structures
-Communication process

TECHNOLOGY DECISION MAKING AND ADOPTION

TECHNOLOGY
-Cost of ICT infrastructure
-Availability of ICT equipment /electricity supply

Conceptual Framework

INDEPENDENT VARIABLES

DEPENDENT VARIABLES

ICT teaching staff- Interest in ICT, Provision of ICT qualified teachers, Poor attitude of skilled teachers.
Cost of ICT infrastructure- Computer laboratory, Computer security.
Availability of ICT equipment- Computers, Projectors, routers.
Availability of electricity- Hydro-power electrification, Alternative electrical power supply (e.g solar power)

-Implementation of ICT education in schools
-Application of skills and knowledge
-Academic performance
-Performance of tasks using computers
-Teaching methods

CHAPTER THREE

METHODOLOGY

Introduction

This chapter shows how the research was carried out. It discusses the research design, population, sampling strategies, data collection instruments, research procedure and data analysis techniques that were employed in the study.

Research Design

The study employed a cross-sectional research design. Cross-sectional design allowed the study of the population at a specific time and the difference between the individual groups within the population to be compared. It also provided for the examination of the co-relationship between ICT resources provided in implementing the policy and how learning of ICT is being conducted in the actual sense by seeking the views of the students, teachers, school administrators and district administrators. The choice of this design was dependent on the nature of the study variables.

Population

The study was carried out among learners, students and administrators from schools and district office of the education system. The population of the study was obtained from 5 secondary and 8 primary schools and the districts office. It involved at least 5 pupils, 3 teaching staff and 2 school administrators from each school and 4 district officials giving a total of 134 participants. The research participants were considered as the true representative of the population which came from different schools within the district.

Sampling strategies

The study employed stratified, purposeful and convenient sampling strategies. Stratified sampling was used to identify the stratum in the population. The researcher identified pupils, teachers and administrators as the relevant stratum and their actual representation in the population. Sufficient number of subjects from each stratum was then selected. Stratified sampling helped to ensure equal representation in an event where one or more strata in the population had a low incidence relative to the other strata. Purposeful sampling was used to acquire the appropriate number of pupil's representation in the study. The pupils represented the widest variety of perspective on the challenges of learning ICT in schools. Convenient sampling was used to identify the teachers and administrators that formed part of the study. This is because the teachers and administrators are relatively few in number and most times its quiet challenging to know when they may be available.

Data collection Method

Secondary data collection was used by the method of analysis of documents. Such documents included official records, newspaper accounts, reports, as well as the published data used in the review of outstanding literature. Primary data collection on the other hand was used to collect data directly from the field through observation, self-administered questionnaires, and interviews.

Data collection instruments

The questionnaires were preferably used in this study because they give clear and specific responses and enable the respondents to express themselves freely at their own time and were given to teachers who may not have enough time to attend to personal interview.

Interview Guide was used to collect primary data because it has outlined questions which guide and make sure that all the relevant areas of the study are covered. Interview guides also permitted the researcher to probe and guide the respondents for detailed information and help keep interaction focused and also serve time. Interviews were suitable for administrators since they have limited time to respond to questionnaires and verbal interaction with them helped in detecting biased answers. The interview guide also was suitable for the learners since they are quite many and so in order to serve time and also to have them to give out their answers on time.

Observation of participants in the context of a natural scene was made. Observation provided knowledge of the context in which events occur and helped to enable the researcher see things that participants themselves may not be aware of.

CHAPTER FOUR

RESULTS OF FINDINGS

Introduction

In this chapter, comprehensive information acquired during the research is presented according to the research objectives. The purpose of this research was to understand the challenges faced by ministry of education in implementing the compulsory ICT policy in Zambian schools especially those in rural areas. This chapter gives out the interpretation of the graphs, pie charts and tables

General Information of the Participants

In order to draw demographic profile of the respondents in the study, frequencies were used to determine the number of times a particular question was answered by respondents. Questions on the advantages of ICT education; number of

ICT teachers and ICT teaching materials and ICT supporting facilities were asked.

Gender of Respondents

The table below shows that out of the 134 respondents involved in the surveyed, 57 representing 43% were female and 77 representing 57% were male. The findings simply show that more males took part in the study than the female and all the respondents were ready to take part in the research. As shown in the table below

Table 1: Gender of Respondents

Gender	No of Respondents	Percentage
Female	57	43
Male	77	57
Total	134	100

Age of Respondents

The Table below shows that majority of the respondents of about (65%) were in the age bracket of 16-30 years, 27% were between the age of 31-45 years, 6% were between the age of 46-59 years and 2% were 60 years and above

Table 2: Age of Respondents

Age Range	No of respondents	Percentage
16-30	87	65
31-45	36	27
46-59	8	6
60	3	2

Occupation of Respondents

The below shows that, it was observed that 40% of the respondents were teachers, 6% were officials

from DEBO, 32% were students and 22% were respondents that outside the education system.

Table 3: Occupation of Respondents

Occupation	No of Respondents	Percentage
Students	43	32
Teachers	54	40
DEBO Officials	8	6
Other Respondents	29	22
Total	134	100

**Challenges faced by different stakeholders in implementing compulsory ICT education**

The study focused on finding out the challenges faced by learners, teachers, school administration and district administration in implementing compulsory ICT education. The challenges faced by learners are shown in the diagram below.

Figure 1: Challenges faced by learners
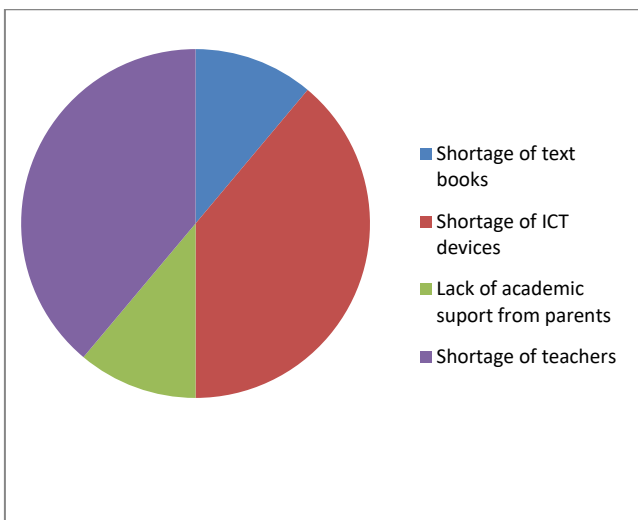
Some of the challenges faced by teachers in most schools are as shown in the diagram below

Figure 2: Challenges faced by teachers
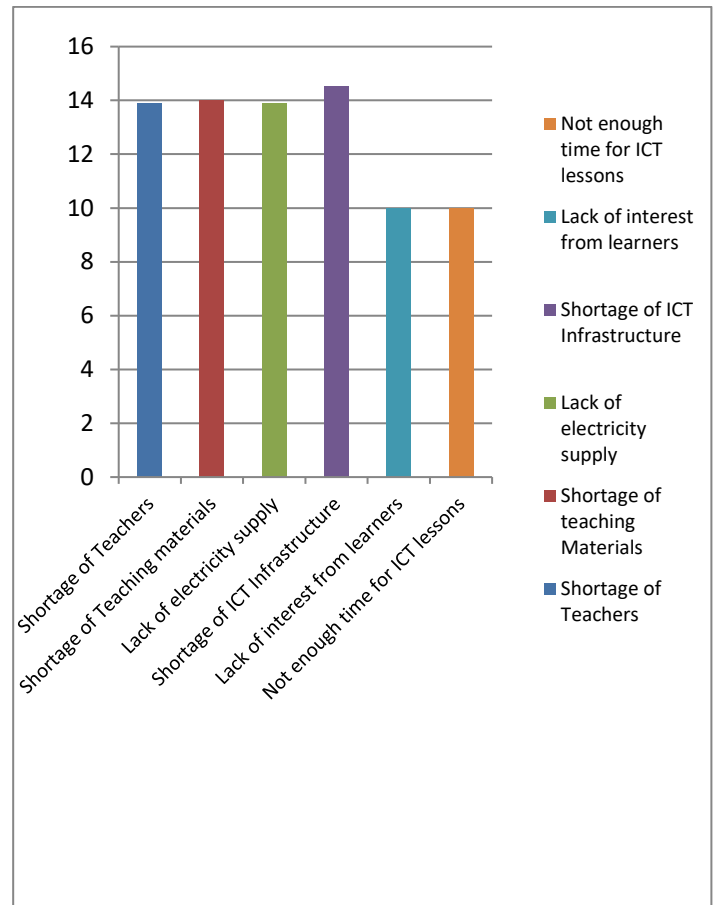
The challenges faced by school administrators in the implementation of compulsory ICT education as they were mentioned by respondents are shown below.
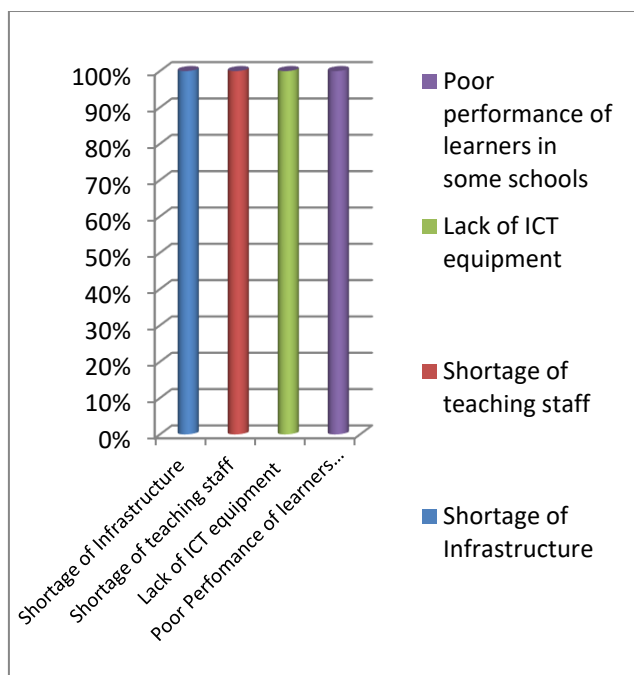
Figure 3:

Challenges faced by school administrators
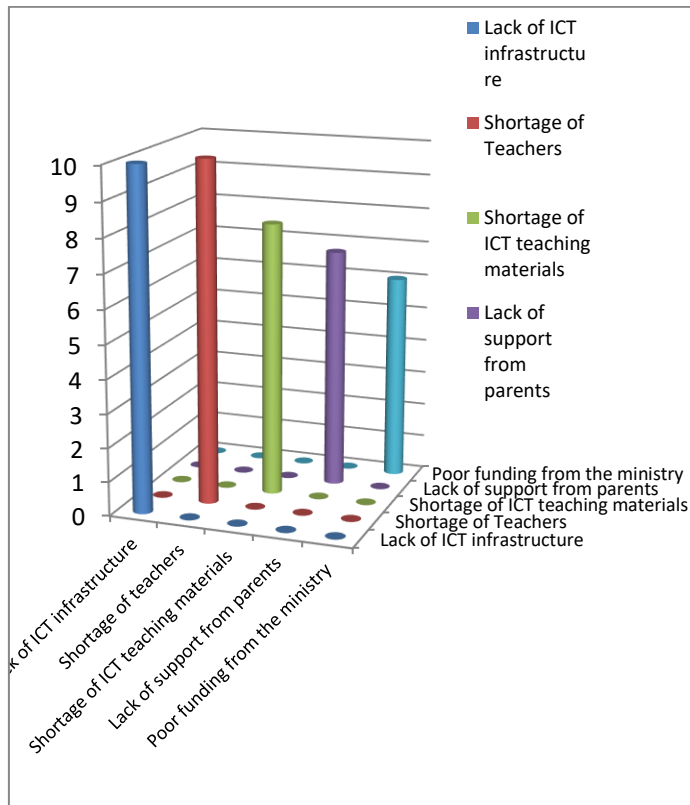
The following diagram shows some of the challenges faced by the district administration in implementing compulsory ICT education as highlighted by respondents.

Figure 4: Challenges faced by district administration

CHAPTER FIVE

DISCUSSION OF FINDINGS

Shortage of books

Most of the learners complained that, even if most schools have been stocked with ICT text books, they are not enough to meet the needs of each learner. On average, 90% of schools in the district do not have libraries where learners can have privileges of accessing text books at their free time and in most cases the learner/ book ratio is very high such that most learners hardly have access to text book. In most cases, text books in schools can only be used during lessons and even during lessons, they can only be given to learners in average groups of 10.This also have an impact on the teaching process because teachers may not use all the appropriate methods such as discovery, research and other methods that may help the learners being involved in the lessons because learners can only access a text book in classroom or within the school premises and in groups.

Shortage of ICT Equipment

Almost all the respondents indicated that, three quarters of the schools in the district do not have enough ICT equipment for both learning process and developing the skill. Most schools in the district use personal owned computers by teachers and it becomes difficult for the teacher to give one computer to each learner as they are also afraid of losing or damaging their hard-earned computers for the sake of meeting the needs of the learners. Even if some few schools received computers from the ministry, the computers are not enough to meet the number of learners they have in school. The ratio of computer to pupils is very high such that it requires learners to be in groups of 10 and above during practical lessons. This has had an impact even during examination time where teachers are forced to conduct the examination the whole day by putting learners into sessions and

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most time to meet the number of days stipulated for that particular examination, teachers are forced to work until late evening and learners are forced to wait until late evening also so that that no learner should be left out in the examination process. Most schools only have a few computers and do have other equipment such as projectors, printers, routers, switches etc. that would aid the ICT learning process.

Shortage of Teachers

On average, the district only has 2 ICT trained teachers and these are in different schools. Most teachers of ICT in schools are seconded teachers who have interest in ICT and those with little knowledge of ICT. Most schools are lacking qualified personnel that can take up the challenge of implementing the policy. Even if interested teachers have taken up the mantle in the district, the ratio of teacher to pupil is too high such that it is difficult for them to meet the needs of each learner. There is a policy that government is training more ICT teachers but most of them are more likely to obtain their qualification in the next two to three year and the question is what happens to learners during this time? Most schools indicated that a lot of learners are interested in the subject but they need close contact with the teachers for them to have both the knowledge and the skill. The fact that ICT teachers are being cannot be denied but meeting the number of teachers that are needed in order to meet the needs of learners in schools will take some time as most trained teachers have not attained their qualifications and some them have not yet been employed by the ministry of education

Lack of Infrastructure

Lack of proper ICT infrastructure is one of the major challenges the district is facing in order to implement the policy. Three quarters of schools do not have computer laboratories and proper storage rooms for computers. Most schools in the district are newly upgraded schools which are still using old primary school infrastructure. Some learners are forced to attend classes in the afternoon and this result into learners having less contact sessions with the teachers as some of the morning learning periods are cut off to give room to afternoon classes and also afternoon learning periods are cut off to give room to learners who come from very far places to travel on time. Some of the classroom learners are using for lessons, are not conducive enough to support a good learning environment but schools have no option since infrastructure has to yet been built for them.

Lack of Electricity Supply

Most of the schools in the district are not connected to the nation electricity grid and very few schools have managed to acquire sola power as it is expensive for most schools to do so. This has been one of the draw backs for most school in carrying out practical lessons with learners and even for learners to have access to computers because most of them come from homes that are not connected to the electricity grid and even when they come to school for help the challenge is still the same. Over half of the schools in the district use solar facilities owned by teachers which they may not always be willing to open their services to the public as it may be risk for them and also if any damage is caused, they may be forced to spend their own resources to replace the damaged items.

Poor Funding from the Ministry

About 95% of schools in the district are grant aided schools which depend on government funding in order to carry out important activities which can help the learning process to be more effective. Most schools are willing to buy more ICT equipment on their own and also build infrastructure but they lack financial support from the ministry. Most schools in the district complained that they have not received their grant for some time and if they receive it, it is too little to meet all the needs of the schools at once. Most ICT programs have not been fulfilled because are lacking funds to support the programs and this led to poor performance of learners in the subject because they are not actively involved. This is one of the major challenges that have led to the inefficient implementation of ICT education policy in the district.

Poor Academic Support from Parents

Most learners and teachers complained that, very little support is given to them in the implementation process of the policy. It is widely known that the learning process of the learner depends on support from parents, teachers and the society for it to be more effective. In Chitambo District, this is not the case with ICT education as most parents have little knowledge of ICT and have less interest in knowing what is involved. Many are times that parents are asked to help their children to carrying out certain tasks given at school but they fail to do so because they have little or no knowledge at all of what the task requires them to do. Learners in most schools completely depend on information given by the teacher and even if they were given assignments to work out on their own whiles at home; they have no one to help them and nowhere to research from. This has led to poor performance of learners in schools and this district at large as far as

implementation of compulsory ICT education policy is concerned.

Conclusion and Recommendations

The implementation of ICT education in schools will play a very important role in the society and the social community in the country which will contribute to the economic development of the country. It is for this reason that the government together with ministry of education should work hand in hand in order to overcome these challenges for the betterment of the country and its citizens

The study found that Shortage of infrastructure; Shortage of teachers; Shortage of ICT equipment; Shortage of books; lack of electricity supply; poor funding by the ministry and lack of support from parents are the major challenges which most schools in Chitambo district are facing. These challenges may not only be faced by Chitambo district alone but most rural district could be facing the challenges as well.

It is for this reason that the government should consider training teachers who are already in the system and are willing to help in the implementation process with short courses and allow them to upgrade as they offer their service. In addition, government should also intensify on employing more ICT trained teacher because most schools in the country a longing to have them for the smooth implementation of the policy. Though the government has invested a lot in the ICT policy, more has to be done on the purchasing of ICT equipment in order to meet the needs of most schools especially in rural areas in order to overcome the challenge.

The government should also reconsider supplying more books to schools in Chitambo District and also build libraries in the schools so that learners can have access to the study materials they need at their own free time. Many are times that learners

depend on lesson notes to understand concepts because schools do not have enough text books for the learners to use and have broad understanding.

Building ICT infrastructure is one of the major projects which must be considered soon because implementation of the policy also depends on it.

Rural electrification should be intensified in the district in order to connect all the schools to the national electricity grid. An alternative to this is that government should supply rural schools with solar system equipment as they wait to be connected to the national electricity grid.

Government should also consider funding schools that are in rural areas as their first priority because many are times that parents do not pay school fees for their children and schools are not allowed to chase any child for failure to pay school fees hence, they depend of grant from the government. Parents should also be sensitized on the importance of them acquiring basic ICT knowledge and also introduce ICT literacy for parents in rural areas. This will help to them know how to give proper academic support to their children.

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