THE PROVISION OF EDUCATION IN SELECTED UPGRADED SECONDARY SCHOOLS OF MUCHINGA PROVINCE IN ZAMBIA: EXAMINING INFRASTRUCTURE AND THE LEARNING ENVIRONMENT

By

Mark Chisanga Chitamaluka

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 Educational Administration and Management.

UNIVERSITY OF ZAMBIA

LUSAKA

2016

DECLARATION

I, MARK CHISANGA CHITAMALUKA, do hereby declare that this dissertation entitled, "The provision of education in selected upgraded secondary schools of Muchinga Province in Zambia: examining infrastructure and Learning Environment**"** is my own work, and that all the work of other people has been duly acknowledged and that this study has not been presented before by anyone at this University and indeed any other university for similar purposes.

AUTHOR

Signed……

Date…..**.....**

SUPERVISOR

Name: Dr. Alfred Kakanda

Sign: ……

COPYRIGHT

CERTIFICATE OF APPROVAL

This dissertation by **MARK CHISANGA CHITAMALUKA** is approved as fulfilling part of the requirements for the award of the Degree of Master of Education in Educational Administration and Management of the University of Zambia.

Signature of Examiners and Date.

1. Signed…… Date……

2. Signed…… Date……

3. Signed…… Date……

DEDICATION

This work is dedicated to God, my parents Ivors and Godfridah for their unwavering support and love. To all saints in the family who spiritually contributed greatly to this great work of my hands. I love you all.

ACKNOWLEDGEMENTS

May I start by expressing my sincere gratitude to the University of Zambia Staff Development Office for awarding me the fellowship to undertake this study. Special thanks go to my supervisor, Dr. A. M Kakanda, for his invaluable advice and guidance. I am also indebted to Dr. Kasonde-Ngandu and Mr. Chabaula for their suggestions in improving this dissertation. To my friend Nelly Andende for her unfailing updates during the period of research and Osward Tembo for his guidance and encouragement.

Furthermore, I am indebted to all the participants in my study - whose names I have withheld for ethical reasons, for their invaluable contributions. All class mates from the 2014 cohort, you made this academic journey an interesting one.

LIST OF ACRONYMS

CDF	Constituency Development Fund
EFA	Education For All
ICT	Information Communication Technology
MDG	Millennium Development Goal
MoE	The Ministry of Education
FGD	Focus Group Discussion
NGO	Non-Government Organization
PTA	Parents Teachers' Association
CDC	Curriculum Development Centre
SNV	Netherlands Development Organisation
UNICEF	United Nations International Children's Fund
UNESCO	United Nations Educational, Scientific, and Cultural Organisation
DEBS	District Education Board Secretary
P E O	Provincial Education Officer

ABSTRACT

The study sought to ascertain whether the state of infrastructure and the learning environment in the upgraded secondary schools is supporting the provision of education. The objectives of the study, were to: determine the state of school infrastructure in up-graded secondary schools; determine the state of the learning environment in upgraded secondary schools and identify the strategies schools have employed in providing education in upgraded secondary schools.

The study used the case study design which employed the qualitative strategy in order to effectively address the issues raised by the research questions. The method of data collection included in-depth structured interview guide, structured focus group discussion guide and observation checklist. The target population included three District Education Board Secretaries, four Head Teachers from four secondary schools, two teachers from the each secondary school, six pupils from each secondary school and six parents from each school. Both simple random sampling and purposive sampling techniques were used to select 78 respondents. Data were analysed qualitatively. This involved description, explanation and interpretation of the raw data.

The findings of the study revealed that infrastructural facilities were in a bad state and were too inadequate to accommodate the increasing number of learners. Classroom blocks in all the schools were those previously meant for primary schools and hence very inadequate Classrooms were inadequate and not spacious. The findings further indicate shortage of teachers' houses, classrooms without windows and the doors had no shutters while the classes were congested and ranged from 60-70 students per class. Schools lacked laboratories, teaching and learning material. Three schools had no electricity making it difficult to use electrical appliances.

However, the findings also indicate that schools were not just siting idol. Schools were doing something about this scenario. The Parents' Teacher Association in collaboration with school administration had started to build classroom blocks and also lobbying from Constituency Development fund to help in building new classroom blocks.

The study concluded that education was being provided in very difficult circumstances. The old infrastructure being used was also bad and inadequate. If the government did not intervene now education provision will not be up to date and learning will not be taking place. The state will have graduates without the skills, knowledge and a changed behaviour to fit in any society beyond Zambia. Based on these findings the study recommends that the government should first allocate some initial funding for infrastructure before upgrading a basic school into a secondary school.

TABLE OF CONTENTS

CHAPTER ONE

INTRODUCTION

1.1 Overview

Chapter one gives a synopsis of the study, providing the background on what prompted the undertaking of this study, "An Examination of infrastructure and the learning environment in the provision of education." The chapter further presents the statement of the problem, purpose of the study, objectives and research questions. It also presents the significance of the study, delimitation, conceptual framework, and limitations of the study, operational definitions as well as the structure of the dissertation.

1.2 Background to the study

The government through the Minister of Education by then, Dr. John Phiri, announced on 20th October, 2011 that the Government has abolished the basic schools system and re-introduced the grade 1 to 7 primary and grade 8 to 12 secondary system. Also adding that community schools will be upgraded to primary status (Zambia Daily Mail, October 20th, 2011).

On 27th February, 2015, the then Ministry of education Spokesperson Hillary Chipango said, "we have so far upgraded a total of 220 basic schools into secondary schools and all the upgraded schools were so far performing very well. We are happy with the performance of secondary schools that were upgraded from basic schools countrywide." (Lusaka times, 27th February, 2015). He further noted that the programme had benefited mainly rural pupils who had been finding it very difficult to have access to distant secondary schools. Mr. Chipango observed that government has already achieved 70 percent (70%) in its upgrading programme.

From these pronouncements, a lot of Day Secondary schools have since been opened. However, Nawa (2010) observed that, with limited infrastructure and resources in the education sector, it would be impossible for Zambia to achieve the Education For All (EFA) target come the year 2015 if no commitment is made towards building new schools and rehabilitating the existing ones. (Times of Zambia, February 5th, 2010)

In every country, quality secondary education is indispensable for individual and national development alike. Secondary education provides a bridge between primary education, the

labour market and tertiary education. As a bridge therefore, decision makers face a basic choice: whether secondary education is to be the weakest link of the education system or its cornerstone (Benavot, 2004). Investment in education has been the hallmark of all nations of the World. According to the World Bank (2005), the benefits of secondary education in a multiplicity of ways contributes to individual earnings, is associated with improved health, equity and social conditions.

Expansion and success of education relies on infrastructure which affects education access, contributes to quality learning environment and student achievement (Crampton, 2003). Provision of education has been emphasized in world conferences on education. The most notable ones are the World Education Forum in Jomtien Thailand in 1990 which advocated for Education for All (EFA). Also the Dakar Framework for Action in Senegal in 2000 which reiterated this commitment and the millennium summit of September 2000.

If education is the cornerstone of both personal and national development, it therefore calls for a conducive place where this education is to be provided. There is actually a general belief that the condition of school infrastructure and the learning environment has an important impact on teachers' effectiveness and students' academic performance (Gibberd, 2007). The facilities that are needed to facilitate effective teaching and learning in an educational institution include the classrooms, offices, libraries, laboratories, conveniences and other buildings as well as furniture items and sporting equipment. The quality of infrastructure and learning environment has strong influence on the academic standard which is an index of quality assurance in the school. For instance, Earthman (2002), reporting on California, revealed that comfortable classroom temperature and smaller classes enhance teachers' effectiveness and provide opportunities for students to receive more individual attention, ask more questions, participate more fully in discussions, reduce discipline problems and perform better than students in schools with substandard buildings by several percentage points.

Many governments and organisations recognise that there are many factors that contribute to undermining the standard of quality of education. These include rapid expansion of the system, especially in developing countries including Zambia; a decline in funding for the sector, reduced learning time; over-crowded classrooms, poor physical infrastructure, lack of textbooks and other learning materials, lack of qualified teachers, Pupil-teacher ratios, inflexible curricula and poor teaching methodologies. (EFA Global monitoring report, 2012)

The government of Zambia in particular recognises the fact that the main purpose of the school system is to provide quality of education. In trying to implement the goals outlined in the Education For All conference held in 1990 the government has embarked on a program of increasing enrolments, access and reduce dropout rates. The government has had on its agenda to upgrade basic schools into secondary schools so that access into grade ten (10) and the possibility of pupils completing school can be enhanced. The government has always maintained that there has been inadequate schools and it has been determined to build more schools as a way of reducing the number of school drop-outs (Educating the Nation, 2005)

The government committed itself to provide adequate infrastructure and equipment to all public learning institutions. In support of this, the Education Act of 1996 states that, "in order to run a responsible democratic education system, there is need to pay particular attention to capacity building through training and re-training, provision of infrastructure and equipment, logistics and adequate funding."

Njapau (2011), in her study, has shown that there are not enough libraries and classrooms for pupils to learn effectively the English language in public schools. Also studies by Chanda (2013) revealed that adequate equipment and facilities for science subjects make learners to perform experiments on their own even without teacher participation. However, these two studies only looked at particular subjects. Hence, this study sought to find out and describe the infrastructure and the learning environments in which learners in public schools learn all the subjects not just the ones Njapau and Chanda looked at; and the possible effects the varying infrastructure and environment might have on the provision of education.

While upgrading of many basic schools into secondary school may have increased participation or accessibility into grade ten (10) and lessened pupils stopping school at grade nine, no study seems to have been done to highlight the state of the school infrastructure and learning environment. This is what this study intends to bring to light.

1.3 Statement of the problem

The government has abolished the basic school system and re-introduced grade 8 to 12 secondary system. The main objective of government was to make secondary education accessible to many rural pupils (Chipango, 2015). Mr. Chipango argued that, before this, it was difficult for many pupils to enter into grade ten (10) due to long distances and limited

secondary schools in their areas. According to Fisher (2000) availability of proper infrastructure and good environment in the school contributes greatly to the learning and teaching process. If this remains unaddressed it will lead to ineffective teaching and learning and thereby compromising the provision of quality education. However, not enough is known about the school infrastructure and learning environment in which pupils in these upgraded schools learn from. Equally, the strategies put in place by these schools to cope with the situation are yet to be known. Currently, the problem under study, seems not to have been researched before in Zambia, hence the need for this study.

1.4 Purpose of the Study

The purpose of this study was to examine the state of school infrastructure and the learning environment for the provision of education in upgraded secondary schools of Muchinga Province.

1.5 Objectives of the study

I. To determine the state of school infrastructure in up-graded secondary schools
II. To ascertain the state of learning environment in up-graded secondary schools
III. To identify strategies that schools have employed in providing education as regards to the state infrastructure and learning environment in upgraded secondary schools.

1.6 Research questions

I. What is the state of school infrastructure in up-graded secondary schools?
II. What is the state of the learning environment in upgraded schools?
III. What strategies have schools employed in providing education as regards to the state of infrastructure and learning environment in upgraded schools?

1.7 Significance of the Study

It is hoped that the findings of this study will help to bring to light the real situation as regards to the school infrastructure and learning environment pupils learn from in the upgraded schools. The findings are expected to be useful to stakeholders, namely, the policy makers, planners, parents, teachers and learners in their endeavour to ensure that learning

takes place in schools. The findings will also contribute to the body of knowledge on the subject matter.

1.8 Delimitation of the Study

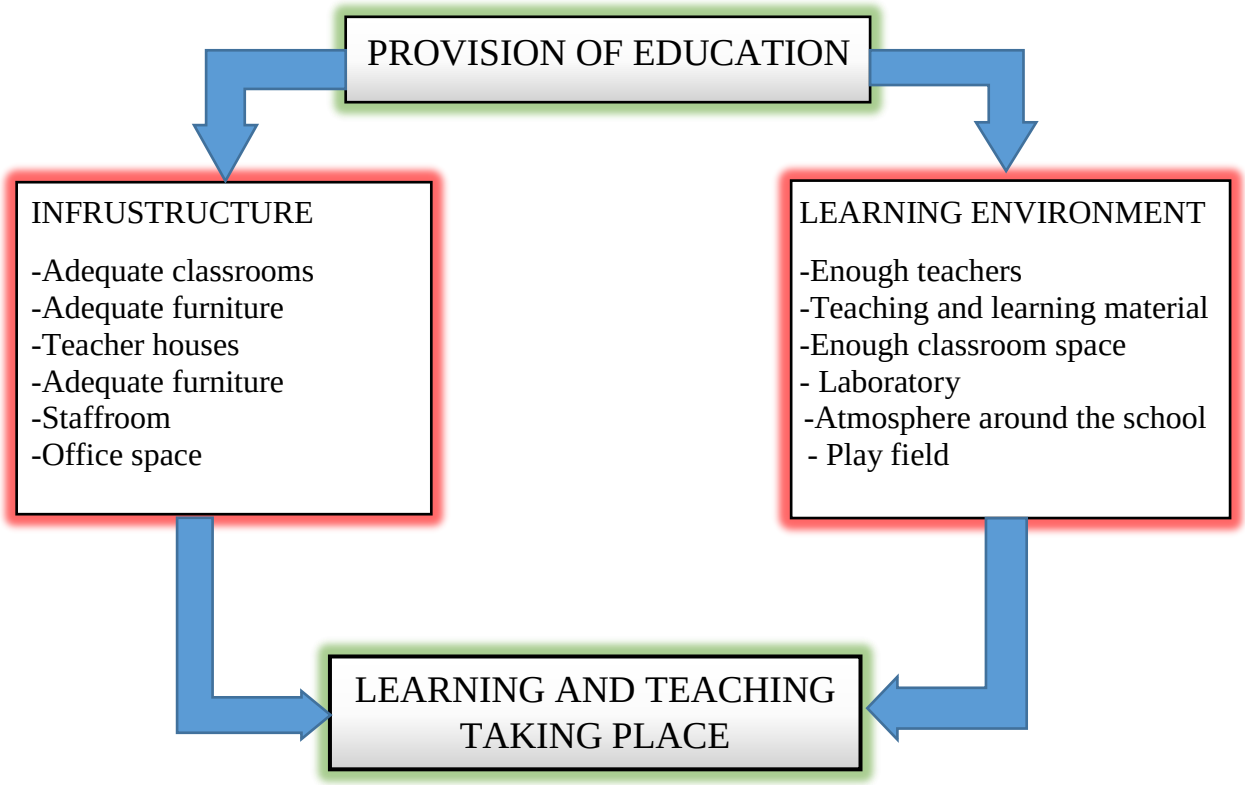
This study was limited to five (5) selected up-graded secondary schools in Muchinga Province. It would have been extended to other up-graded schools in the province, but due to limited time, this was not the case. The findings therefore, did not reflect a complete picture about all the schools in Zambia.

1.9 Conceptual Frame work

The researcher conceptualizes that effectiveness of education provision requires adequate infrastructure and a good learning environment. Adequate infrastructure entails enough class rooms, furniture, teacher houses and equipment such as laboratory accessories. Learning environment encompasses issues to do with the atmosphere around the school, adequate teachers, teaching and learning materials and time. It entails electricity and water.

When the infrastructure and learning environment are not conducive for the learner, education provision is compromised. The result of this compromised education provision is that effective teaching and learning will not take place. Learning is defined as the acquisition of knowledge and skills through education (Encarta Dictionary, 2008). The nation will have young people who have completed secondary school programme but without adequate skills, knowledge and competencies required. When this happens, national development is hindered.

Adequacy in this conceptual understanding becomes important. Encarta dictionary (2008), defines adequacy as a condition of being sufficient in quality and quantity to meet a need. Adequacy arises from the availability of resources that will sufficiently realize the goals of education (Crampton et al; 2008).When the school infrastructure and the learning environment are inadequate, the provision of education will be compromised. Education will be provided in an environment which will not facilitate the learning and teaching process. Below is a diagram to help explain the above concept.



10 Limitations of the Study

According to Orodho (2004) a limitation is an aspect of study that the researcher knows may adversely affect the results of the study but over which he or she has no direct control over. The study was primarily limited by its small sample size. Therefore, the results of the study may not be generalized as the prevailing situation in all education units country wide since the research was conducted in Muchinga Province which is a rural province. In short, the study was characterised by this limitation which is related to generalisation.

10.1 Operational definitions of terms

Some words may be used to denote other things by different people depending on a situation or context. In this study, the following words have been used as they are defined to suit the study:

Access *:* The extent to which education is being accessed by the generic eligible population at a given education level.

Drop out: Pupils who leave the education system without finishing a given school year.

School Infrastructure: refers to the site, buildings (classrooms, libraries, laboratories and teacher houses) furniture, equipment that contribute to a positive learning and quality education.

Learning environment: refers to the diverse physical locations, contexts, and cultures in which students learn. It is described as all external factors influencing the life and activities of learners. In this study, it will mean classroom space, atmosphere around the school, available teachers, teaching and learning materials, electricity, toilets, water and time.

Upgrading: Transforming or changing from a basic or primary school to a secondary school.

Quality of education: there are many definitions due to the complexity and multifaceted nature of the concept. For the purpose of this study, quality of education is defined as learning achievement that a pupil has acquired at every level of education that will help him/her, his /her parents and community in which he/her lives, in their daily lives. Such learning achievements include a progression to the next level in the education system, life skills in reading, writing, numeracy and critical thinking.

Community: A group of people who live in the same area, or the area in which they live. A group of people with a common background or with shared interests within society.

Pupil Teacher Ratio: The average number of pupils per teacher, based on headcounts for both pupils and teachers.

Learning Achievement: The actual skills, attitudes, values and level of knowledge acquired by the individual; it implies some measurement or demonstration that learning has occurred.

Learning: The acquisition of knowledge, understanding, or behaviour and skills through education. It is a relatively permanent change enabling someone to fit in any society.

Curriculum: From the Latin word "race". In this study it is the collection of subjects that students study at a particular school or college. It is also the lessons and academic content taught in a school or college in a specific course or program.

Teaching and Learning Materials: Apparatus, equipment, reagents and laboratory space and text books needed to teach.

1.11 Summary

This chapter has discussed the background to the study, statement of the problem, the purpose of the study, objectives and research questions. Further, it has presented the significance of the study, delimitation, conceptual framework. Lastly, limitations of the study, operational definitions. The next chapter reviewed literature related to the study.

CHAPTER TWO

LITERATURE REVIEW

2.1 Overview

The previous chapter discussed the background to the study justifying the problem, stating the purpose and outlining the objectives. This chapter examines documents and other materials such as books, journals magazines, dissertations, theses and other researches related to school infrastructure and the learning environment. The review starts by defining and explaining the variables; infrastructure and the learning environment. Then, it goes on to give a detailed expose of the international perspective on infrastructure and the learning environment and then the Zambian context. The review further gives out strategies involved during education provision in relation to infrastructure and learning environment particularly in the Zambian context. The literature has been presented in line with the set objectives.

2.2 Understanding Infrastructure and the Learning environment

The school learning infrastructure refers to all those facilities that contribute to a positive teaching and learning during the provision of education for all students. School infrastructure therefore, is everything from electricity, toilets, safe buildings, libraries, computer rooms, safe classrooms, sports halls and fields, laboratories for science experiments, running water, fencing, furniture and equipment (Fisher, 2000). Without these things, a school cannot provide education properly.

The quality of learning facilities available within an educational institution has positive relationship with the quality of teaching and learning activities which in turn leads to the attainment of goals set. The quality of the school buildings and furniture will determine how long such will last while comfortable classrooms and adequate provision of instructional

resources facilitate teachers' instructional task performance and students' learning outcomes (Mason, 2013).

In this review, it is therefore important to look closely at the role of physical infrastructure in schools. It has been established that physical infrastructure has not enjoyed much attention like other factors that contribute to learning and successful achievement of education goals and its role in the achievement of educational goals cannot be over emphasised (Fisher, 2000). The successful school activities usually depend mainly upon the availability of proper infrastructure which includes physical facilities in the school like: buildings, ground furniture and apparatus along with equipment essential for imparting education. It even contributes to student identity and it improves student's academic achievement (Ellis, 2005).

According to Ayogu, (2007) the question is not whether infrastructure matters, but precisely how much it does in different contexts. Preserve articles argues that, the main task of a school is to provide education which involves a series of programmers and activities. The successful conduct of the activities usually depends mainly upon the availability of proper infrastructure which includes physical facilities in the school like: buildings, ground furniture and apparatus along with equipment essential for imparting education *(www.preserve*.com). This view is shared by (Fisher, 2000 and Randall, 2002). Equally, good infrastructure contributes to student identity and also improves student's academic achievement (Ellis, 2005).

Alongside infrastructure is the learning environment. Learning environment refers to the diverse physical locations, contexts, and cultures in which students learn (Warger, 2009). Since students may learn in a wide variety of settings, such as outside-of-school locations and outdoor environments, the term is often used as a more accurate or preferred alternative to all external factors influencing the life and activities of learners. It means classroom space, atmosphere around the school, sanitation facilities, available teachers, teaching and learning materials and time (Schneider 2002).

Educators have argued that learning environments have both a direct and indirect influence on student learning, including their engagement in what is being taught, their motivation to learn, and their sense of well-being, belonging, and personal safety (Seppänen et al, 2006). Further, Seppänen gives an example that, learning environments filled with sunlight and stimulating educational materials would likely be considered more conducive to learning than drab spaces without windows or decoration, as would schools with fewer incidences of

misbehaviour, disorder, bullying, and illegal activity. How adults interact with students and how students interact with one another may also be considered aspects of a learning environment, and phrases such as "positive learning environment" or "negative learning environment" are commonly used in reference to the social and emotional dimensions of a school or class (Schneider, 2002).

Existing studies show a direct link between learning environment in which learners are taught, learning effectiveness and student learning outcomes (Schneider 2002). Poor learning environments have been found to contribute to irregular student attendance and dropping out of school and teachers' absenteeism and ability to engage in the teaching and learning process (Haverinen-Shaughnessy et al. 2011).

Learning is a connection between response and stimuli. A good environment reinforces the efforts of the teacher by providing a good stimulus for effective teaching and learning to take place (Lawrence, 2008). Such a stimulus Lawrence says, is not only provided by ensuring good physical plant planning but also through proper maintenance of such physical facilities. A good school environment where good working facilities exist is a catalyst for effective teaching and learning. In a school where there is enough space for the teachers to walk round in the classroom while delivering the lesson will promote rapt attention of students and good academic performance (Lawrence, 2008).

2.3 Global perspective

The United Nations declaration on human rights in November 1948 opened up to the recognition of the dignity and equal rights of all human beings. This is contained in article 26, which states that, "Everyone has the right to education…" (UNESCO, 2015). As a follow up from this, nations made a declaration of the right to education for all people. From this background, many United Nations agencies among them the United Nations International Children's Emergence Fund (UNICEF) and the United Nations Educational, Scientific and Cultural organisations (UNESCO) sponsored the world conference on Education For All in March, 1990 in Jomtien, Thailand. The Education For All conference emphasised that expanding access alone would be insufficient for education to contribute fully to the development of individuals and society, there is need to improve even on the facilities in the provision of education (EFA Global Monitoring Report, 2012).

The World Education Forum which was held in the year 2000 in Dakar, Senegal as a follow up to the Jomtien conference a decade later, set up a set of goals. One of which was to look into the accessibility of learners in relation to the learning facilities obtaining in various countries. This was the sixth goal. The Dakar Framework for Action was later created which declared that access to an education of good quality was the right of every child (Education For All Report, 2015). It affirmed that quality was the heart of education, a fundamental determinant of enrolment, retention and achievement. One of the emphasis of the World Education Forum was to expand the definition of quality of education to address the issues of learning facilities, learning materials and content. (Education For All Report, 2015). Here we can deduce that, the Jomtien conference in 1990 and the Dakar Declaration of 2000 have provided the benchmark for countries to improve their secondary education to realize education for all goals.

A number of studies have shown that schools in many countries are plagued by decaying buildings that threaten the health, safety, and learning opportunities of students. (Barrett et al, 2015). Good facilities appear to be an important precondition for student learning, provided that other conditions are present that support a strong academic program in the school. A growing body of research has linked student achievement and behaviour to the physical building conditions and overcrowding (Barrett et al, 2015).

According to UNESCO report of 2015 Bangladeshi has been cited among many countries which have achieved success in creating a good learning environment. Bangladeshi adopted a new education policy in 2010. Taking the cue from the Dakar Framework for Action, the country formulated the concept of quality in education in terms of student quality, teacher quality, sound classroom and learning environment, quality curriculum, textbooks and teaching learning materials, resource allocation, sound physical environment in schools, and good governance (UNESCO, 2015). The policy aimed at creating a suitable learning environment for all pupils in rural and in urban areas. In 2012, 98% of the schools received textbooks before the school year began and this trend continued in 2013. By 2013 the report indicated that Pupil-teacher ratio had dropped from 64:1 to 40:1, 79% of schools had safe water facility and 79% schools had classrooms rated as ‘good’ or of ‘moderate’ quality. (UNESCO, 2015*).* The report further reveals that the policy has helped increase the number of students who pass the Secondary School Certificate Examinations (SSC) to 89.98% in 2013 from 52.57% in 2005 (UNESCO, 2015).

In nine major disasters that have occurred since 2000 in El Salvador, Venezuela, Italy, Turkey, Cambodia, USA, Pakistan and China more than 28,000 children and teachers have lost their lives because of unsafe school buildings (DFID, 2010). The 2005 Pakistan earthquake alone killed at least 17,000 and seriously injured 50,000 students and in total over 300,000 children were affected. An estimated 6,500 primary schools were destroyed or badly damaged and in some districts 80% of schools were destroyed. (DFID, 2010). The poor seismic resistance of the existing building stock was a significant factor in the large death toll amongst children. The issue of 'school safety' incorporating adequate building standards and construction quality has now been put high on the reconstruction agenda.

In South Africa, Spaull, (2013) undertook a wide-ranging research on whether adequate infrastructure had a direct link with pupil learning achievements. His findings showed that the issues most closely related to teachers had the greatest impact on learning outcomes. Further, findings showed that it was theoretically possible for an excellent teacher to garner good results from learners in a mud school infrastructure. (Spaull, 2013). However, it must be remembered Spaull says, that extremely poor infrastructure has an effect on teachers, as well as pupils. A school which has no toilets for learners will usually have no toilets for teachers either. If children get wet when the roof leaks, so might teachers. The second reason why good quality outputs are unlikely from mud schools is that children who learn in mud schools with no electricity, no running water and no toilets are likely to live in circumstances that are similarly bereft of services. These circumstances are generally significant in learner outcomes.

In 2013, the Minister of Education, Science and Technology in Malawi, Eunice Kazembe indicated that poor infrastructures in Public Secondary Schools are hindering students to go to Universities. She is reported to have said that,

> The infrastructures in our public secondary schools are poor and that leads to poor delivery of quality education that made them fail to compete with students from private secondary schools. Most private schools in the country have good infrastructures and that contribute to quality delivery of education since the students have a good learning environment. Statistically, 60 per cent of the country's university students are from private secondary schools and 40 per cent are from public secondary schools" (Likomwa, 2013)

This scenario in Malawi shows how important infrastructure is in educational provision. It is important for secondary schools to have adequate infrastructure because the subjects need not

only theory but experiments are needed for better understanding and in preparation for the student's practical examination at the end of the year.

In Ghana, a preliminary report from the Centre for Democratic Development (CDD) survey on tracking public basic school infrastructure in five regions revealed poor infrastructural conditions, most of which were unfriendly to persons with disabilities. The report revealed that most of the school infrastructures lacked basic standards such as adequate classrooms, proper ventilations, safety floors, roofing, toilet facilities, water, as well as fencing to provide security for both pupils and equipment (Tsegah, 2013). According to Francis Tsegah, a Senior officer at CDD, "although the investment have in education yielded some dividend in terms of increased enrolment levels in public schools, it failed to attract corresponding development of infrastructure and enhanced teaching and learning materials such as textbooks and computer laboratories. The result of this poor quality of infrastructure has affected educational outcomes in most parts of the country. (Tsegah, 2013)

In India, the latest report shows that learning outcomes are abysmal in Indian schools due to poor infrastructure (Annual Status of Education Report, 2012). Sharad Raghavan gives the findings on Indian schools in terms of infrastructure in the following words; "Schools are supposed to be the temples of learning, but on average educational institutions in India lack relevant infrastructure. Most public schools are dilapidated without access to electricity, toilets and with too few teachers." (Raghavan, 2015). Having great school infrastructure is sufficient to improve learning outcomes. It is certainly a necessary condition in educational provision.

Globally, the expectations of every society is that apart from the infrastructure, the learning environment in which learners are subjected to should be conducive as well. There is actually a general belief that the condition of school's learning environment has an important impact on teachers' effectiveness and students' academic performance. As seen in the definitions of infrastructure and the learning environment earlier, the facilities that are needed to facilitate effective teaching and learning in an educational institution include the classrooms, offices, libraries, laboratories, conveniences and other buildings as well as furniture items and sporting equipment. (Warger, 2009).

The quality of the learning environment has strong influence on the academic standard which is an index of quality assurance in the school. For instance, Earthman (2002), reporting on California, revealed that comfortable classroom temperature and smaller classes enhance teachers' effectiveness and provide opportunities for students to receive more individual attention, ask more questions, participate more fully in discussions, reduce discipline problems and perform better than students in schools with substandard buildings by several percentage points.

The other components found in the learning environment is teacher presence. The learning environment cannot be adequate without the availability of teachers themselves. Teachers are an important component in the learning process. They are the most capable of helping their students learn, have deep mastery of their subject matter. (Akinsolu, 2010). The number of teachers relative to students in Africa is generally very low. UNESCO report of 2011 reveals the following; on average, more than 60 percent of Sub-Saharan countries have more than 40 pupils per teacher. Countries such as Chad, Rwanda, Zambia, Malawi and Mozambique and many more, have ratios exceeding 60:1. In situations where some countries have ratios less than 40:1 it has been found that there is a wide disparity within such countries. For example, in Nigeria, the ratio is much higher in the northern region than the southern region of the country, although this is in favour of male students as against their female counterparts (UNESCO, 2011).

According to Jago et Tanner (1999), learning environment encompasses issues to do with working conditions for teachers. When teachers have decent accommodation they create a good atmosphere around the school. In schools where teachers face transportation and housing obstacles, it becomes difficult to get to school on time and staying until school closes. A study in China, Guinea, India and Mexico found that nearly half the teachers interviewed reported being absent at some point during the previous month (Carron & Chau, 1996), requiring other teachers to compensate for them or leaving students without instruction for the day. The main reason given was lack of housing within the school premises. When teachers have no accommodation, adequate education provision is affected. Teacher absenteeism becomes rampant because they have to travel long distance to see their families.

The availability of teaching and learning materials is another component in the learning environment. Whether the teaching and learning materials are adequate is another factor that

affects the provision of education. A pilot survey of schooling conditions in eight least developed countries of Africa conducted by UNESCO, 2011 and UNICEF, 2000 found that half the pupils in secondary schools had no text books (Montagnes, 2000). The study reported that few books were available in Angola, Tanzania and Zambia; in Kenya, Nigeria and Sierra Leone the pupil: text book ratios were between 10:1 and 28:1 implying that one or two text books per class. Furthermore, the survey noted that rural schools generally fared worse than urban ones in terms of how they were equipped with science materials and that the conditions were far from being adequate. (Montagnes, 2000). Now this is a dismal picture because science teachers depend heavily on text books as science concepts are generally challenging.

The 2012 report on the state of Human Rights in Sierra Leone, highlighted the inadequate provision of basic teaching and learning materials and other school resources in school. (Tarawalle, 2013). This was after the Government of Sierra Leone on Thursday 29th July 2010 made public the White Paper on the report of the Gbamanja Commission of Inquiry set up to look into the poor performance of pupils in the Basic Education Certificate Examinations. It was discovered before the commission that many pupils completing school did not acquire proper education due to lack of learning material. (Williams, 2014). Under the Education Sector Plan, as an intervention into the problem, the government of Sierra Leone, had to provide textbooks for free to achieve a core textbook to pupil ratio of 1:1. Another intervention was the Sababu Education Project, which was jointly funded by the government, World Bank and African Development Bank. Acting together made a significant investment in textbooks. By the end of the Project in 2010, it had supplied approximately 1, 133, 417 sets of core textbooks to junior schools and about 240 663 sets for secondary schools.

Availability of lavatories and a clean water supply is another concern as far as learning environment is concerned. When pupils have to leave school and walk significant distances for clean drinking water, for example, they may not always return to class (Miske & Dowd, 1998). In the fall of 2010, California (USA) passed legislation called ‘SB 1413’, to require that free, fresh drinking water be made available to students during school time (Christen 2012). This legislation came after the realization that, water facilities in schools such as water fountains and taps were the most common drinking facility in schools, and both were frequently sited in the toilet area. Walters and Cram (2002), as cited by Christen (2012) revealed that a study which measured the hygiene of water fountains in 39 schools in California found that most water points were sited in toilet areas and were dirty, badly

maintained and highly contaminated. This was found to be unsafe for learners. Commenting on the California scenario, Nickle Brander said, "availability of water in schools does not only help resolve problems of obesity, nutrition and health, it helps improve academic performance and achievements in schools" (Brande (2012; 204.)

Class size has been said to be a cardinal component in the learning environment if proper learning is to take place. A UNICEF/UNESCO survey conducted in 1995 in 14 least developed countries found that class sizes were mostly big. For instance in Madagascar class size ranged from 30 students to 73 and 30 to 118 in Equatorial Guinea (UNESCO, 1995). It was found that there was a relationship between class sizes and academic achievement in the sense that most teachers could not manage the Teacher –pupil ratio. Another similar study of overcrowded schools in New York City found that students in such schools scored significantly lower in both mathematics and reading exams than did similar students in underutilized schools. In addition, when asked, students and teachers in overcrowded schools agreed that overcrowding negatively affected both classroom activities and instructional techniques (Myburgh, 2011). It was further discovered that overcrowding and heavy teacher workloads created stressful working conditions for teachers and led to higher teacher absenteeism.

Crowded classroom conditions therefore, not only make it difficult for students to concentrate on their lessons, but inevitably limit the amount of time teachers can spend on innovative teaching methods such as cooperative learning and group work or, indeed on teaching anything beyond the barest minimum of required material (UNESCO, 1995). In addition, because teachers must constantly struggle simply to maintain order in an overcrowded classroom, the likelihood increases that they will suffer from burnout earlier than might otherwise be the case. (Myburgh, 2011).

Psychological elements if not attended to can make the learning environment not conducive for learners. Relatives to both girls and boys, parents, educators and researchers express important concerns about teachers who create an unsafe learning environment for students (UNICEF, 2009). In some schools in Malawi, for example, male teachers harassed girls sexually even with outside observers present (Miske, et al., 1998 as cited in UNESCO, 2013). When parents in Burkina Faso, Mali and Tanzania were asked about reasons they might withdraw their children from schools, they most often cited a lack of discipline, violence of teachers towards pupils (corporal punishment), and the risk of pregnancy due to the male

teachers' behaviour (Bergmann, 1996 as cited in UNESCO, 2013). A study in Ethiopia found that nearly 50 per cent of the teachers interviewed reported using corporal punishment at least once a week, with eleven (11) per cent saying they use it every day. Just over one third said they never use corporal punishment (Verwimp, 1999 as cited in UNESCO, 2013). These teacher behaviours affect the quality of the learning environment since learning cannot take place when the basic needs of survival and self-protection are threatened.

2.4 Zambian Perspective

Infrastructure development in the education sector is one of the major challenges hampering success in the Zambian education sector (Nawa, 2010). Further, Nawa, (2010) observes that, with limited infrastructure and resources in the education sector, it would be impossible for Zambia to achieve the Education For All (EFA) target, come the year 2015, if no commitment is made towards building new schools and rehabilitating the existing ones (Times of Zambia, February 5th, 2010).

One of the most important Zambian education documents, **Educating Our Future**, did allude to the issue of infrastructure and the learning environment. It said that, the over-use of school buildings, through multiple sessions and large classes, coupled with the near absence of public funds for school maintenance and repairs, has left most schools in an unacceptably poor physical condition. Except in a few rehabilitated schools, classrooms are typically bare, with few or no desks, no teacher's table nor chair, and a broken chalkboard. (Ministry of Education 1996).

The scenario as depicted in the Educating Our Future document of 1996, still stands even at the moment. According to Education For All 2015 National Review on Zambia, a large portion of the class rooms, in rural areas possibly as many as 20% of the total number are temporary mud and grass structures. Almost half the rural schools do not have their own source of safe drinking water, while urban schools have grown well beyond their planned size, but without any commensurate increase in sanitary facilities. These factors affect the public perception of schools and what they have to offer. They also affect the ability of the schools to provide education of reasonable quality (EFA National Review, 2015)

However, strides have been made by the government. In the recent past, the importance government attaches to education and skills development can also be reflected in the fifth republican president, His excellence Michael Chilufya Sata's speech when he opened the Fourth Session of the Eleventh National Assembly in 2014 (Zambia Daily Mail September 20, 2014). In this speech President Sata outlined a number of successes his government had scored in the sector since assuming office in order to improve access and the quality of education. According to the 2014 report in the Zambian daily mail, so far, government has completed construction of 41 of the targeted 84 secondary schools, which is 49 percent rate within a short period while the remaining 43 schools were still under construction. (Zambia Daily Mail September 20, 2014). This shows how important infrastructure is for education delivery.

In a comment on the state of the science facilities in high schools MoE (2004) noted that, the laboratories and other practical rooms had fallen into a state of disrepair. The Ministry of Education further observed that "almost no investment has been made in the last 10 years to counter the situation" (MoE, 2004:26). In other words, the above observation points to the fact that the poor state of the laboratories and lack of equipment and chemicals have greatly contributed to low level of quality in science education in secondary schools. Further, GRZ (2006) pointed out that the poor investment in education led to high text book-pupil ratio of 1: 13 at primary school level and1:7 at high school level in different subjects. With this scenario, education provisional becomes a challenge.

The study carried out to describe the experiences of grade 12 pupils in the School Certificate Biology Practical examinations, at a certain high school in Central Province, revealed that the examinations were characterised by a provision of inadequate materials and facilities, and a lot of improvisation (Mudenda, 2008). The materials and facilities being referred to here, include laboratory space, equipment, reagents, and specimens as well as other consumables. The findings indicated that inadequate provision of materials impacted negatively on the respondents' academic performance in the practical papers. Mudenda (2008) further revealed that, apart from that it also acted as a catalyst for examination malpractice as candidates were very often in contact with each other and could thus consult one another. The study, furthermore, revealed that the candidates failed to use improvised equipment to obtain results that were consistent with the examination setters' prescribed materials. In addition to the above, the study also found that the candidates did not display competency in basic

manipulative skills involved in practical work such as manipulation of variables and observation. This observation is evident enough that candidates were not given enough experience in practical work in the biology lessons.

As a strategy to deal with the inadequacy of infrastructure and the learning environment, the Zambian government recognises the fact that itself alone might not create a conducive learning environment for all learners. In 1966, the Education Act gave power to Parent-Teacher Association to ensure through regular contacts between teachers and parents, the welfare and the best possible education of pupils, an enlightening of all parents on all aspects of pupils' progress in school (Mwanakatwe, 2013)

The Ministry of Education Policy of 1996 encouraged partnership in the education system. It encouraged corporation between school and the local community. Communities participated in educational provision through construction of school buildings, management of schools, maintenance of classrooms and provision of school furniture (Ministry of Education, 1996). From this policy, the Ministry of Education has since partnered with communities in ensuring that infrastructure is provided. Education takes place not only in schools but also within families, communities, and society (Snelson, 1990). Despite the various degrees of responsibilities taken by each group, none can be the sole agent to take 100 % responsibility for educating the young people (Ministry of Education, 1996). Schools are institutions that can prepare learners to contribute to the betterment of the society in which they operate, by equipping them with skills important in society. Schools cannot and should not operate as separate entities within society.

Swift-Morgan (2006) reminds us that the international community recognizes the importance of community participation as a critical ingredient for educational access and quality. Viewing engagement from an international perspective offers worthwhile insights into the scale of community participation as well as potential domains of engagement where parents and community can have greater impact working with schools to ensure they are responsive to all learners.

Studies done in Zambia by Nzala (2006), Chituma (2005) and Mwakaya (2005) using a descriptive survey research design show that there has been community participation in education in areas such as provision of finances, constructions and teaching and learning materials. Their findings however, reveal that education provision in most schools in Zambia

has been a challenge and learning does not adequately take place simply because the proper infrastructure and the learning environment needed is not enough.

In Zambia the predecessor to the Strategic Plan, the Integrated Education Sector Investment Programme (ESIP) policy framework, which ran from 1997 to 2001, was a more pragmatic and practical approach. It emphasised the provision of education using available resources. The government here, recognised the stakeholders, which apparently include teachers, parents and pupils to contribute and own the facilities instead of always relying on the Government. Improving the quality of education therefore, requires concerted efforts.

It is however worth noting that, in as much as community participation as a strategy has been there, the question of what kind of infrastructure this partnership between communities and schools brought about, still remains. Has this partnership improved the state and adequacy of infrastructure in schools? Several studies have been done looking at infrastructure and the learning environment in relation to particular subjects taught in schools. For instance, Njapau (2011) in her study, has shown that there are not enough libraries and classrooms for pupils to learn effectively the English language in public schools. Also studies by Chanda (2013) revealed that adequate equipment and facilities for science subjects make learners perform experiments on their own even without teacher participation. However, these two studies only looked at particular subjects. Hence, this study sought to find out and describe the infrastructure and the learning environments learners in public schools learn from; and the possible effects the varying infrastructure and environment might have on the provision of education.

2.5 Summary

The review of literature has shown that the adequacy of infrastructure and the good learning environment in secondary schools, varies from country to country to another. It was as well evident that in many countries learning facilities are a problem. However, the importance and the role infrastructure and the learning environment play has been emphasised by many countries in the world. It was as well shown that many countries are making frantic efforts to create learning environment adequate for better results.

In terms of educational infrastructure policy, it was evident from the literature that most educational systems, especially in developing countries, are creating policies to improve the

inadequacies of infrastructure. Many are moving from centralised to decentralised systems to allow for community and private sector participation in educational provision

As for Zambia, there seem to be no study that has been conducted in the Muchinga Province to examine the infrastructure and learning environment in the provision of education, especially in the upgraded secondary schools so as to evaluate the adequacy of infrastructure and the conduciveness of the learning environment in secondary schools.

From the reviewed literature, it appears that all the studies have emphasized the importance of infrastructure and the learning environment during education provision and that there have been inadequacies in infrastructural facilities and in the learning environment in most of the already established public schools of Zambia. However, none has looked at how education is being provided in the upgraded secondary schools in Zambia ever since upgrading started. This study has brought to light that which these upgraded secondary schools are doing to mitigate the shortfall of infrastructure and the learning environment. Therefore, this study uniquely contributes to the body of knowledge by filling in this knowledge gap.

CHAPTER THREE

METHODOLOGY

3.1 Overview

The previous chapter reviewed the relevant literature for the study. This chapter discusses the methodological approaches which the study employed. Wilson (2009: 58) says, "Methodology is the plan of action which informs and links the methods used to collect and analyse data to answer the original research question." This chapter therefore, has been divided into the following sub-headings: Research design, research site, study population, study sample, sampling techniques, data collection instruments and procedure, data analysis and presentation, reliability and validity and ethical considerations.

3.2 Research Design

Kombo and Tromp, (2009), define a research design as a method of collecting information by interviewing or administering a questionnaire to a sample of individuals. A research design can be thought of as the structure of research, or the "glue" that holds all of the elements in a research, to show how all the major parts of the research project work together to try and address the central research questions (Kombo and Tromp, 2009). Additionally, according to Punch (2006), a research design on a practical level is one that connects the research questions to data. Therefore, a research design sits between research questions and data, showing how research questions will be connected to data and what tools and procedures to

use in answering them. This is exactly what this research design here tried to achieve. In choosing the research design, the researcher was informed by the principle that the selection of a research design is based on the nature of the research problem or issues being addressed and the audience for the study (Creswell, 2009).

This study used a case study design. A case study is an empirical inquiry that investigates a contemporary phenomenon within its real life context (Yin, 1989). A case study design was appropriate for this study because its overall purpose was to achieve understanding of how people make sense of what they do in their lives within their context by allowing the researcher to undertake an intensive and in-depth study. It seeks to describe a unit in detail, context and holistically, since it is done in a bonded system. It further provides insights that assist the reader to visualise the experiences of people (Cohen, 2007). The other justification for using this design is that case studies present data that is usually gathered through a variety of means including interviews, observations and document analysis (Baxter, and Jack ., 2008). With these instruments, this design was deemed appropriate for this study because it allowed the researcher to describe what was really happening in more detail and also the subjective inner experiences of the respondents on the matter at hand. Further, the researcher used this design in order to give an adequate description of the state of infrastructure the learning environment and how education was being provided in the upgraded secondary schools in Muchinga Province. Kerlinger (1969) points out that descriptive research under case study, are not only restricted to finding out facts but may also lead to the formulation of useful knowledge and solutions to significant problems. The issue of infrastructure and the learning environment is significant in education provision. Just like in other provinces, Muchinga province is one of the provinces where primary schools are being upgraded into secondary schools. These are the schools the researcher is looking at. Therefore, in this bonded system, the details of how education is being provided in relation to infrastructure and learning environment came to light.

It is worth noting that many scholars have cited the inability to generalise research findings as the main weakness of the case study design. Conversely, findings of a study of one institution can be transferable to other institutions with similar situations (Bryman, 2004). Besides, generalisation is not ascribed to the frequencies of sample, but rather, to what has emerged as a grounded theory after analysis has been made (Yin, 1989). It is in this line that the researcher engaged the case study design in this research.

In order to satisfactorily address the issues raise, the research strategy or paradigm used in this study was the qualitative method. According to Walliman (2006), qualitative research brings out data which cannot be measured or counted but rather expressed more in words than numbers. Among other things qualitative data requires identifying, understanding and interpreting ideas, customs, opinions, morals, beliefs and other essential human activities and decisions in society. The study opted to use this method taking into account the nature of the research at hand. The study aimed at collecting views or data from respondents on the state of infrastructure and the learning environment in the upgraded schools of Muchinga Province. Primary data were obtained using interview schedule, group focus discussion guide and observation schedule while secondary data were gotten from the internet, journals and books. Quantitative methods however was also partly used particularly on the charts where figures are shown depicting the number of people and their responses. This qualitative approach employed a tripartite data collection mechanism involving in-depth structured interviews, focus group discussion and structured observation.

3.3 Research Site

Kombo and Tromp (2009) give clues on how one can select a research site in order to come up with useful data for one's study. They recommend that the researcher should identify a very large area which could be appropriate to the research objectives and questions. The area should be an actual one which could have all the possible characteristics for the study.

Accordingly, this study was conducted in Muchinga Province, Zambia. Purposive sampling was used to select this province because the province has witnessed numerous secondary schools being upgraded. All schools sampled were the upgraded secondary schools in the province. The research site was very convenient to the researcher because it is easy to access the schools.

3.4 Study Population

Mugenda and Mugenda (1999) define population as a complete set of individuals, cases or subjects with some observable characteristics. Punch (2006) also defines 'population' as the target group usually large about whom we want to develop knowledge, but which we cannot study; therefore, we need a sample from that population. It can consist of objects, people and events to which the findings may be generalised.

The population of this study was gotten from Muchinga Province which had more than ten (10) upgraded secondary schools. Five (5) upgraded secondary schools out the ten (10) were picked for the study. The population of the study comprised of the District Education Board Secretaries of the Districts where the selected schools were found, Head teachers of the selected schools, Teachers, Pupils and Parents.

3.5 Study Sample

Kothan (2004) states that sample size refers to the number of items to be selected from the universe. The sample of this study consisted of 78 respondents comprising three (3) District Education Board Secretaries (DEBS), five (5) Head teachers from five selected schools, ten (10) Teachers (two from each school) from the five selected schools, five (6) parents from each school and six (6) pupils from the five selected schools. In this study all respondents were chosen because of the role they played in the administration, monitoring and implementation of policies in education. The District Board Secretaries being the in-charge of the schools in the district, they had required data on the study at hand. The head teachers being the implementers of policies in the schools on behalf of the State. They understand the day to day running of the schools more. Teachers as well know the best infrastructure needed for the learners. Therefore, they are able to provide accurate information on the prevailing situation as regards to infrastructure and the learning environment. Pupils were at the receiving end. They were able to see what facilities are needed for them to be provided with education. Parents were partners in education provision. They send children to schools and in return expect them to be learned. They too had information on what they need to contribute to enable the school provide good education.

3.6 Sampling Techniques

Kombo and Tromp (2009) state that sampling procedure is a process that is used to find a number of individuals from a population such that the selected number of individuals consists of elements representative of characteristics found in the whole group. In this study, two sampling techniques were used namely; simple random sampling and purposive sampling.

3.6.1 Simple Random Sampling

According to Bless and Achola (1988), simple random sampling refers to a sampling procedure which provides equal opportunity of selection for each element in a population. It is a probability sampling in which all the members of the population have equal chances of being selected for the study. In this study a simple random sampling was used to select schools, parents and pupils as respondents. The Lottery method was used. According to this method, the names of the individuals and schools were written on slips of paper and they were put in a box. Then the slips of paper were mixed thoroughly and some slips were picked up from the box. These papers were then taken for sampling. The researcher chose simple random sampling procedure because it allows every unity in the population an equal chance of being chosen or selected as a sample.

3.6.2 Purposive Sampling

According to Kombo and Tromp (2009), purposive sampling is a method in which the researcher chooses a particular group of people knowledgeable about the study. Purposive sampling which is sometimes referred to as 'judgmental sampling' is a method of sampling based on the judgment of the researcher (Bless & Achola, 1988). This sampling procedure purposively targets people believed to be reliable and knowledgeable on the problem under investigation. The logic and power of purposive sampling lies in selecting information-rich persons whose responses will illuminate the questions under study (Patton, 1990).

This study used purposive sampling in selecting key respondents to provide the desired data. The method also helps in coming up with the rich information for in-depth analysis of the issue under study. Purposive sampling helps the researcher to select what he or she thinks is a 'typical' sample based on specialist knowledge of criteria. Therefore, purposive sampling procedure was used to select the District Board Secretaries (DEBS), Head teachers and teachers because of their involvement in the management of schools in their respective areas. At the same time these are the custodians and administrators who know the kind infrastructure and the learning environment that is best for learners.

3.7 Methods of Data collection and instruments

Kasonde-N'gandu (2013) defines a research instrument as a toll or device chosen by the researchers to collect required information. In order to gather data for this study, a variety of data collection instruments were employed namely; structured interview and, focus group

discussion guides and observation checklists. This was done in order to achieve the strength of each instrument while minimising the deficiencies of another. The research instruments used are further explained below:

3.7.1 Structured Interview

According to Kombo and Tromp (2006), an interview as a method of data gathering refers to the questions which are asked to the respondents orally. It consists of a written list of questions or topics that need to be covered by the interviewer. In this study, structured interview guides were developed and used as the main instrument in the collection of data. The gathered data were accurately recorded. According to Kombo and Tromp (2006) structured interview is a method that involves subjecting information of a sample to the same stimuli. For example, every respondent is asked similar questions according to their category. The structured interview method of collecting data was used because of some advantages that the procedure has. For instance, the reliability of information gathered is very high as it gives in-depth information about specific issues that the researcher requires. It is also very systematic and well guided since the questions are prepared before the interviews. Interview schedules are prepared with a series of headlines using open-ended questions. Formulating questions before the interview makes the procedure comprehensive and orderly. As a result, the researcher becomes clear of the issues being studied.

Kombo and Tromp, do not only praise the structured interview method but also note that it has some disadvantages too. They include the rigidity displayed by the researcher, which can affect the responses given. This is because the researcher has already planned questions to help in getting desired data. The respondent may feel as if he or she is under investigation or being probed. This may also affect the responses as some of the respondents may even become hostile.

In this study therefore, structured interviews method was used to obtain qualitative data from the DEBS, Head teachers and teachers. During the interviews, the researcher was recording the conversation between the researcher and the respondents using a recording machine. Barbour (2008) suggest that the interview schedule should be drafted beginning with simple questions and through to the most probing ones. In this study, questions will be carefully drafted to allow the continuity of interview without threatening the respondents. The discussion questions were prepared beforehand.

3.7.2 Focus Group Discussion

A Focus Group Discussion as a method of data collection, refers to a planned group interview designed to obtain information on the participants' beliefs and perceptions on a defined area of interest (Kombo & Tromp, 2006). According to Wilson (2009: 90), "Focus groups are useful for revealing, through interaction, the beliefs, attitudes, experiences and feelings of participants." It is worth noting that in a focus group discussion, the role of the researcher changes; he or she functions more as a moderator or facilitator, and less as an interviewer (Punch, 2009). Like any other interview, a focus group discussion can be unstructured, semi-structured or highly structured. In this study, structured focus group discussion guides as instruments were used in order to solicit pupils' views, experiences, perceptions and beliefs on the problem under investigation. This also allowed the researcher to probe the respondents further. Focus Group discussion was conducted to parents and to pupils. During the discussion every participant was given a chance to contribute something especially on the individual opinion on the state of infrastructure and the learning environment.

3.7.3 Observation Checklist

Bryman (2008: 257) describes non-participant observation as a research method in which "the observer observes but does not participate in what is going on in the social setting." An observation can either be structured or unstructured. In order to observe specific behaviour patterns, attitudes and expressions, a structured observation approach was used. This kind of observation allowed the researcher to be focused and clear on the behaviour being observed (Kombo & Tromp, 2006). Thus a non-participant observation checklist was used to observe the state of infrastructure and the learning environment. Observation was done by going round observing the schools' infrastructure, equipment, facilities and the learning materials while recording all the observations on the observation checklist.

Another necessary tools used in the study were a diary in which all appointments and important observations were recorded. The voice recorder was also used to record data during the interviews. However the voice recorder was dependent on the agreement with the respondents. The voice recorder was not to be used in cases where its use was to make the respondents uncomfortable.

The study used two major sources of data namely, primary and secondary. The primary data comprised the responses gathered through interviews, observation schedules and group focus discussions to enhance the reliability and replicability. On the other hand, secondary data were obtained from official records, reports, internet, dissertations, and books available in the libraries. The Ministry of Education Headquarters Documentation Centre was also used to collect data.

Before data were collected in the field, the researcher started by delivering an introductory letter to District Education Board Secretaries from the University of Zambia. This was a way of getting permission from the relevant authority to collect data from the selected schools in the particular district. The researcher then asked for another introductory letter to take to the head teachers in the respective schools. The researcher thereafter went to the selected schools with the introductory letter from the District Education Board Secretaries to meet the head teachers and explain the topic and then enter into data collection process. Collecting data took one (1) month.

3.8 Data analysis and presentation

Thematic analysis was used to analyse the data. Thematic analysis is one model of narrative analysis. According to Walliman (2006) thematic analysis helps to summarise several data collected about the research questions. Bryman (2004) states that thematic analysis gives an emphasis on what is said rather than how it is said. According to Kombo and Tromp (2005), qualitative data collected from focus group discussion guide, interview guide and observation guides were analysed through thematic analysis by coding, grouping and meaningfully interpreting emerging themes reflecting both the specific research questions and objectives of the study.

Collected data were analysed qualitatively. Creswell (2012) observes that analysing qualitative data requires an understanding on how to make sense of the text and images so that answers to the research questions are formed. Qualitative analysis involved description, explanation and interpretation of the observations made and responses collected from the interviews, focus group discussion and observation. In this study therefore, groups of questions that were interconnected and related were identified as themes for the purpose of

analysing the views of the respondents on the state of infrastructure and the learning environment in the provision of education.

3.9 Reliability and Validity

Reliability is concerned with the degree of consistency to which a particular measuring procedure gives equivalent results over a number of repeated trials (Bless & Achola, 1988). According to Sanders (1992), "reliability is concerned with error of measurement or whether the instrument or method is giving you a stable reading." It depends on the *trustworthiness* of the research instruments, whether a research instrument is consistent and able to generate the same data when repeated several times. To ensure that the research instruments remained consistent, all the instruments were piloted so that corrections and modifications could be made. Additionally, through triangulation of the research methods, reliability will be assured because the defects which can be found in a single method will be minimised (Patton, 1990).

Validity on the other hand is concerned with the integrity of the conclusions that are generated from a piece of research (Bryman, 2008). It has to do with the accuracy and precision of data, and whether a study can yield the same results when repeated. To ensure that data remained valid and trustworthy, the researcher established rapport with respondents and ensured the collection first-hand information. All the research instruments were personally administered by the researcher who ensured that probes, clarifications and follow-up questions were addressed. Recording of the interviews also helped in further strengthening the trustworthiness of data by ensuring that data was not distorted.

3.10 Ethical Considerations

The study took into account all possible and potential ethical issues. Respondents were assured of high levels of confidentiality. In addition, the respondents were informed that the information gathered was purely for academic purposes and no names were revealed or used. As rightly identified by Wimmer and Dominic (1994), the principle of confidentiality and respect are most important ethical issues requiring compliance on the part of the researcher. This basic ethical requirement demands that the researcher respects the rights, values and decisions of the respondents. Informed consent was obtained from both the respondents and the people in charge of the places where the research was carried out.

3.11 Summary

This chapter has discussed the methodology. The aim was to show the methodology that was used during the whole research process. The research used a case study design utilising a qualitative approach which helped to describe the views of the respondents on the state of infrastructure and the learning environment in the provision of education. The methodology part of the research was presented while outlining the instruments that were used in the collection of data. The findings of the study is be presented in the coming chapter.

CHAPTER FOUR

RESEARCH FINDINGS

4.0 Introduction

The previous chapter presented the methodology that was used for the study. This chapter presents the findings of the study. The findings are presented according to the following three main research questions of the study which are also used as headings:

i) What is the state and adequacy of school infrastructure in selected up-graded secondary schools?

ii) What is the state of the learning environment in upgraded schools?

iii) What strategies have schools employed in providing education as regards to the state of infrastructure and learning environment in selected upgraded schools?

4.1 The state and adequacy of school infrastructure in selected up-graded secondary schools

In order to address the first research question, a number of questions on the state of school infrastructure in selected up-graded secondary schools were asked to the three (3) District Education Board Secretaries (DEBS) and five (5) Head teachers. Observation schedule was also drawn containing the observed data on the state and adequacy of infrastructure.

4.1.1 Findings from interviews with District Education Board Secretaries

The first task was to find out the number of upgraded secondary schools in the district. DEBS 1 indicated that there were five schools recently upgraded. She further indicated that, in all these schools, the state of infrastructure was bad. The structures that are being used were those previously used by the primary schools. The upgraded secondary schools have been sharing these very classroom blocks with the primary section. In her own words, DEBS 1 said, "at the upgrading time each upgraded secondary school had to share classrooms with the primary section." Further she went on to indicate that there were no teachers' houses, no specialised structures like laboratories, few and mostly bad classroom blocks. The issue of teacher accommodation has contributed to high retention rate among members of staff. Most teachers want to stay in places where there is electricity, running water and good house. She added that,

> Particularly in this district, we have experienced a lot of teacher movement wanting to go to other schools or districts. The teacher retention is very high. Even when we had the recent teacher recruitment most teachers upon reporting started pushing for transfers because of accommodation. Teacher accommodation is also very poor in the upgraded schools of the province.

Asked whether the government was doing anything about the situation, she said that out of the five schools which were upgraded, one had received funding from the central government and constructions had started. The other four still rely on the old structure. On whether the district was satisfied with education provision in the midst of such a scenario, the DEBS said,

> Not really because we need to have all the facilities for the learners before the school is upgraded. This kind of upgrading without facilities, is a challenge to education provision. One cannot compare these upgraded secondary schools to those already established. In short, the learners are not adequately prepared for exams especially in practical subjects where they are expected to use laboratory apparatus.

Interviewing DEBS 2 on the state of infrastructure, the DEBS started by stating that there are four upgraded secondary schools in the district. All these had no new structures built specifically for the secondary school. They had been using primary school classroom blocks. In his own words he said,

> "When secondary schools were opened, there were a lot of differences between the school administrators (head teacher primary and head teacher secondary) as to who would get more or better classes. Head teachers in most of these schools had to fight verbally when it came to sharing of classroom blocks and teachers' houses."

Asked whether he was satisfied with the state of infrastructure, the DEBS said that, "we would have been satisfied if the upgrading of these schools went along side construction of new structures, but as the case is I am not satisfied." Commenting on the same state of infrastructure, he said that two schools out of the four were in worse state because there was no even electricity, classrooms had bad roofs, very old structures built by the missionaries in the 1940s.

Asked whether, there were interventions from the government, he said that for three years , the government had been promising but nothing had been given so far. "The provincial team has been coming and even some Standard Officers from Lusaka but still we are just waiting." On teacher houses, the DEBS stated that teachers mostly stay in the villages around in very small houses. He added that, "The common trend has been putting two teachers in one house and this entails leaving families somewhere else. Most teachers in the district had left their families in towns forcing them to ask for permission once or twice within a term to have time to visit their families."

Interviewing DEBS 3 on the state of infrastructure in the upgraded secondary schools, the DEBS started by indicating that the district had more than five upgraded secondary schools. Most of these were in the real rural areas of the district. When asked about the state of infrastructure in which education was being provided, the DEBS stated that infrastructure was bad. "Quantifying the state of infrastructure in these upgraded secondary schools, I can say that over 80% of these schools had bad state of infrastructure. The classroom blocks being used now were previously used when these schools were by then primary schools."

When asked whether these schools have enough classrooms, his response was that they were not enough and that schools had devised a system to ensure that education was provided despite not having good infrastructure. "There is one school which uses buildings deserted by the world vision. These world vision buildings have been turned into a secondary school. This initiative came in because the primary school classroom blocks which were shared at the time of upgrading were not enough."

When asked if teachers had accommodation, the response was that, "there are no teachers' houses in these upgraded secondary schools." He further explained that schools which have houses are those that were given one or two houses when the basic schools were being

upgraded. This was at the time when they were sharing classroom blocks and houses with the primary section." He further indicated that, "the state of these teachers' houses varies from school to school. Some are good and others are bad."

When asked on the teacher retention in these school, the DEBS said the number of teachers was not stable. "We have a big challenge with teacher retention because most of these upgraded schools are in remote areas where electricity, water and decent houses cannot be found. As a result we have teachers coming for transfer requests wanting to move out on reasons of being sick or witchcraft."

4.1.2 Findings from interviews with Head teachers

On the number of classroom blocks, head teacher 1 indicated that there were two classroom blocks for grades eight up to grade twelve. The classrooms were not adequate. Offices and departmental offices were inadequate. Heads of Departments had been grouped together in one room. The state of the classrooms was fairly good because they had been renovated. "The renovated classrooms were fairly good though not adequate. The laboratory and home economics departments were under construction", he said. On the teachers houses, head teacher 1 said that there was no single house for the teachers at this school. Teachers trek from the township using their own arranged transport.

Head teacher 2

Responding to the question on the availability of classrooms the head teacher stated that the school had seven classroom blocks each with four classes. All these were meant for the primary section but were turned and given to the secondary school, leaving the primary section with fewer classroom blocks. He indicated that there were a lot of pupils in this school as the school was the only day secondary school within town and as a result classrooms were always not enough. On departmental offices it was found that they were very inadequate. The common trend was that one office was being occupied by two departments. The laboratory as a building was there but there were no apparatus. On teacher accommodation, the head teacher expressed inadequacy of teacher accommodation. "At the time of sharing classroom blocks and teachers houses we got only the head teachers' house, the deputy and three teachers houses, and these houses are around the school, the rest of the teachers are coming from the township," he said.

Head teacher 3

When asked on how many classrooms the school had, the head indicated two classroom blocks and a total of six classrooms for grades eight to twelve. It was established that the state of infrastructure in this school was bad. Classrooms had bad roofs, floor and many classrooms had no windows. Classes for design and technology were conducted under the mango trees due to lack of classrooms. There were no office space for departments not even the staff room. The staff room used was a shelter built out of poles and grass thatched. The head indicated that,

> In general terms, this school has very bad infrastructure and at the same time very inadequate. There are only two offices; one for the head the other improvised as deputy head's office. We cannot get more classrooms from the primary section because they have also been affected. The primary section is overcrowded because we got their classrooms making teaching for the teachers very difficult. We do not have specialised structures; laboratory or even home economics department. The class of design and technology is at times conducted under a tree.

On teacher accommodation, the head teacher stated that at the time of sharing teacher houses only three teachers houses were given to the secondary school section. "The school has three houses and the rest of the teachers are coming from the nearby villages. These houses are in bad state for status of a teacher." Asked what effect this scenario has on the life of the school, the head said "teachers delay in reporting at the beginning of the term when they are still with their families in towns like Lusaka or the Copper belt. For example, this term, up to this fourth week one teacher has not reported because he has been complaining of a poor house in the village. I don't know when he is coming."

Head teacher 4

On the state and adequacy of infrastructure, the head teacher stated that there was only one classroom block with three classrooms. "Initially, they were built and meant to be laboratories for the then basic school. Before the apparatus were brought in, the school was upgraded and so the very structure was turned into classrooms for the secondary school. The state of infrastructure was good because they were built not long ago. The only defect is that the classroom space is small and the classroom can only allow stools and not desks." It was further established that, the school had no office space for departments. There is no staff room apart from the grass thatched shelter (Insaka).

On the teacher accommodation the school had none. She attributed late reporting of the members of staff at the beginning of the term to this, as all the teachers were scattered in the

village. The school had no boarding facility for pupils. Each pupils had find accommodation privately which had been a source of concern especially for the safety of a girl child.

Head teacher 5

Responding to the question on the state and adequacy of infrastructure, he indicated a worrisome situation. It was found that the school had no specific buildings for the secondary school. He explained that, "What you are seeing are old and abandoned buildings for World Vision in which they used to conduct workshops. It is good that these classrooms have blackboard already otherwise the kind of infrastructure is not meant for pupils' classrooms." On adequacy, the head indicated that they were not enough. "We have three classrooms for all grades (from grade 8 to 12). This situation has forced the administrators to make a system where by grade eight B and grade nine B report for classes in the afternoon there by compromising with the stipulated period of time in a day. The rest of the grades have the normal school learning time.

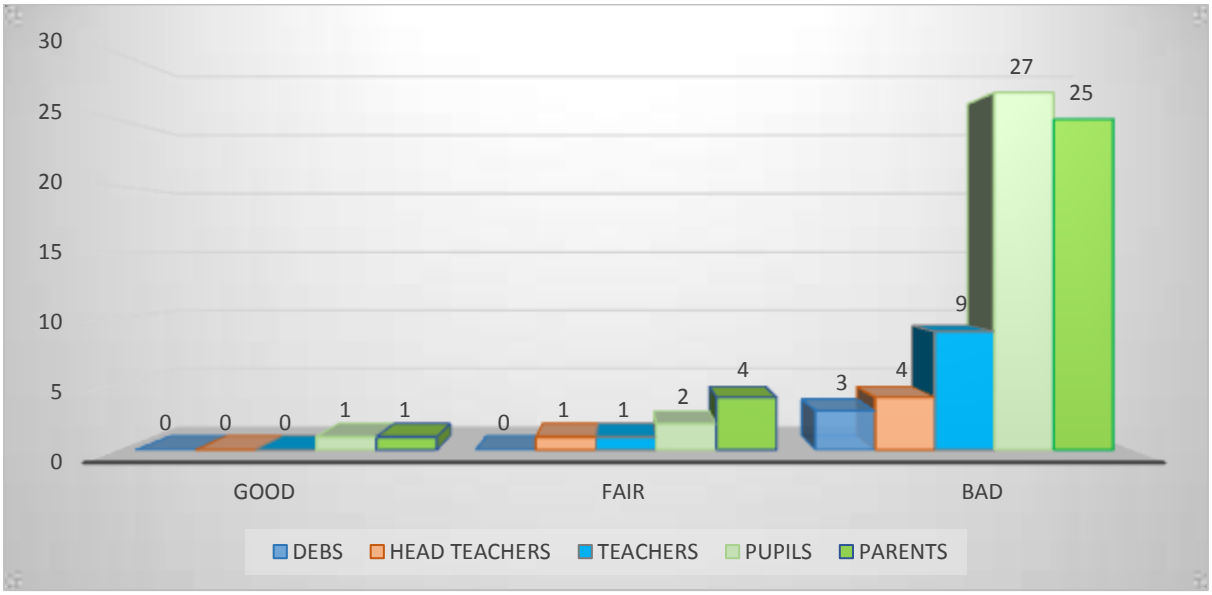
On classroom space the respondent indicated that the kind of classrooms left by the world vision were not meant for pupils, hence the space is not enough for many desks. On teacher accommodation, the school had no single house for teachers. All the teachers have accommodation in the village. The kind of houses in the village were also pathetic. "From inception, the school has had no teachers' houses. It is now that the PTA and the school are planning to put up something," he said. On departmental offices and the staff room, the head teachers indicated that the staffroom was there but is very small while the departmental offices were not there at all. He added that, "the school has only two offices; the head's and the deputy's and these two offices are also used as stole rooms for certain equipment and materials for the school."

On boarding houses, the head teacher indicated that pupils had to find their own accommodation in the village as well just like teachers. The school had not managed to build boarding houses for them. "We have no resources to look into those issues. We have pressing issues of teacher accommodation first." When asked whether he was comfortable with the way education is being provided in the midst of such a situation, the head indicated a worrisome and difficult situation. "We are providing education to seniors (from grade 10 to 12) as though they were primary school pupils where learning can still take place even without certain facilities like departmental offices, laboratories, staff rooms and other important structures."

Figure 1. Findings presented by the use of a chart.

The above findings on the state of infrastructure are being illustrated by a chart. The chart below shows the five categories of respondents; 3 DEBS, 5 Head teachers, 10 Teachers, 30 Pupils and 30 Parents. Each category gave their own opinion on the state of infrastructure. The highest response is that of respondents who had an opinion that the state of infrastructure was bad. The other opinion indicated that the state of infrastructure was fair. Those who responded that the infrastructure was good were very few as compared to those who said it was bad and inadequate.

The state of infrastructure in upgraded secondary schools.



Observation checklist

In order to verify the information provided by both the District Education Board Secretaries and the Head teachers in their schools, the researcher observed actual state of infrastructure as in the table below.

State	School	A	B	C	D	E
STATE AND ADEQUACY OF INFRASTRUCTURE						
No. of classroom blocks		2	6	2	1	1
No. of Classrooms		9	18	4	3	3
No. of Pupils		736	769	411	321	287
No. of Teachers' Houses		0	7	3	0	0
Staff room		Yes	Yes	Grass thatched	Grass thatched	Yes
No. of Departmental offices		1 for all	2 depts. in 1 office	0	0	0
Boarding house		0	0	0	0	0

Pictures showing the state of infrastructure

Picture 1: Shows the office of the Deputy Head attached to the classroom block. This classroom was built in 1940s by the missionaries.

Picture 2: Shows a house for the teacher

Picture 2: Shows a grade nine (G9) classroom.

Picture 3: Shows a 1X 3 classroom block attached to the Deputy Head's office

Picture 4: Shows the staff room. The first picture shows the outside while the second picture shows the inside.

4.2 The state of learning Environment in selected upgraded secondary schools

Addressing the second research question, on the state of school learning environment in selected up-graded secondary schools, a number of questions were asked to the five (5) Head teachers, ten (10) teachers and thirty (30) pupils. Interviews were conducted with head teachers and the teachers while a focus group discussion was conducted with the pupils. Observation schedule was also drawn containing the observed data on the state of learning environment.

4.1.3 Head teachers

Head teachers are the custodians of the school. They are the ones with a bigger picture of the learning environment pertaining to the entire school.

Head teacher 1 (school A)

The head teacher was comfortable with the area and the visible environment the school was found in. It was established that it is peaceful and in terms of security measures, the school had a watchman and in future the school planned to erect a wall fence. On the availability of water, the head teacher agreed that water was available though not adequate. He said, "Water is available but not enough. We only have one bole hole from where even nearby villagers draw water as well."

When asked whether electricity was available in school, he indicated that there was no electricity not even solar energy and so pupils had no evening studies. Time to study was left to the individual pupil at home. On the classroom's conduciveness in terms of the floor, walls, and windows, he indicated that there was no big problem with all these as the school had recently received a face lift. When asked whether the school had a laboratory, the head teacher said, "we are building now. We only have a mobile laboratory which is not enough."

The enrolment level was found to be high. It was at 50 pupils per class and more in some classes. The Head teacher stated that, "the government recommended enrolment level is 45 per class, but during our head teachers' meetings with the DEBS we are advised to go up to 50 because of lack of classrooms. The reality is that at times we even go beyond 50." When asked whether teachers were enough at school, the respondent indicated inadequacy of the teaching staff making it difficult to fulfil the revised curriculum requirements of two path ways, that is; academic and career pathways. On the pupil- teacher ratio, the head teacher indicated the ratio to be at 1:25.

On the availability of teaching and learning materials, the head teacher indicated that they were available though not adequate especially that the curriculum was revised. He further added, 'however, there is some green light because the DEBS has announced that the district is soon to start distributing books in schools." On the pupil – book ratio, the head teacher indicated the pupil-book ratio to be at 7:1. When asked whether desks were enough for all the pupils in schools, he indicated the inadequacy of desks. Asked whether the learning out comes in terms of pass rate was impressive, the head teacher indicated that pass rates were fair especially with the grade nines (9) because the school had never had grade twelve exams. "We are going to have the first grade twelve exam this year 2016," he said.

Head teacher 2 (School B)

When asked whether there were activities that disturb the learning, head teacher 1 expressed happiness that the school was situated in a good location. "We have no bars, or human activities that disturb the learning to take place," he said. When asked how the situation of water and sanitation was, head teacher said, "We have our own source of water, we don't depend on the Chambeshi water and sewerage company. We have two bole holes." On the availability of electricity, it was found that it was available in all the classes.

The respondent had a problem however, with classroom space. “Due to limited classrooms the desks are packed with little spaces between them. This makes classrooms not to be conducive.” When asked whether teachers were enough, he expressed inadequacy of teachers. “We have a shortage of teachers to fulfil the requirements of the revised curriculum. All subjects are being taught but by teachers whose speciality is in another subject.” On the learning materials, he said, “the school lacks learning materials making the pupil –book ratio to be at 8:1. We are hopeful that we shall receive books from the Ministry.”

When the head teacher was asked on the pass rate, he was happy and indicated that, “we have been having exams for the past four years and the pass rate has been good to both grade nines (9s) and grade twelves (12s). For instance the year 2015 was at 57% for the junior section and 76% for the grade twelves.” When asked as to why the pass rate had been good, he attributed it to qualified teachers, the response was that the school had qualified teachers as most of the teachers were degree holders and so this had contributed to a good passing rate especially with grade nines (Grade 9s).”

Head teacher 3 (School C)

Responding to the question on the conduciveness of the site the school were found in, head teacher was comfortable and indicated that there were no threatening human activities to disturb the learning activities. He however was quick to point out that, “people sometimes tress pass as there are houses near the school premises. At times parents would stand nearby, calling a pupil who happens to be their son or daughter.” However, he was not comfortable with the atmosphere within classrooms due to the small space as most of the desks were packed close to each other. “Classrooms are packed with desks and at the same time these classrooms have bad floor, walls and no glass pens. Some other classrooms do not even have doors which makes it impossible to leave sensitive materials.”

Due to limited classroom space, it was found that in one classroom there would be two classes. He explained that, “the grade 8A (academic pathway) and 8B (career path way) have one class room. When the 8A have to learn what is in their particular pathway, 8Bs would go out and sit under trees. The opposite is the case when grade 8Bs are having a class.” This situation is the same with Grade 10s A and B. “We had a tough time to explain and convince the inspectors when they came from Lusaka because they found them outside. They thought we were tolerating indiscipline in school. In fact due to limited classrooms we have a grade

eight (8) class which learns design and technology under a tree." When asked the enrolment level, it was found that one class had more than the stipulated 45 pupils. "How can we maintain 45 pupils per class when there are still pupils wishing to be in school? Our enrolment goes beyond 50 in most classes," he added.

On the availability of water, head teacher was happy that water was there though inadequate. Electricity was also inadequate as most classrooms did not have. "Only two classrooms have electricity the rest do not have." When asked whether teachers were enough, the head teacher stated that teachers were not enough. "We have a situation where one teacher or two teachers teach all grades in the particular subject, which is not normal. The most affected subjects are sciences and ICT. This has caused the teacher – pupil ratio to be approximately at 1:20." On the learning materials, the respondent indicated that they were not enough in all the subjects. "This has been a challenge in fulfilling the requirements of the new revised curriculum and our pupil-book ratio stands at 10:1." The head teacher expressed hope that the situation would change because the district will soon start distributing books in schools. On the pass rate the head teacher indicated that the first grade twelve results of 2015 had shown 38.4 percent.

Head teacher 4 (School D)

When asked the general learning environment in terms of the site where the school was found, the head teacher was happy stating its conduciveness. She however lamented on the classroom space. "The classrooms are packed making education delivery difficult. Some grades come in the afternoon. This has compromised the stipulated duration for conducting a class." When asked whether the floor, walls and doors were in good condition, she stated that all was good. On enrolment, she said, "we have 40 pupils per class and sometimes 35 pupils per class. However, even with this enrolment we have a shortage of classrooms because we have three (3) classrooms in the whole school."

On teacher availability she stated that teachers were not enough. "In some subjects we are okay in other subjects we are limping especially in sciences and in ICT where we have only one teacher per subject. Our teacher –pupil ratio stands approximately at 1:23," the respondent said. On the learning materials, it was found that the situation was the same as that of lack of teachers. "We don't have enough learning materials. In ICT it is worse. The only good thing is that we have a lot of computers donated by SAMSUNG, but we do not have books and a trained ICT teacher."

When asked on the availability of desks, the head teacher expressed inadequacy of desks. However, she gave a reason, "the kind of classrooms we have were previously laboratories and the arrangement inside these classrooms is that of a laboratory with pillars and stools for siting on." She further said, "We did not accept desks when the province was distributing because we didn't have where to put them as our classroom arrangement was that of a laboratory. These laboratories are the ones now used as classrooms."

Head teacher 5 (School E)

Responding to the question on whether the school was situated in a good environment or good site, the respondent expressed dissatisfaction on the site. "The school being of old World Vision structures was situated on a wrong place for leaners. It was near the main road with a lot of noise and village houses are just next door, only when the government finishes building the secondary school across the river will the school be situated on a good site." On the availability of teachers it was established that teachers had never been enough at this school as most teachers leave the station upon seeing the school and the place. The school is in a rural place and teachers avoid such places. "Some subjects are not taught well because of lack of teachers which is due to lack of accommodation and the place being rural. At the same time, we have some teachers who have not reported for a term now because of the above reasons."

When responding to the question on the availability of learning and teaching materials the respondent alluded to the lack of resources for the school to purchase these materials. The school did not have enough revenue from schools fees as most pupils did not pay and according to the government policy no pupil should be expelled from school for not paying. In his own words he said, "Learning materials are not enough because the school cannot manage to buy many text books. We do buy some books every term but not enough because many pupils don't pay and those who do, do it very late. Grants come once in a while but the school has a lot of needs. This has caused the pupil – book ratio to be 9:1."

When asked whether the school has specialised structures like laboratories, the respondent indicated that the school has no laboratory. It only had one mobile laboratory without enough apparatus. "It is not easy to teach science subjects as the mobile lab does not have enough apparatus. It is mostly theory which is dangerous during exams. On the availability of water and electricity the respondent had this to say, "We have one mono-pump but unfortunately

water is bad. Water has some colour like rust." On electricity, it was established that not even solar is available. They are hoping that the new secondary school being built will be complete soon as it will have all these things in place.

On furniture the respondent indicated that at least the two offices (the head's and the deputy's) had furniture bought by the school as they were the only offices in school. With desks and staffroom chairs and tables, the respondent indicated that desks were enough though there were no spaces in classrooms where to put them. "We don't have a shortage of desks because the government provided enough. We may not have enough tables and chairs for the staff room but not desks," he said

4.2.2 Teachers

School A

In response to the question on the general state of the environment where teachers were providing education, all the two teachers interviewed were comfortable with the atmosphere and the sites the school were situated. "The school is situated in very conducive environments," one teacher said. In agreement to this the other teacher said, "There are no bars or noise around the schools to disturb the learning activity". When asked whether the classrooms were conducive inside, teachers agreed and expressed happiness. One said, "Classes are spacious, well ventilated and good floor, we can't complain." However teacher 2 said despite classrooms being spacious there was still need for more classrooms to reduce the enrolment per class which was usually at 50 and above."

On sanitation the two teachers agreed that water was not enough and toilets were not enough as well but the situation was not so desperate that pupils could not learn in such an environment. On electricity, they all indicated the same that there is no electricity in the school. When asked if the revised curriculum was being followed in terms of teaching all the stipulated subjects in two pathways, the two teachers indicated that teachers were not enough. "The most affected subjects are career pathway subjects especially sciences and ICT subjects," said teacher 1. However teacher 2 disagreed on the affected subject, he said even the subjects in academic pathway were affected as well. "I teach civic education, in our department we only have one teacher for Religious Education and one teacher for history."

On the teaching materials, the two teachers interviewed agreed that there was a shortage of learning materials. In most departments, teachers had only one book or two making it

difficult for pupils to access detailed information on each topic," Teacher 2 said. On the pass rate, all teachers agreed that it had not been very bad. Teacher 1 explained, "The pass rate for grade nines (9s) has not been bad, we are hoping that even the first grade twelve exam pass rate for the year 2016 will be good."

School B

Responding to the question on the conduciveness of the site the two teachers agreed that the site was conducive for the teaching and learning processes. When asked whether classrooms were conducive, they all disagreed that the space was small because desks are packed together. "It is difficult to pass through desks when teaching because desks are packed due to over enrolment per class. Enrolment per desk was mostly more than 45." On sanitation, they all agreed that toilets were not enough but they did not pose a health hazard to pupils. It was established that they were all flushable toilets and not pit latrines," Teacher 2 stated. Water was found to be plenty. "Water in school was not a problem. We have our own source." Teacher 1 explained.

Responding to the question on the availability of teachers, both teachers agreed that teachers were not enough and as such, teachers had more periods than they were supposed to have. "In other subjects teachers are asked to assist just to fulfil the curriculum requirements." When asked on the availability of teaching materials, it was indicated that they were not enough either, making it difficult to give a lot of homework. The school had been existing for over four years but still learning materials were a problem, especially with the new revised curriculum, books were too scarce to prepare pupils for final exams," teacher 2 stated.

School C

Responding to the question on the conduciveness of the environment in which the school was found, teachers were comfortable but complained of people trespassing in school. "Some parents trespass through the school as the school is near to the village," Teacher 1 stated. On the conduciveness of the classrooms, the two teachers were not comfortable with the classrooms. Teacher 1 stated, "The classrooms are in a bad state. Most classrooms have bad floor, cracked walls, no window pens and no better doors."

Asked whether sanitation issues were good, they all expressed inadequacy of water and toilets. Teacher 1 added, "We only have one toilet for the members of staff causing teachers to go to nearby teachers houses when nature calls." Asked whether the enrolment level had an effect on the teaching activity, Teacher 2 expressed discomfort when it comes to marking and one to one monitoring of pupils. He said, "Classrooms are packed with little space between desks forcing a teacher to only remain standing in front without going round desks to monitor what pupils are doing."

Responding to the question on the adequacy of teachers, Teacher 2 indicated that teachers were not enough, "We cover even those subjects we are not trained for just to make sure all the subjects are taught." On the learning materials all the two teachers indicated that they were not enough. Teacher 2 who teaches Mathematics complained, "I am the only teacher of Mathematics alone for the senior section and I have one single text book to use. Pupils have no text books for maths." He further added, "The scenario may change because the district is starting to distribute learning materials in schools." On the pupil - book ratio, Teacher 1 put it this way, "The pupil – book ratio stands at 7:1 which is not good for learners even for me as a teacher to determine the level of knowledge because pupils don't access extra information from books before a test or an exam is given." Answering the question on whether the laboratory was available, it was found that the school only had a mobile laboratory which proved to be inadequate as it did not contain many apparatus.

School D

When asked whether the site was conducive, both teachers were comfortable with the site and that it was conducive. However, one teacher complained of lack of teachers' houses. "The site is good but we have no houses and the place is rural. This forces us to leave our families in towns or districts where there are good houses and good schools for our children." On the availability of water it was found that there was only one source of water for pupils even for nearby villagers. However, they were happy because water was there. Teacher 2 expressed that, "We don't send pupils to fetch water elsewhere, we have it within school though it is not enough." On electricity both teachers expressed happiness that electricity was available in school and in every classroom making pupils do evening studies in the evening.

Responding to a question on whether the school had a laboratory, all the two teachers said that there was no laboratory. "The mobile laboratory does not have enough apparatus for all the pupils," said Teacher 1. On the conduciveness of the classrooms, the teachers agreed that

the walls, floor and doors were good but it was just that the kind of classrooms used were of a laboratory set up. This was in agreement with what the head teacher for the same school D had earlier indicated. Responding to the question on availability of desks, Teacher 2 explained, "The classrooms are good but there are no desks because the classrooms were initially meant for laboratories." It was indicated that the classrooms were inadequate and as such, some pupils come in the afternoon making the stipulated number of hours to be in class compromised.

On the adequacy of teachers, it was found that teachers were not enough. The most affected subjects were Sciences and Zambian language. On learning materials it was indicated that they were not enough. Teacher 1 said, "Most teachers here have one text book for the teacher himself or herself." On pupil-book ratio, Teacher 1 indicated 7:1 while teacher two indicated 6:1

School E

When asked whether the classrooms were conducive and adequate for education provision, Teacher 1 indicated that the space was too small while Teacher 2 indicated that the classrooms were fairly adequate. However, both teachers agreed on the point that the classrooms were inadequate and that the space inside the classrooms were not enough. One teacher said, "Imagine the whole school has only one classroom block and a hall. It has been a challenge to make sure each grade has a shelter to learn from."

On departmental offices, both teachers indicated that there was nothing like that in the school as there were only two offices; one for the head and the other for the deputy. "Departmental heads take advantage of the staff room to communicate to members of the department. It is difficult to plan together or hold meetings as a department." On whether desks were available, both teachers indicated that desks were enough. "Desks are enough, what is not enough is where to put them as the space in the classrooms are small because the kind of classrooms were not meant for pupils. These were World Vision abandoned structures for workshops," said one of the teachers.

Responding to the question on whether the school has a laboratory, both teachers indicated that the school has no laboratory. This is in agreement with what the head teacher had said earlier. However, both teachers added that the school has only mobile laboratory which has proved not to be very adequate for science lessons. The two teachers revealed further that pupils at this school felt inferior for learning at such a school. They admire their friends in

other secondary schools who tell them a lot about learning facilities like laboratories, school theatres, paly fields and other school structures. One teacher revealed, "Every term we have pupils getting transfers going to other schools where they feel education can be provided in a better way. We do not have pupils getting transfers from elsewhere coming to this school." It was also revealed that at the beginning of grade ten class in January, the class had about 50 to 60 pupils but by the end of grade twelve (12) the class will have reduced to 30 pupils. Besides these, other factors that contributed to this reduction like early marriages, early pregnancies and other causes of drop outs and the issue of transfers due to inferiority complex cannot be ruled out. On learning and teaching materials, the teachers confessed that these were not enough as the school had no enough resources to purchase many copies. One teacher explained, "Most teachers have a copy only. Certain subjects like Mathematics require a lot of copies for each pupil. However, we were told that the government was starting to distribute some books very soon."

Responding to the question on the pass rate the teachers indicated that the most affected subjects were Science and Mathematics. They both indicated a low pass rate every year. When asked what could be the reason, Teacher 2 is quoted here saying,

> Part of the reasons could be the non-availability of learning materials, laboratory and sometimes the pupil's poor back ground. It could also be science and maths teachers are few and also the staffing levels are low in this school. If they are not introduced to experiments from grade eight it would be difficult to improve when they reach senior level.

Teacher 1 added, "This school has no exam centre number and so pupils do shift to other secondary schools when time comes for end of year exams. They have to travel, look for food and accommodation. Psychologically, they are disturbed being in the new environment with all these challenges. Also that when they go there that's when they practice how to use apparatus in the laboratories. How do you expect them to pass science subjects?"

4.2.3 Pupils

A group focus discussion was conducted with six pupils per school making the total of 30 pupils. The following were the findings. Responding to the question on whether the classrooms were adequate, one pupils at school A said, "At this school the classroom space is good but the only problem is that classrooms are not enough." This response was echoed by

all the pupils in all the four schools. Quoting one pupil in school C where the situation seemed to be very serious the pupil said,

> for grade eights (8), when it is time for Grade 8 A to do Religious Education, Grades 8 B would go out to give chance because they (grade 8B) take Design and Technology (career pathway) and not Religious education. If there is Design and Technology on the time table at the same time with religious Education, either Religious education class would go out or Design and technology class would go out to learn under a tree on pillars build around the mango tree.

In school E, pupils also echoed the same shortage of classrooms and added that the classrooms had little space which is not possible for many desks. On the conduciveness of the classrooms, pupils in schools C and E complained of the floor, walls and windows. One pupil from school C said, "The floor is bad, some walls have no plaster and some classrooms have no glass pens." Other pupils from the other three schools did not complain over such. However, they all complained of the space inside the classrooms that was it not enough because classes were over crowded due to limited classrooms.

Asked whether there were specialised structures like libraries and laboratories, pupils in all the five schools shared the same worry. All the five schools had no laboratories. Pupils in school A put it in this way, "We don't even have a laboratory. We are worried as to how we will do the experiments during exams as this year 2016 will be our first grade twelve exam at this school." Pupils at school E brought out a shocking issue. They revealed that they felt inferior to do grade ten (10) to grade twelve (12) at this School instead of being in other secondary schools where educational facilities were available. One pupil explained, "We feel inferior or as second class pupils as if this school was for those who are dull. We don't have enough learning facilities and this makes us feel neglected. Many of our friends get transfers every term." This point of feeling inferior was raised even by the two teachers at this same school.

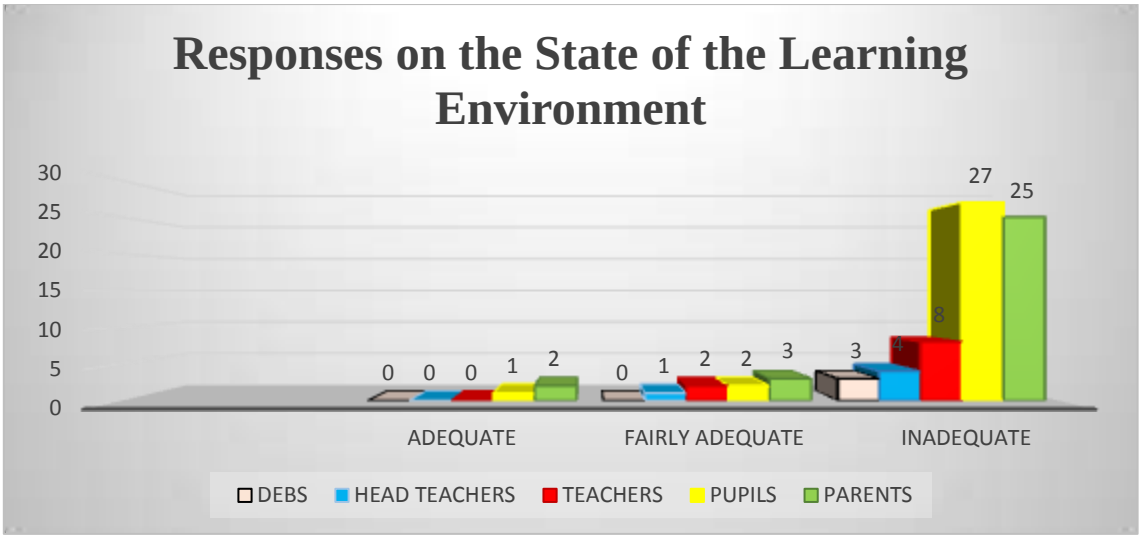
On pupil accommodation, it was established that the five schools had no accommodation for pupils coming from far off places. Each pupil had to find accommodation in the surrounding villages. Responding to the question on electricity, it was established that out of the five schools only three (3) had electricity. One pupil in schools A put it in this way, "We always complain of lack of electricity in the school. Not having electricity makes it difficult for us to do private evening studies as most of us come from nearby the school." Pupils in school B had a different scenario. They had electricity in plenty, while those in school C responded

that there was electricity but not in all the classrooms. They said, “Electricity is only in two classrooms, the rest do not have.” Pupils in school D indicated that electricity was in plenty. “We are able to do private evening studies because we have electricity,” one pupil said.

On sanitation situation in the five schools, pupils expressed happiness that they had toilets even though not enough. All the schools had pit latrines apart from school B which had flushable toilets. Asked whether, water was available in all schools, pupils expressed happiness that at least they did not go elsewhere to fetch water. However, they all indicated that though water was available it was not just enough. When asked whether desks were enough for all pupils, pupils in all schools apart from school D were happy that desks were enough. School D uses stools because of the class arrangement. The classes they use were meant for a laboratory before they were turned into normal classrooms.

When asked whether teachers were enough, pupils in all the five schools indicated that teachers were not enough. “Teachers are not enough because some are asked to teach the subjects they did not do in college,” said a pupil in school B. Pupils in school A added that, “especially in computer subject, our teacher just helps, he teaches Mathematics but because he has a computer he was asked to be helping.” Pupils at school D, also shared this response and one pupil stated, “The most affected subjects are ICT, Sciences and Zambian Language.” Pupils in school E alluded the teacher shortage to the place being rural and so teachers run away to better places. “Teachers tell us that this school is too remote and we can’t stay here, us we are educated,” one pupil at school E narrated. On Pupil - book ratio all the pupils complained that books were not enough. It was further established that, Pupils in school E had a worse pupil-book ratio of 10:1 while those in the rest of the schools the pupil-book ratio was 7:1 and in one schools, it was at 8:1

The chart below shows the five categories of respondents; 3 DEBS, 5 Head teachers, 10 Teachers, 30 Pupils and 30 Parents. Each category gave an opinion on the state of the learning environment. The majority of the respondents indicated that the learning environment was inadequate. This means that, the environment lacked enough teachers, learning materials, classroom space, water supply, laboratory and all necessary ingredients of a good learning environment.



Observation checklist

In order to verify the data provided by Head teachers, teachers and pupils in their respective schools, the researcher observed the actual state of the learning environment as in the figure below.

Table 1

State	**School**	A	B	C	D	E
STATE THE LERNING ENVIRONMENT						
Laboratory		No	No	No	No	No
Pupil – book ratio		1: 7	1:8	1:10	1:9	10:1
Water supply		1 bore hole	1 bole hole	1 bore hole	1 bore hole	1 bole hole
Electricity		No	Yes	Yes in parts	Yes	No
Toilets for Pupils	M	3	4	4	3	3
	F	2	4	3	2	3
Play field		1	1	1	1	1
Industrial arts kit		Non	Non	1	Non	Non
Computers		0	10	Non	15	0
No. of Sports kits		1	1	1	1	1

No. of Science kits (Mobile lab)		1	1	1	1	1
Pupil – book ratio		7:1	8:1	9:1	7:1	10:1
No of Teachers		20	47	25	21	15

Pictures showing the state of the learning environment.

Picture 1*: Shows some students sitting down not because of lack of desks but because of lack of space where to put the desk.*

Picture 2*:* *Shows a Design and Technology class being conducted under a tree not because of wanting some fresh air but because it's a period for those doing Religious Education.*

4.3 Strategies schools have employed in providing education as regards to the state of infrastructure and learning environment in upgraded schools

In addressing the third research question, a number of questions were asked on the strategies employed in providing education in the midst of the current state of infrastructure and learning environment. The interviews were conducted with the three (3) DEBS, ten (10) Head teachers and 30 Parents form all the five (5) selected upgraded secondary schools of the Province.

4.3.1 District Education Board Secretaries

DEBS 1

Responding to the question on what strategies that had been put in place to deal with the challenges schools were facing in infrastructure and learning environment, the DEBS explained that the district had embarked on sensitising parents in all the schools, especially the upgraded ones to work towards strengthening community participation in issues of infrastructure development in schools. "When these schools were upgraded, we realised that this is not the only district with new schools and so the Government alone cannot manage to do everything within our time frame, it has its pace of ensuring that facilities in schools are in place. We have therefore embarked on sensitising parents to come on board and participate fully" The DEBS noted that there exists a gap between educationists and parents. She said, "The gap has been there. This issue of lack of infrastructure in the newly upgraded secondary schools has been our eye opener to start seriously implementing what was recommended in the 'Educating Our Future (1996) document on community participation in education provision."

The other strategy the DEBS mentioned was that teachers were being advised to use available resources to make their teaching and learning a reality. "We urge teachers to be resourceful and look for necessary teaching materials in cases where they do not have them available in school. A properly trained teacher cannot just sit and fold his or her arms and say we have no teaching materials. Such a teacher is not worth to be. Especially in computer studies where teaching materials are very scare, they need to ask their colleagues in other schools."

When asked if at all there had been help form elsewhere, the DEBS indicated that, there had been Non-Governmental Organisations that had shown commitment in helping schools. "We have been lobbying to Non-Governmental Organisations. Camfed for instance has been instrumental in helping the girl child. Some books have been given to some schools by

Camfed. We have also been lobbying to the NGO called SVN. They have been building toilets in schools. Their mandate is to build one toilet for 20 girls and one toilet for 25 boys. This is according to their own policy."

When asked what has been the intervention by the government, the DEBS indicated that only two (2) out of six (6) upgraded secondary schools in the district have received funding from the Central Government to construct classrooms, offices and dormitories. On whether, grants had been coming to these schools, the DEBS indicated that funding has been coming but not consistent. "Some schools have just started receiving grants ever since they were upgraded, and mostly these grants are not enough to carter for infrastructure development, they are normally meant for other things."

DEBS 2

Responding to the question on the strategies the district was employing to manage the situation, the DEBS shared the same strategies with DEBS 1 emphasising the partnership between the schools and parents. She said, "We have been preaching community participation in all the schools. We feel that when the parents come on board some of the infrastructure challenges will be sorted out, at least we will have done something than just waiting for the government. In almost all the upgraded secondary schools there are some structures being constructed by the collaboration between schools and parents?"

When asked whether there had been some lobbying from elsewhere, DEBS indicated that the area Member of Parliament has been written to and engaged in discussion to consider funding these upgraded secondary schools using the Constituent Development Fund (CDF). "The Member of Parliament accepted and promised that every year at least a secondary school would be funded. As I am speaking two schools out of the four upgraded secondary schools have been given something towards classrooms construction though they have not yet started. However, we cannot say that this will solve all the infrastructure problem faced in these schools. It is just a drop in the ocean." Responding to the question on government funding of these schools, DEBS indicated that funding had been there but some schools had not received any ever since they were upgraded. Even when they were given, it is usually not meant for constructions but for designated items to buy for the school. These funds were not even enough.

DEBS 3

In response to the question on what the school was doing to ensure that education is provided in the midst of the current state of infrastructure and the learning environment, DEBS 3 said the same as other DEBS in terms of sensitising community participation. Head teachers were reminded to bring on board the community and mobilise them to make sure infrastructure was available. Just as others had said, the district had been doing some lobbying to NGOs like world Vision and Constituent Development Fund. The respondent indicated further, that nothing much was coming from the government to help these upgraded secondary schools improve infrastructure.

4.3.2 Head teachers

Head teacher 1

Responding to the questions on the strategies employed to mitigate infrastructure challenges, Head teacher 1 responded that the administration and the parents had come together to construct a 1x2 classroom block and a 1x3 classroom block. The head said, "The 1x3 classroom block will have a laboratory, home economics classroom and a computer room. The same block will have offices for various departments." The other strategy that the school had put in place was that out of the school fees collected from pupils termly, part of it is used to buy teaching and learning materials. "As school policy, 20% of the money collected from pupils go towards the purchase of learning materials," the head explained.

On parents' participation, it was established that parents were willing to contribute in terms of turning up for making bricks, sand collection and stone crushing. The respondent explained that half of the parents were able to pay for such works while the other half who did not manage to pay come physically to do the works. The money collected from those who were able to pay went towards the purchase of cement and other building materials.

When asked whether they had been lobbying from somewhere, the respondent agreed to have applied through the area Member of Parliament to be included on the list of the beneficiaries for the CDF. "We are still waiting for the response from the CDF where we applied for funds. We have written to the World Vision to build something here but they have not yet responded," he explained.

When asked whether there had been government intervention, the head responded that there had been promises only. "The province and the district offices were aware of our situation,

they have been promising us but nothing has come up yet. We hear our friends in other upgraded secondary schools have received some funding towards classroom construction, but for us it has just been promises."

Head teacher 2

When asked what the school was doing in order to enhance the education provision the head teacher 2 indicated that they had been lobbying from both the central government and local government. He said, "Currently we have applied for a share from the constituency Development Fund and as I am speaking a laboratory block is being constructed. Part of the works like sand, stones and ferrying baked bricks have been done by parents through project fund levied from the pupils. However, there is nothing from the central government. They have just been promising."

Head teacher 3

Responding to what the school was doing to ensure education provision was enhanced, head teacher 2 indicated that the project had commenced in collaboration with the parents to build a 1 x 3 classroom block. He said, "Parents baked bricks and ferried them to the site. They also ferried sand and stones." When asked whether the school had lobbied from elsewhere, the head indicated that many application letters were written to the government and Constituent Development Fund committee, but there had never been a response.

Responding to the question on what other solutions the school had found to give learners a good conducive environment, the head explained, "We have been under pressure. We have not received a single funding from the province or elsewhere. Currently, we have borrowed a Catholic Church hall which we use as a classroom. Trouble comes when the church has a workshop during weekdays. When this happens learners are squeezed in another class." The other initiative the head teacher indicated was the construction of a shelter which is used as staff room. "We have constructed a shelter (insaka) to be used as a staff room. However, this time around it has become small because we have received some more teachers," he explained.

Head teacher 4

Responding to the question on what the school was doing to ensure that the provision of education was not disturbed, head teacher 2 indicated that they had received some money from Constituent Development Fund committee to build a 1 x 2 classroom block. The head

said, “right now the classroom block is under construction as you can see over there. We lobbied from the CDF and we were lucky we were given something though not big and that’s why we decided to put up just a 1x 2 classroom block.” The head further indicated that there was nothing coming from the government apart from promises.

On community participation, the head was satisfied that at least parents were cooperative and they respond well to the works at the school. She said, “Those parents who stay very far are made to pay an extra amount of money for such works while those nearby are asked to come for the actual work. Even if some don’t comply but at least three quarters are cooperative” When asked what the Province and the District had done to ensure education was provided in a conducive environment, the head indicated that the DEBS office had donated computers through SAMSUNG company.

Head teacher 5

When asked whether there was anything being done to ensure education provision was not disrupted given the current state of infrastructure and the learning environment, the respondent indicated that, “there is not much we are doing because all that can be done requires money.” It was further established that pupils in this school did not pay on time while many did not pay at all. With the Government policy, no pupil can be expelled for not paying school fees. However, it was found that the greatest solution that was made after discovering that the classrooms they were given by the primary section after the school was upgraded, was to completely detach themselves from the primary school classroom blocks and get the abandoned World Vision buildings and turn them into a secondary school. These buildings had two classrooms and a hall. These were being used as classrooms. It was further established that the school had not built any classroom block simply because the government has embarked on a secondary school construction which will have many facilities. “No new structure has been built, not even new toilets, besides the ones the World Vision left,” the head explained.

When asked whether the community had been involved in ensuring that education was provided in a conducive environment, the respondent refuted any commitment that the community has shown. The respondent explained, “We have tried to engage the community here to build at least one staff house but the response has been very negative. Their response has been that the government is building a school and so there is no need for them to build

anything." The respondent further indicated that the very school the government is building has taken about five years now without completing. In mitigating the shortages of learning and teaching materials, through grants and school fees, the school has been buying books every term even though they are not enough.

4.3.3 Parents

School A

Responding to the question on what parents through Parents Teacher Association were doing to ensure their children learn in a conducive environment, the parents said that through meetings they had managed to mobilise fellow parents to participate in the construction of a 1 x 2 classroom block and another 1 x 3 block where there would be a laboratory, departmental offices and a computer class. The community has been involved in ferrying sand, baked bricks and stones. One parent said, "Parents around the school are happy to have a secondary school nearby and so they are excited and they feel encouraged to do the works." Another parent agreed to this and added that in fact, "despite the government not putting up structures before starting a secondary school, as parents we are happy because it was expensive for our children to go to distant boarding schools."

School B

Responding to the question on what the parents were doing to ensure that education provision was enhanced, parents indicated that they had been paying some money called project fund which went towards constructions of various structures. One parent explained, "We have built water borne toilets and a 1 x 3 classroom block using such money. Currently, a laboratory is been constructed." Another parent agreed to this and added that, "here the school is in township, no parent can come to work at school, they were all busy working elsewhere. Parents work through PTA project fees."

School C

Parents at school C responded to the question on parents' participation in education provision by giving an example of what they had done so far. One parent said, "We ferried sand, stones and bricks and the school bought cement and that is the classroom block you are seeing there though not yet completed. We will finish." It was established further that the construction of this classroom block was the only project the school was doing in conjunction with parents. During this discussion it came out from all the parents that the school had never received any

funding, not even the grants given to other schools. This complaint was also given by the head teacher of this same school. Explaining the same situation, one parent said, "We cannot do much. We can't make school fees high for the purpose of building classrooms so we appeal to the government not just to announce that such and such a school is now a secondary school without sending at least some money for classroom blocks." This parent said this because it is a known fact that this school has never received a single coin ever since it was declared a secondary school in 2012 November and the school head teacher had shared this with the Parents Teacher Association (PTA).

School D

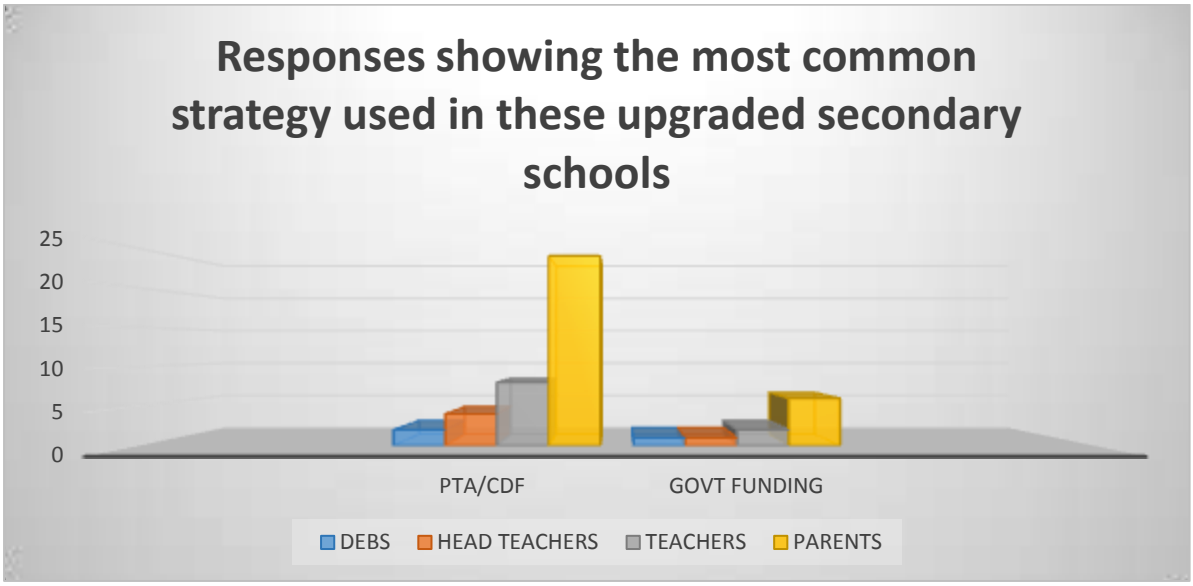
When asked whether they had been participating in the governance of the school in education provision, parents responded that they had come together with the school administration to do something on the lack of infrastructure. One parent said, "The community and the school have come together. So far we are working on a 1x2 classroom block which has already a roof." Another parent said, "Part of the contribution to this block is from the CDF and then us as parents contributed by ferrying sand, baked bricks and stones." Parents indicated that the government should come in quickly to build a school because as parents they cannot do much.

School E

The focus group discussion with parents revealed that, parents had not been involved themselves in constructions to make education provision better. Whenever the school calls for some work at school the turnout had been very bad making it difficult for any work to be done. During the discussion one parent reported that parents in the area were not corporative and have been saying, "We, the same parents, cannot be working for the two schools (Primary and secondary schools). In fact there was no need to be building anything at the secondary school since the government had been building a secondary school across the Kanchibiya River." It was convincingly found that in school E nothing much was being done by the school administration and the community but just waiting for the completion of the school under construction.

The chart below is a graphical presentation of the findings on the strategies used. The graph shows categories of respondents; 3 DEBS, 5 Head teachers, 10 Teachers and 30 Parents. Each category indicated the resource mobilization strategy used to mobilize resources for

construction. The majority of the respondents indicated that the strategy used was lobbying for funds from the Constituent Development Fund. The other common strategy was to enhance the partnership between the school administration and the Parents Teachers Association (PTA). With the PTA strategy, it involved pupils paying extra fee on top of school fees called project fund. Only one school revealed that the funding was coming from the government and the construction of the school was under way.



Pictures of what is being done in some selected secondary schools

Picture 1: 1 X 3 classroom block by the school using PTA funds only

Picture 2: shows 1x2 classroom block under construction using PTA funds only.

Picture 3: shows 1x4 block being constructed using CDF funds

4.4 Summary

In winding up the presentation of the findings of the study, it is clear that most of the structures being used are those old ones which were once used when these schools were either primary schools or basic schools. The schools had no teachers' houses and so teachers have to accommodate themselves in the nearby villages. The study further revealed that there has not been construction of new structures from the time these schools were upgraded. The findings indicate also that only one school out of the sampled five schools had received a contractor on site to build a new school, even then, the construction of this school has taken now five years without completion.

With the learning environment, the findings have revealed that there had been inadequacies in all those areas which create a conducive learning environment. There had been few teachers as most of these schools had not been gazetted and so they did not have an establishment. Hence, DEBS got teachers who were deployed from other established schools to teach in these schools. In other instances the deployed teachers in these schools did not want to work in these schools giving reasons of being remote and without teachers' houses. Coupled with the issue of gazettion is the issue of examination writing. These schools had no exam centre numbers. Only one school reported to have had an exam centre number owing to the fact that it has about five years of its existence as a secondary school. Pupils had to leave their schools a month before to other secondary schools where they could organise for the use and practice of laboratories and eventually write exams. This was found to have a psychological effect on the learners. Laboratories were not present, however, mobile labs were used but were very inadequate and with few apparatus.

Learning materials had been found to be inadequate and since the funding has been poor these schools have been left to use few text books they can manage to buy. This had led to high pupil – book ratio with the highest being 10:1. However, there had been an assurance from the government that it would soon start text book distribution. The spaces in the classrooms has been small due to lack of classrooms to equally distribute the surplus number of pupils and so deal away with congestions in classrooms. In some schools there was no electricity not even solar. It becomes difficult for pupils to do the ICT course which had been introduced in the new revised curriculum. The issue of electricity had not only affected the pupils and teachers in teaching ICT but also the school administration who found it very challenging to organise official documents. It further becomes expensive to drive into town centres to do all such works like printing, photocopying and exam preparations. Water and sanitation were found to be better even though water points were not enough. All the schools had toilets. However, only one school had water closed or water bone toilets. It was found impressive that despite water not been enough, at least the school had water within the vicinity. The next chapter will discuss these findings.

CHAPTER 5

DISCUSSION OF THE RESEARCH FINDINGS

5.1 Overview

This chapter discusses the research findings of the study. The main purpose of the study was to determine whether the current state of school infrastructure and the learning environment supports the provision of education in upgraded secondary schools. The research findings will be discussed under the headings drawn from the three specific research objectives that guided the study. These headings used are coming from the objectives. These are: I) the state and adequacy of infrastructure in the selected upgraded secondary schools. II) The state of learning environment in the selected upgraded secondary schools. III) The strategies employed in education provision in the midst of the state of infrastructure and of the learning environment in the selected upgraded secondary schools.

5.2 The state and adequacy of infrastructure in the selected upgraded secondary schools

The first objective was to examine the current state of infrastructure in the selected upgraded secondary schools. The findings revealed a number of issues which will be discussed here. They include the state and adequacy of classrooms, office space, office furniture, desks and teacher accommodation.

It was evident from the findings that all the secondary schools had no enough classrooms. The reasons for this scenario was because all these schools were upgraded without building classrooms beforehand. When these schools were declared secondary schools the primary administration and the secondary administration had to sit down and share the existing structures. This is the reason why all the schools under study revealed the inadequacy of classrooms. Encarta dictionary (2008), defines adequacy as a condition of being sufficient in quality or quantity to meet a need. Following this definition, the condition of being sufficient in quality and quantity to meet at the point of need is what is lacking in these schools. This

has resulted in having a lot of pupils in one class there by compromising with the space inside the classrooms.

What came out strongly in these schools is that despite classrooms being inadequate some schools were in bad state in terms of infrastructure. One school out of the five schools came out the worst in terms of the state and adequacy of infrastructure. Buildings at this school were of old style built by the missionaries many years ago.

Due to lack of classrooms, pupils were seen at some school, learning under a mango tree. This class was conducted when it was either the period for religious education or design and technology. This clearly shows that the classrooms were inadequate. The school management had no option but to allow a class be conducted under a tree. In another school pupils have been learning in a Catholic Church hall where they were packed beyond the recommended class enrolment level of 45 per class. This class had more fifty (50) pupils. The situation highlighted above could partly be attributed to the limited corresponding investment in educational infrastructure to match the ever-increasing population among the school-going age and also lack of government quick intervention in funding construction of new classroom blocks in the upgraded secondary schools in this province and even beyond.

Lack of office space was revealed when all the teachers and head teachers responded that in these schools office spaces were inadequate. Only one school out of the five revealed that each department had an office but again it was quickly noted that it was a usual and common trend for two departments to share one office. It is therefore, concluded that despite having offices, they were not enough. In the rest of the four schools, there were literally no office spaces. It was revealed that in other schools teachers were given one room to use for all departments. This clearly shows that infrastructure was lacking in these school. Teachers as education providers need to be found in an environment where facilities would enable them to plan well. Departmental meetings are cardinal in the life of a secondary school. It is in these departments where schemes of work are planed which consequently result into lesson plans. Equally, they needed to hold meetings and discuss some issues relevant to particular departments. The way the scenario in these schools was, it was difficult to plan as a department. This may result into inefficiency in departmental works. The problems teachers find for not having a staff room in these schools under study have been echoed before in a research conducted by Erick Christensen (2011), in USA. In his paper, he argues that the staffroom is an important professional learning space where beginning teachers interact to fit

in that community and to understand the nature of their professional work. His findings were that schools without a staff room tend to be unorganised and teachers' togetherness is compromised. In his findings, many new teachers interviewed did not know what exactly should be contained in a teaching file and others said information circulation like memos or circulars were very poor. This should be avoided in these upgraded secondary schools. Relevant infrastructure must exist from the very beginning of the life of these schools.

The findings further revealed that two schools had built a shelter (Insaka) as a staff room while the rest reported to have though in some cases these staffrooms were very small. This clearly shows that certain specific infrastructure was lacking. In this epoch, seeing teachers using a thatched shelter as staffroom would not be believable to many people. Even though the idea of shelters appear to be an initiative, these shelters however, were not big enough to accommodate all the teachers. This causes teachers to snick back to their homes on the pretext that there is nowhere to sit. When teacher movements start happening in school, learning gets affected. Pupils are the most affected individuals in a school which lacks infrastructure. Facilities for teachers have to be made available to avoid any excuse of not being found in school at the time they are needed for work.

However, it was revealed that in all these schools, head teachers did not lack offices. This was good. They all had office space. The state or the condition of these offices varied from school to school but they all had offices. The state of head teachers' offices matched with the state of the rest of the infrastructure at the school. One school for instance, had the best office space for the head teacher as compared with other schools. At least having a head teacher's office meant that some issues could be handled in secret and in confinement at that level. Studies by Saval (2014), support the idea of an office for carrying out administrative functions. Saval further, says the primary purpose of an office building is to provide a workplace and working environment primarily for administrative and managerial work.

With regards to availability of desks, all the schools revealed that desks were not a problem. In all the schools desks were available. The government had been distributing desks to schools. It was evident that desks were not just more than enough but they were in good condition as they were given less than three years before. The only problem in relation to desks was that the space where to put them in classes was scarce. According to School Planning and Management / College Planning and Management Magazine, 2012

(SP&M/CP&Ms), the proper selection of school furniture and equipment plays an important role in creating an effective, high performance learning environment. Further, this magazine revealed that learners who sit comfortably in class have a high chance of concentration than those who may be sitting on a stone while in class. This will in turn make such pupils perform well academically.

It was evident from the findings that all the schools under study lacked teacher accommodation. Only two schools reported having teacher houses. However, despite having accommodation these houses were not enough for all teachers. One of the schools that reported to have teacher houses had three (3) houses against 24 teachers and the second one had eight (8) houses against 47 teachers. This is a drop in the ocean. When teachers have no accommodation, adequate education provision is affected. Teacher absenteeism becomes rampant because they have to travel long distances to see their families. When this happens education provision is hampered. Pupils suffer most. These findings agree with those of Carron and Chau (1996), who conducted a study in China, Guinea, India and Mexico. They found that nearly half the teachers interviewed reported being absent at some point during the previous month and required other teachers to compensate for them or leaving students without instruction for the day. The main reason given was lack of housing within the school premises (Carron & Chau, 1996). It was further revealed in the study by Carron & Chau, that in schools where teachers faced transportation and housing obstacles, it became difficult to get to school on time and staying until school closes. This was evident even in the current study. Most teachers reported late at the beginning of the term and the head teachers had no control.

The above findings and the consequent discussion confirm the observation by the Government of the Republic of Zambia (2006) where it was noted that the provision of educational facilities remains limited and unsatisfactory due to the increasing pressure on educational infrastructure, poor maintenance and increase in the school-going population. In this document, it was emphasised that teachers needed accommodation near the school without which education provision would be hampered. Teachers would continue to report late every morning and would continue to report late at the beginning of the term. Even during the term, teachers would give several excuses of not having a staffroom, teachers' toilets and departmental office for planning. Infrastructure availability in secondary schools is therefore cardinal if learning has to take place in these secondary schools.

5.3 The state of learning environment in the selected upgraded secondary schools

The second objective was to examine the current state of the learning environment in the selected upgraded secondary schools. The findings revealed a number of issues which will be discussed here. They include the state of classrooms space, learning and teaching materials, adequacy of the teaching staff, laboratories, pupil – book ratio, availability of water and electricity.

The findings through interviews and observation revealed that apart from inadequate classrooms in all the schools under study, teaching and learning was not easy because of overcrowding of learners in classrooms. The findings established that only one school out of the five had a better scenario though not 100% perfect. The rest of the four schools had overcrowded classrooms. Overcrowding makes the learners feel uncomfortable. Such an environment could not make it possible for learners to develop their academic abilities fully. The findings in these schools were contrary to the findings of Tharp and Gallimore (2004) and the works of the humanist psychologist Abraham Maslow which assert that certain psychological and social facilities influence learning habits and that learners benefit from interaction in a setting. Additionally, learners in these schools were uncomfortable and found it difficult to optimise the development of their academic abilities in class.

With regard to over-enrolment, the standard class size for secondary school, in 2016 was 35 pupils but the findings of this study revealed that the classes ranged from 50 to 60 pupils. This indicates that over-enrolment in these upgraded secondary schools was a common problem. With this scenario, teachers found it difficult to teach properly in classes which were over-enrolled because they could not give individualised attention to pupils as they were too many. Furthermore, an over-enrolled class creates problems of furniture, apparatus and equipment shortages in the laboratory among pupils in the same class and also among other classes which may want to use the same materials at that particular time. Demonstrating experiments to over-enrolled classes also became a challenge as pupil control was difficult. Consequently, teachers resort to theoretical teaching at the expense of practical work especially in science subjects. Teachers may opt to adopt teacher-centred teaching approaches which are suitable for handling large classes as opposed to pupil-centred teaching approaches which allow pupils to actively participate in the learning process.

Furthermore, the findings of the study also established that all schools did not have laboratories. Only one school reported to have a building called 'laboratory' but without adequate apparatus. However, they all had mobile laboratories which had been helping a bit in science subjects. It was further observed that even if these schools had mobile laboratories, they were extremely inadequate. One mobile laboratory could not match the entire school population. This is 100% inadequacy of laboratories. The percentage that is been reported in this study is the same percentages reported by Garritz and Talanquer (1999) in a World Bank study in Mexico where it was found that developing countries lack science facilities. This implies that though lack of laboratories in upgraded secondary schools was a global occurrence, the problem may be worse in countries like Zambia. The standard number of science laboratories which every secondary school must have is four (4) (GRZ, 2006). This translates into a laboratory space of 4 x 102m^2. A laboratory serves as a workroom specially made for teaching and learning science. Baird (1990) observed that laboratory learning environment warrants a radical shift from teacher-directed learning to purposeful inquiry that is more student-directed. Hofstein and Lunetta (2003) also pointed out that the laboratory offers unique opportunity for the students to relate science concepts with theories discussed in the classroom and in text books with observations of phenomena and systems. Laboratory work is also an important medium for enhancing attitudes, stimulating interest and enjoyment, and motivating students to learn science (Hofstein and Lunetta, 2003).

It is therefore, a sad state of affairs to discover that upgraded secondary schools operated without laboratories. Plans to improve the quality of science laboratories were made 20 years ago (in the 1996 document; Educating our future) because MoE (1992) pointed out that the priority in resource allocation in secondary schools should be given to the rehabilitation of science laboratories and specialised rooms. However, the findings of this study indicated that no such measures had been taken, may be it was because these were recently upgraded secondary schools. In other words, the Zambian government's recognition of science education as an important academic discipline which could contribute to economic development had not been matched with adequate resource allocation to schools. One measure that can be taken to mitigate this challenge is what schools under study are doing at the moment. They are building. However, though some schools have commenced constructing laboratories using school grants and PTA funds, the government should move in

and build science laboratories in all the upgraded secondary schools because these schools are extremely in need of this facility.

With reference to the availability and adequacy of leaning materials in terms of pupil text books, the study revealed that these materials were in short supply as was indicated by the high pupil-text book ratios. All the schools did not have enough learning materials. The coming in of the new revised curriculum has made it even worse because schools have to prepare pupils for end of year exams using the prescribed textbooks in agreement with the current syllabi. Going by the schools, the pupil – book ratio ranged from 7: 1 to 10:1. These ratios were according to subjects. Looking at these ratios it is clear that learning is extremely difficult for pupils especially slow learners who needed extra time and personal effort to sit down and read text books.

The government recognises that poor investment in education had led to high pupil-text book ratio of 7: 1 at secondary school level and so it aspires to improve the pupil-text book ratio to 1:1 (GRZ, 2006). However, the ratios reported by the Government of the Republic of Zambia (2006) were far much lower than the ones reported in this research and they affect all subjects indicating that the provision of education in the upgraded secondary schools was not getting any better. In fact, the ratios revealed in this study were mere averages. They may be actually higher in some other schools not included in the study sample, creating a situation which was not conducive for the teaching and learning. As Schramn (1977) points out, text books are one basic channel for communicating ideas and concepts in the classroom for the purpose of bringing about effective teaching and learning. If they are not available or adequate, the only source of information for the pupils will be the teacher and this will deprive them of the opportunity to study what they learn in class on their own. Consequently, this negatively affects the way they understand the concepts they learn. Abimbade (1997) added that text books help students to discover ideas and consolidate these ideas on the concepts they learn in class. However, the current standard pupil-text book ratio of 1:1, in Zambian secondary schools, difficult to attain because of the low economic performance of the country. Therefore, the Ministry of Education should just work towards achieving a pupil-text book ratio of 3:1 as suggested in the Vision 2030 document.

The availability of teaching and learning materials, increase learner participation in the learning process. This consequently increase their motivation and minimises the possibility of

failure. Adebanjo (2007) supported this view when he observed that instructional materials in the teaching and learning process makes students to learn more and retain better what they have been taught and that it also promotes and sustains students' interest..

In terms of availability of teachers, the study revealed that there was inadequacy in the number of teachers in these upgraded secondary schools. All the schools revealed the same inadequacy. Part of the reasons for this is that these schools were in outlining areas where accommodation was a challenge. As revealed by the one of the District Education Secretaries, a point which was shared even by the other DEBS are in the following words;

> Teachers are not enough. All teachers teaching in these upgraded schools are taken from the already existing secondary schools because these upgraded secondary schools are not on government establishment yet and we don't know when. The teacher – pupil ratio varies depending on the school. However, the most common is 1:50 in these schools.

With these revelations, it is evident that teachers were not enough to teach all the prescribed subjects in the curriculum. It was further established that the scarcest teachers were science, mathematics, computer and Design and Technology. There seemed to be more teachers for social sciences and languages in the Ministry of Education as opposed to those offering practical subjects. MoE should be pro-active in ensuring that enough teachers were provided and sent to schools in order for schools to provide quality education to pupils. Learning happens with the availability of teachers. This scenario confirms the UNESCO report of 2011 which established that on average, more than 60 percent of Sub-Saharan countries had more than 40 pupils per teacher.

The study has further revealed that in all the schools under study, the learning environment has water for the learners. At least there is no school without water for learners. Despite water not being enough what is consoling is that there is water. Water is very important for the health of a learner because it contributes to the performance of the learners. Benton (2009), stated that, "providing students with access to safe, free drinking water throughout the school day is one strategy schools use to create an environment that supports health and learning." Standards and regulations assure that tap water is clean and safe. In cases where tap water may not be safe schools should provide drinking water to students in other ways, including digging bole holes just to ensure safe drinking water is available for students.

The findings from interviews and observation revealed that two (2) schools out the five (4) schools havd electricity in plenty and without problems. One (1) school had electricity in only one classroom block while the other school has no electricity, not even solar energy. These findings therefore, imply that there is a challenge in education provision in these schools without power. Pupils may not do prep in the evening and the school administration cannot buy electric gadgets like printers and photocopiers to do administrative work. In the end it would be expensive for them to travel to towns to do paper work.

As evidenced from the District Education Board Secretaries, the upgraded schools had no exam centre numbers. Three schools out of the five had no exam numbers. This had resulted into making arrangement with the already established secondary schools for exams. Pupils had to travel and camp somewhere in rented houses during exam periods. This arrangement however, had a negative psychological effect on the learners. An educational psychologist BF. Skinner in his theory of 'Operant Conditioning' states that a learner is likely to retain what is in memory quicker if he /she is found in the same place where he / she learnt from (Saul McLeod, 2007). There is psychological unpreparedness in pupils siting for exams in these schools. They fact that they had to look for accommodation and food whenever they camp, the whole arrangement affects their performance in an exam session. The other threat is security and pregnancies in case of girls. Who takes care of these pupils during exam period? There is no doubt therefore, that the learning environment is not very favourable for learners in these upgraded secondary schools.

The above discussion on the state of learning environment, is in agreement with the government's observation. The government indicated that "improvement of quality in secondary schools, and improvements in student performance, depend heavily on there being adequate classroom space, enough teachers, sufficient learning materials including science equipment, adequate number of teaching staff, and other teaching aids in secondary schools" (MoE, 1992:16).

5.4 Strategies schools have employed in ensuring education provision in the midst of the state of infrastructure and the learning environment

With regard to the strategies schools have employed to ensure education provision is not disturbed, the study established that there was a provincial directive given to all District Education Board Secretaries and down to school heads to engage the community in the provision of education. This directive came in full force upon realising that almost all the

upgraded secondary schools lacked infrastructure. It has been observed that there seems to be a gap between educationists and the parents in education provision. With this directive, parents were sensitised to come on board and participate by ensuring that infrastructure is developed for the provision of education. However, this sensitisation does not go beyond the usual contributions parents have been aware of even in the past. Even before this sensitisation, parents usually contributed in terms of moulding and baking bricks, sand collection and stone crushing.

Parents were wondering as to why they were being sensitised when other secondary schools the government just built without involving them. Parents had no problem with these usual works because they have been doing them. What they found strange was to start sensitising them to put more effort when the government's effort is not been seen in the first place. The structures are those mostly used when these schools were basic schools. Creation of secondary schools should have gone alongside building of new structures. In secondary school E to be specific, parents literary refused to cooperate with the school administration on community participation because they had seen that the government was building a secondary school in the area. This shows that community partnerships in this regard could only work where parents themselves saw the need and were overwhelmed. Where parents thought it was the duty of the government to provide conducive environment for learners, parents would not even lift a finger to do anything.

Apart from sensitizing parents to come on board, the other directive from the provincial office was towards teachers. Teachers were being advised to use local resources available to make teaching and learning materials instead of sitting and waiting for the government to supply these materials. In other words teachers were being reminded to be innovative or resourceful by asking their fellow teachers elsewhere for some materials and borrowing computers for ICT classes or photocopying text books. However, this is only possible in areas which has a nearby school with such materials. This may not be possible as most established schools in the province may have similar challenges.

It was evident from the findings that some schools had started receiving some funding for building the whole school infrastructure. This is a good move by government. It is indeed its responsibility to do this. However, out of the five schools sampled for this study only one school received a contractor on site. It was evident again that the construction of this very school has lasted for over four years without completion. The question is when will education

be provided in this new infrastructure? With only one school receiving funding out of the sampled schools its means that the government had a lot to do in terms of creating a good environment for learners in these upgraded schools. The statement made on 27th February, 2015, by the Ministry of Education Spokesperson Hillary Chipango, "we have so far upgraded a total of 220 basic schools into secondary schools and all the upgraded schools were so far performing very well" can only make sense and give meaning if the upgrading of these secondary schools went alongside with infrastructure development. With the current situation where funding is not consistent for the general running of these schools and non-availability of specific funds for infrastructure development in terms of classrooms laboratories and offices, the education provision in these upgraded secondary schools would not result in learning taking place. As defined by Kendra Cerry (2015), learning is often a relatively lasting change in behaviour as a result of the gained knowledge or skill by studying, being taught or as a result of experience. If this upgrading continues without going along with building of classrooms and making a conducive environment for learners, the country will be sending grade twelve graduates in society who are not learned. Learning according to the above definition implies that someone is able to use the skills, knowledge or behaviour to earn a living and can fit in any society.

From the findings, it was evident that all the five schools had no laboratories. However, all the five were building laboratories. This is a good and positive sign that education would soon start to be provided in a good learning environment. It was further evident that all these schools were not using money from the government but from the locally mobilised resources with the help of the community. This shows how passionate school administrators have become after realising that these schools were upgraded without adequate infrastructure. The administration in these schools seem to understand well what Monk and Osborne (2000:68) noted that "practical work is one of the hallmarks of science, and many educators argue that a science education without practical work fails to reflect the true nature of scientific activity". This fact is supported by Oyeniran (2003) who points out that pupils learn best if they are given the opportunity to see and make observation of what they are taught.

It was evident from the findings that parents were being asked to contribute an extra amount towards classroom construction. This contribution was evidently referred to in other schools as project fund. For parents to contribute it means that they have liked what is happening. As evidenced from one of the focus group discussions with the parents in one of the schools, that

parents were happy because the amount of money they used to give their children when going to boarding schools was too much for them. These day secondary schools were charging them half of what they used to spend in one term for their children. With this motivation, definitely parents could not fail to support any payment proposed by the PTA in collaboration with the school management. This confirms the studies by Siyumbwa (2010), where it was revealed that there was a positive effect on the provision of educational support by the community as long as the community was sensitised and they love the project. Parents had the feelings of educational inadequacy, economic issues and possess life stresses that hinder their participation. They must still be recognised as primary educators in a child's life. Educators therefore, have an essential duty to determine the reasons for barriers to non-participation and to offer assistance to those parents so that they can become integral partners in their children's education. For even the previous non-involved parents, educators must view such parents as a vital resource to be taped in assisting students to master skills needed for advancement (Indiana Department of education, 2011)

It was further evident from the findings that School C had asked for a church hall from the Catholic Church. This idea reveals creativity but it shows that the school administration is stranded with classrooms. Such an arrangement would lead to piling of many pupils in one hall and in such cases teaching becomes difficult. This is evidenced from the findings which revealed that the hall accommodated a lot of grade ten (10) pupils. This class had two classes in this one big class. This is a typical example of congestion. This confirms a UNICEF/UNESCO survey conducted in 1995 in 14 least developed countries which found that class sizes were mostly big. For instance in Madagascar the class size ranged from 30 students to 73 and 30 to 118 in Equatorial Guinea (UNESCO 1995). It was found that there was a relationship between class sizes and academic achievement in the sense that most teachers could not manage the Teacher –pupil ratio. Overcrowding of pupils in one class leads to heavy teacher workloads which in turn creates stressful working conditions for teachers and leads to higher teacher absenteeism (Myburgh, 2011). If this situation is not changed education provision by teachers will not be effective.

5.5 Summary

The chapter has discussed the findings of the study. The discussion of the findings was informed by the conceptual framework while keeping in mind the research questions that

drove the study. As was conceptualised in the conceptual frame work, adequate infrastructure and the learning environment results in learning taking place. This study shows that these variables are not adequate. There have been inadequacies. The infrastructure is inadequate forcing some schools to hold class sessions under a tree. In the learning environment the discussion has highlighted several inadequacies including teacher shortages, inadequate learning materials and limited classroom space among many. What is however positive about it is that, schools are not sitting idle. They are doing something even though not enough to create the scenario conceptualised by the researcher. The proceeding chapter draws conclusion and makes recommendations based on the findings of the study.

CHAPTER 6

CONCLUSION AND RECOMMENADTIONS

6.1 Overview

Chapter five discussed the findings of the research findings of the study. The study aimed at examining the current state of infrastructure and the learning environment in which education is being provided in the upgraded secondary schools and whether the infrastructure and the learning environment is adequate enough to support education provision. This chapter, therefore, presents the conclusions and recommendations of the study based on the research findings and the discussion.

6.2 Conclusion

In line with the objectives of the study, the following conclusions were made:

i. With regard to the state and adequacy of infrastructure, the findings of the study revealed that the state of classrooms and other learning facilities were in bad state. As evidenced from the findings, infrastructure in these upgraded schools was not satisfactory. The study further revealed that infrastructure was not just bad but it was also inadequate. The reason is simple. Most of these buildings were used when these schools were called basic schools and others as primary schools. The kind of classrooms, teachers' houses and other physical infrastructure which were used by primary pupils were now used by the secondary school pupils who needed laboratories, departmental offices, spacious classrooms and other specialised facilities. This observation points to the fact that if upgraded secondary schools were not supplied with adequate infrastructure, quality learning would not be taking place in these schools. Learning is not just an official meeting of a teacher and his / her pupils in a confined building called a classroom. To the contrary, it is the proper acquisition of skills and knowledge on the subject matter and be able to use what is learnt in the daily life where ever one goes. It was revealed that some of the infrastructures were below acceptable standards.

With regard to funding, the Ministry of Education had not done a lot to ensure that the upgrading of the basic schools or primary schools to secondary school go along with funding these particular schools in terms of infrastructure development. The government seemed to be happy and proud on the numbers of upgraded basic schools that had been turned into secondary schools without taking into consideration the state of these basic schools they were upgrading. As announced on 27th February, 2015, by the Ministry of education Spokesperson Hillary Chipango, "we have so far upgraded a total of 220 basic schools into secondary schools and all the upgraded schools were so far performing very well. We are happy with the performance of secondary schools that were upgraded from basic schools countrywide." What the spokesperson mean by saying, 'we are happy with the performance of secondary schools that were upgraded from basic schools country wide' is what is not known. The performance of these schools can only be seen in the end of year exam results in terms of pass rate which according to this study, pass rare for grade nines so far has been around 50% except one school which had been recording above 50% because it was upgraded about five years ago and it had managed to organise itself, not that the government has built any new structure.

There is a greater task ahead of the Government, school administrators, teachers and other stakeholders in meeting the challenges of unattractive and poor condition of school buildings. These challenges range from; crowded classrooms, non-availability of recreational facilities and aesthetic surroundings which have perhaps contributed to poor quality teaching-learning process and the non-attainment of quality education by students in secondary schools.

Certainly, Government funding was inadequate to cater for infrastructural developmental projects such as classrooms, teacher houses and other facilities that go along with a secondary school. Out of the five schools that this study covered, only one has received funding for school construction. The rest were still using old buildings which were previously meant for basic schools or primary schools and yet these buildings were even by then in bad state and were inadequate. The government funding was very much needed in these upgraded secondary schools

so as to enable them construct even a few classroom blocks and laboratories which are very critical in education delivery. The idea of upgrading was good but it needed to match with availability of resources for infrastructure development as indicated by all DEBS in the sampled districts.

The projects that existed in the schools such as construction of classrooms, laboratories and toilets were either sponsored by CDF, PTA or NGOS. This shows that the Government Contribution towards infrastructure in the schools was inadequate. More infrastructural facilities needed to be built and not even to be renovated because some of them were in bad state to the extent that renovating them would be tantamount to wasting of resources.

Apart from the inadequacy of educational facilities for education recipients like classrooms and laboratories, it was discovered that even education providers also had not been spared in this situation. Teachers had no houses. Out of the sampled schools only those that got houses from the time of sharing classrooms with the primary section had them. Only two schools had indicated that they were given some houses as can be seen on the chart in chapter four. This shows that education providers have had challenges in staying at these schools with their families. It was discovered that most teachers in these schools had their families in towns and others in the nearby district and had to see their families in the middle of the term making them absent from teaching. The reason being that there were good houses and better schools for their children than bringing them to these schools.

ii. Coming to the state of learning environment, the it is concluded that some key teaching and learning materials were not available in the upgraded secondary schools of Muchinga Province. Even those which were available were not adequate. These materials included teacher's hand book as well as learner's text books. This was shown by the pupil-book ratios. For instance the pupil- ratio for the highest pupil-ratio was 10:1.

Apart from inadequacy of teaching and learning materials, teachers as education providers were as well not enough. It was discovered that these upgraded secondary schools had no establishment yet because they are not gazetted. This

means that DEBS would only get teachers from other established schools to teach in these new schools. The other reason is that when teachers were deployed using other schools' establishment, they did not stay due to lack of accommodation. Many teachers ask for transfers to go elsewhere where there are good facilities especially accommodation. All these reasons, including the national crisis of science and mathematics teachers, have contributed to lack of enough teachers in these upgraded secondary schools. It was clear from the findings that the most affected departments were mathematics and science.

Furthermore, all schools had no science laboratories and were instead using classrooms for lessons and other science activities. However, mobile labs were found in these schools but they were very inadequate looking at the number of enrolment. It was found that only one mobile lab existed per school.

Certainly looking at enrolment levels, it is concluded that over-enrolment of pupils in all the schools was a common phenomenon. This was not because of wanting more pupils get enrolled but because there are few classroom blocks to take the surplus of pupils. In the end they were grouped together in one class. It is clear with no doubt that teaching in this manner must be very difficult for teachers who could not give in their full contribution because the class is too big.

All the schools took seriously the issue of water and sanitation. All the schools had water and toilets. It is therefore, not shocking to discover functional public sanitary facilities in all the five schools. There was no use of the 'bush' to serve the toilet purpose in these institutions. It was also discovered that four schools out of the five schools did not provide water closets for the students' toilets but instead provide pit latrines and other unconventional options. This is not very bad because at least sanitation was being taken care of. However, it was discovered that toilets were not enough.

On the availability of electricity which is a vital component in the learning environment, some schools were not yet connected to the supply at all. Pupils in some of these schools had not been using electricity to enable them do prep during their private times. Teachers as well had been affected in education provision

when it requires the use of electricity to teach and prepare for lessons. This clearly shows that even science experiments are not done well in these schools due to lack of electricity. Pupils could therefore be unable to do prep at night.

On the examination arrangement, the study discovered that these upgraded secondary schools had no centre numbers for exams. It is therefore concluded that there was some psychological torture on the pupils in such an arrangement. This arrangement was not beneficial to the learners and can psychologically affect their exam outcome. With this kind of arrangement, is it clear that the number of pupils doing well in their exams could not be impressive.

iii. On the strategies that schools had employed in providing education in the midst of the state of infrastructure and learning environment in upgraded schools, it can be concluded that the upgraded secondary schools were not just sitting idle. They were doing something to ensure that education provision did not completely become difficult and that learners at least access education. From the findings, the biggest concern by the school administration was the issue of classrooms and laboratories. Schools had embarked on classroom and laboratory construction though with limited resources. The concern seems not to be so much on staff room, departmental offices or teacher's houses but on classrooms and laboratories. This shows how passionate school administrators and whole teaching staff were on the importance of ensuring that pupils learn. Their concern is not much on their comfortability in terms of teacher houses and the staff room.

It is further concluded that even if the schools have embarked on construction of classrooms and laboratories they did not have enough resources. The resources being used were mostly the locally mobilised resources particularly school fees. The possibility of building substandard structures is very high. Structures that were built with limited resources were mostly not strong which is a danger.

It is concluded that some communities in these upgraded secondary schools were happy about the idea of bringing secondary schools on their door steps. This has proved cheap on their side as opposed to sending their children to boarding secondary schools where there were other costs besides school fees. The response

was overwhelming in most schools except in one school where parents were reluctant because the government had been constructing a school.

The other conclusion is that the government seems not to be running together with these schools. After the upgrading, the government was supposed to come in, in terms of infrastructure development. As was seen in the findings, only one school had received government funding and the contractor had been on site working. The government seemed to be standing aloof and expect education to be smooth. It is also very clear that teachers in these upgraded secondary schools had been working under very difficult conditions which other teachers in already established secondary schools were not experiencing. The strategies put in place are only beneficial to the education recipients and not to education providers because teachers have no accommodation, staffroom or departmental offices. Therefore, it is imperative that the government starts to invest in educational infrastructure and in the issues to do with the learning environment.

6.2 Recommendation

In view of the results of the study and the conclusions drawn, the following Recommendations are made:

i. The government should ensure that before upgrading these basic or primary schools into secondary school, funding is made available to avoid these schools providing education infrastructures that are bad and inadequate.
ii. The government should quickly fund these upgraded secondary schools so that infrastructure is improved and the country can be guaranteed of learning taking place.
iii. The government should start allocating funds to the upgraded secondary schools by way of increasing per pupil capita so that more of the funds can be spent on the procurement of teaching and learning materials so as to improve the learning environment.
iv. The Ministry of Education should emphasize and re-echo the recommendation of the Educating Our Future of 1996 document on community participation. In this situation where the government is failing to promptly meet the need for better infrastructure and learning environment in the upgraded secondary schools,

community participation might be an immediate intervention in seeing to it that education is provided in good state of infrastructure.

v. The corporate world can also be called upon to partner with the government, under private public partnership (PPP), in sharing the necessary heavy expenditures through such initiatives as financing the construction of science laboratories in these upgraded secondary schools as well as donation of teaching and learning materials for science and other subjects. This is because the industries reap by far the greatest benefits from science and technology education and training. Schrader (1976: 26) observed that "nowadays, progress in technology is almost entirely based on advances in science". Therefore, there is a very great need to improve science teaching at all levels of education in underdeveloped countries like Zambia.

Summary

- The government upgraded schools without corresponding infrastructure development. The old infrastructure is bad and inadequate.
- The provision of education in these schools is a big challenge because of so many inadequacies such as lack of teachers, teaching and learning materials, crowding classes, lack of office space, lack of teachers' accommodation as a motivating factor, and other necessary amenities.
- Education provision in the upgraded schools will continue to be difficult if no corresponding infrastructure is put in place which, subsequently will affect the learning process.
- Government's objective of increasing access for a rural pupil has been achieved, but without its intervention, the quality of education will be compromised.

As recommendation, the government should:

- Ensure that before upgrading any school there is corresponding infrastructure so as to reduce crowding in classes and thereby enhance the learning process.
- Embark on construction of teachers' houses in schools as a way of motivating them in their teaching profession.
- Increase funding to the upgraded schools so as to enable them purchase the necessary teaching and learning materials.

- Deploy teachers of mathematics, science and ICT subjects to the upgraded schools as they were not adequate enough to handle the ever increasing numbers of pupils.
- Through its appropriate organs emphasise to the school administrators and parents the need for partnership in the education of their children.

Suggestions for further research

The following were identified as areas of possible future research:

i. Investigation as to why there are few teachers in Mathematics and in science subjects in the upgraded secondary schools.

ii. An investigation into how grants are being utilised in these upgraded secondary schools.

4.0 REFRENCES

Abimbade, A. (1997). ***Principles and Practice of Educational technology***. Lagos: International Publishers.

Adebanjo, A.A, (2007). ***Effect of instructional media on the learning of computer in JSS***. African Journal of Educational Research. Ibadan. Department of Teacher Education. 11.1(2): 71-75.

Akinsolu, (2010). ***Education and International Development: An Introduction.*** London, Bloomsbury Publishing.

Ayogu, Z.O. (2007). ***Challenges of Science Technology and Mathematic (STM).Education Policy Implementation in Nigeria schools***. Journal for Science Teacher Today vol 4, no 1.

Baird, J.R. (1990). ***Metacognition, purposeful enquiry and conceptual change. The student Laboratory and the science curriculum*.** London: Routledge.

Barbour, Rosalin S. (2008). ***Introducing Qualitative Research***. Los Angeles: SAGE Publication.

Barret S., Banerji, R. and Bano, M, 2015. ***Second Chance Programmes in South Asia.*** Background paper for *EFA Global Monitoring Report 2015*.

Baxter, P. and Jack, S. (2008***). Qualitative Case Study Methodology: study Design and Implementation for Novice Researchers. The qualitative report, 13(4), 544-559.*** Retrieved from http://nsuworks.nova.edu/tqr/vol13/iss4/2

Benavot, A. (2004), **"*Comparative Analysis of Secondary Education Curricula" With the Collaboration of Massimo Amadio***. Washington, D.C: World Bank.

Benton, (2009). ***The Costs and Financing of Education****: Trends and Policy Implications*, Education in Developing Asia Volume 3, Asian Development Bank, Manila.

Benton, D and Burges, N. ***The effect of the consumption of water on the memory and attention of children***. Appetite Journal. 53:143-146.

Bergmann, H. (1996). ***Quality of education and the demand for education: Evidence from Developing countries.*** Journal for International Review of Education, 42(6): 581-604.

Brander, (2012). ***Drinking water in schools***. Retrieved on 24.09.2015 from http://www.wateriscoolinschool.org.uk

Bless, C. & Achola, P. (1988). ***Fundamentals of Social Research Methods***. Lusaka: Government Printing Department

Bryman, Alan (2004). ***Social Research Methods***. New York: Oxford University Press

_____ (2008). ***Social Research Methods*** (3rd Ed.). Oxford: OUP.

Carron and Chau, (1996). ***Achieving Universal Primary Education****:* A Chance for Every Child. Washington, DC, World Bank.

Chanda, (2013). ***Teachers' and Pupils' Perceptions of Factors that motivate Learners in a Classroom***. University of Zambia.

Chipango, H (2015. Government upgrades 220 basic schools into secondary. ***Lusaka times*** 27th February, 2015.

Christen, M.W. (2012***). What knowledge exist about water and academic achievements in School.*** *International Journal of Information and Education Technology, Vol. 2, No. 6, December.*

Cohen, L. (2007). (5thed.). **Research Methods in Education**. London: Routledge.

Crampton, J. (2003)***.Saving America's School Infrastructure***. Greenwich, Conn: Information Age Publications Corporation.

Crampton. F .E. and David. C. Thompson & Cragwood. R. (2008). ***Money and Schools.*** Greenwich.4th edition. Larchmont New York: Eye on Education.

Creswell, J.W. (2003). ***Research Design: Qualitative, Quantitative, & Mixed Methods Approaches*** (2nd ed). Thousand Oaks, CA: Sage Publications, Inc.

_____ (2009). ***Research design: Qualitative, Quantitative, & Mixed Methods Approaches*** (3rd ed). Thousand Oaks, CA: Sage.

DFID. (2010). ***Tools for Development***. Interagency Network for Education in Emergencies (INEE) website. <www. ineesite.org>.

Earthman, G. I. (2002). ***School facility conditions and student academic achievement***. Los Angeles: University of California's Institute for Democracy, Education and Access.

Ellis. (2005). ***Place and Identity of children in classroom and schools***. Journal of studies in

Caribbean Association of curriculum studies, vol. 3, no, 2

Fisher. (2000). ***Building better outcomes .The impact of student out comes and behaviour schooling issues digests*** .Canberra: Department training and youth affairs.

Garritz and Talanguer (1999). ***'Schools Count. World Bank Project Designs and the Quality of Primary Education in Sub- Saharan Africa'***, World Bank Technical Paper No. 303, Africa Technical Department Series, World Bank, Washington D.C.

Gibberd. (2007). ***"Factors which influence the well-being of pupils in Flemish secondary schools"***, *Educational Studies*, Vol. 30, Issue 2.

GRZ, (1996). ***Investing in Our People: Integrated Education Sector Investment Programme (ESIP) Policy Frame work***. Lusaka, Ministry of Education. Haverinen-S., Moschandreas, D., Shaughnessy, R., (2011), ***'Association between Sub – Standard Classroom Ventilation Rates and Students', Academic Achievement***. Indoor Air Incl.

Haverinen-Shaughnessy, U., Moschandreas, D., Shaughnessy, R., (2011), ***'Association between Sub-Standard Classroom Ventilation Rates and Students', Academic Achievement***. Indoor Air, 21(2), pp. 121–131.

Heneveld, W. and Helen C. (1996). ***Schools Count: World Bank Project Designs and the Quality of Primary Education in Sub-Saharan Africa.*** Washington, DC: The World Bank.

Hofstein, A. and Lunetta, V.N. (2003). ***The laboratory in science education: Foundations for the twenty-first century.*** Pennsylvania: Wiley Periodicals.

Indiana Department of Education (2001) ***School –parent community partnership resource book'*** accessed from *http://www.doe.in.gov/publication/pdf-other/SFCP.narrative.pdf on 02/04/2016*

Jago, E, and Tanner, K., (1999), ***'Influence of the School Facility on Student Achievement'***, University of Georgia.

Jeremy, G. **(2007).** ***South Africa's School Infrastructure Performance Indicator System.*** South Africa**:** *Council for Scientific and Industrial Research.*

Kasonde-Ngandu, S, (2013). ***Writing a Research Proposal in Educational Research.*** Lusaka: University Of Zambia

Kendra Cerry, (2015). '***Public and Private Schools and Public- Private-Partnerships in Education in India', paper presented to the Conference on 'Mobilizing the Private Sector for Public Education'***, Harvard University, 5–6 October.

Kerlinger, M., C. (2004), ***Global Education Digest 2004. Comparing Education statistics across the world*.** Montreal, Canada: UNESCO Institute for statistics.

Kombo, D.K. and Tromp, D.L.A. (2006). ***Proposal and Thesis Writing: an Introduction.*** Nairobi: Paulines Publishers Africa.

Kothan, C.R. (2004). ***"Research Methodology: An Introduction" in Research Methods and Techniques***. New Delhi: New Age international Limited Publishers.

Lawrence, T. (2008). ***'Selecting Outdoor CO2 Criteria for Outdoor Air Monitoring'***, ASHRAE Journal, December 2008, American Society of Heating, Refrigerating and Air-Conditioning Engineers, Inc.

Likomwa. L, (2013). ***Malawi: Poor Infrastructure Hindering Public School Students From Accessing University Education***. Retrieved on 08/09/2015 from http: //www.*allafrica.com/stories/201306120277.html*

Makwaya, C. M (2005). ***'An Assessment of Community Participation in Teacher Education through Education Boards,***' M.Ed dissertation, University of Zambia.

Mason, M. (2013). ***'Educational development agendas post-2015, and a continuing focus on Africa.'*** International Journal for Educational Development 33.

Montagnes, I. (2000). ***Thematic study on teaching/learning environment, text books and learning materials 1990 – a global survey***, [Online], UNESCO department for international development, Available from: (http//www.unesco.org/images) [Accessed on 2nd June, 2011].

Monk, M. and Osborne, J. (2000). ***Good Practice is Science Teaching: What research has to say***. Buckingham: Open University Press.

Mudenda, V. (2008). ***Zambian Grade 12 pupils' Experiences of Biology Practical work during School Certificate Examinations: The case of Kabwe High School***. M.Ed dissertation, University of Zambia.

Mugenda and Mugenda, A. (1999). ***Research Methods: Quantitative and Qualitative Approaches***. Nairobi; African Centre for Technology Studies Press.

Microsoft Corporation (2008). ***Encarta Dictionaries***. Washington D.C: Microsoft.

Mikako, N. (2007). ***Problems behind Education for All (EFA): The case of Sierra Leone.*** Retrieved on 19th October 2015, from *http://www.educatejournal.org/*

Miske and Dawd, (1998). ***Perceptions of stakeholders on causes of poor performance in grade 12 in a province in South Africa***. South Africa journal of education**,** 22(2): 113-118.

Ministry of Education 1996. ***Educating Our Future***. Lusaka, Ministry of Education.

Ministry of Education, (1966). ***Education Act***. Lusaka: Government Printers.

Ministry of Education, (2005). ***Educating the Nation***. Lusaka: Government Printers

Mwanakatwe, K.M (2013). ***The growth of education since independence***. Lusaka Zambia: Oxford university press.

Mwakaya (2005). ***Effects of community participation in education on learning and teaching in selected high schools in Mongu district.*** University of Zambia.

Myburgh, J. *(*2011). ***Crowded Mozambique classrooms drive kids to night school.*** Retrieved on 26/10/15 from: *http://en.tengrinews.kz/science/Crowded-Mozambique-classrooms-drive-kids-to-night-school--1745/*

National Parliament. (2015). ***Second Report of the Committee on Education, Science and Technology for the Fourth Session of the Tenth National Assembly Appointed on 24 September 2009.***

Nawa (2010). Education for All - Time to Build Infrastructure, ***Times of Zambia***, February 5th, 2011.

Njapau (2011). ***The Effects of Learning Environment on the Development of Pupils' reading skills in English,*** University of Zambia.

Nzala, M.A (2006). ***'Parent Involvement in the Education of intellectually Challenged Children: A case of special selected Units in Lusaka District,'*** M.Ed. dissertation, University of Zambia

Olatoun, A. A (2010).***Teachers and Students' Academic Performance in Nigerian Secondary Schools: Implications for Planning***. Florida Journal of Educational Administration & Policy Summer 2010 Volume 3, Issue 2.

Orodho, J. A. (2004). ***Elements of Education social science research methods*** (First Edition) Nairobi: Masola Publishers

Oyeniran, J.O. (2003). ***Teaching methods: An introduction to principles and methods of teaching***. Lagos: SIBIS Ventures.

Patton, M.Q. (1990). ***Qualitative Evaluation and Research Methods*** (2nd ed). Newbury Park: Sage Publication Inc.

Punch, F. K. (2006). ***Developing Effective Research Proposals*.** Second Edition. New Delhi: SAGE Publications India Pvt Ltd.

_____ (2009). ***Introduction to Research Methods in Education***. London: SAGE Publications Ltd.

Phiri, J (2011). Government re-introduces the grade 1 to 7 primary and grade 8 to 12 secondary system. ***Zambia Daily Mail***, October 20th, 2011.

Raghavan, S. (2015). ***The poor state of school infrastructure, India*.** Retrieved on 24/08/2015 from *http://www.livemint.com/Politics/h7WkzI77bMtmN9FLDvyo0M/The-poor-state-of-school-infrastructure.html*

Randall. S. V. (2002) ***Emerging research in establishing the critical role of physical infrastructure, The allocation and impact of social funds spending on schools infrastructure.*** Oxford University Press London.

Saul McLeod (2007). '***On a New Slate: Quality education, not just Education for all, is what is required in India.***' *India Today*, 21 August, pp. 76–80.

Saval, N (2014). ***A secret History of work place***. Double day, USA.

Sanders, J.R. (1992). ***Evaluating School programs- An Educator's guide***. London: Sage.

Seppänen, O. et al (2006). ***Ventilation and performance in office work, Indoor Air***, 16(1), pp. 28-36.

Schneider, M, (2002), ***Do School Facilities Affect Academic Outcomes? National Clearinghouse for Educational Facilities***, National Institute of Building Science. New York.

Schrader, R. (1976). ***Science and Policy: On the Interaction of Science and /Political***

Affairs. London: Pergamon Press.

Schramn, W. (1977). ***Big Media, Little Media Tools and Techniques for Instructions***. London: Sage Public.

Siyumbwa, L. W (2000). ***"The Effect of Community Participation in Education on the Learning and teaching Environment in selected High Schools of Mongu District,"*** M.Ed. Dissertation, University of Zambia.

Spaull, N. (2011). ***South Africa's education crisis: The quality of education in South Africa 1994-2011.*** International Journal for Educational Development 33 (2013).

Spaull, N. (2013). ***'Poverty and privilege: Primary school inequality in South Africa'*** International Journal for Educational Development 33 (2013).

Snelson, P.D. (1990). ***Educational Development in Northern Rhodesia 1883-1945- 2nd Edition.*** Lusaka: Kenneth Kaunda Foundation.

Swift-Morgan, J. (2006***). "What Community Participation in Schooling Means: Insights from Southern Ethiopia,"*** Journal for *Harvard Educational Review*. Vol. 76, No. 3, pp. 339-368).

Tarawallie, I. (2013). ***Sierra Leone: Lack of Learning Materials Affects Right to Education.*** Retrieved on *13.10.2015 from www.allafrica.com/stories/201308291346.html*

Tharp and Gallimore (2004). ***Education Denied: Costs and Remedies***, Zed Books, London.

Tsegah, (2013) ***GNA-Preliminary report Centre for Democratic Development (CDD),*** Ghana.
Retrieved on 09/06/2015 from *http://www.Ghananewsagency.org/.../cdd-validates-**report**-on-tracking-public-basic-s*

UNESCO-IICBA, (2011) ***United Nations Educational, Scientific and Cultural Organization.***
Improving the conditions of teachers and teaching in rural schools across Africa. Addis Ababa.

UNESCO, (1995) ***Global Monitoring Report.*** Paris: UNESCO.

UNESCO, (2012). ***EFA Global monitoring Report***. Paris: UNESCO Publishing.

UNESCO, (2015) ***Education for All 2015 National Review***, Bangladeshi.

UNESCO (2013). ***EFA Global Monitoring Report: Overcoming Inequality: Why Governance Matters***. Paris/France: UNESCO Publishers.

UNESCO, (2015). ***Education for All 2015 National Review***, Zambia.

UNICEF (2000). ***Curriculum report card. Working Paper Series, Education Section, Programme Division***. Paris/France: UNESCO Publishers.

UNICEF (2009). ***Overcoming Inequality: Why Governance Matter*s**. Paris/France: UNESCO Publishers.

Verwimp, P. (1999). ***Measuring the quality of education at two levels: A case study of primary schools in rural Ethiopia***. Journal for International Review of Education, 45(2): 167-196.

Waters and Cram (2002). ***Cheap children and the persistence of poverty***. *The Economic Journal,* Vol. 115, No. 500, pp. 88-110.

Walliman, N. (2006). *Social Research Methods.* London: SAGE Publication.

Warger, T. (2009***). Learning Environments: Where Space, Technology, and Culture Converge.*** Education Learning Initiative. ELI Paper 1, USA.

Wimmer, B. and Dominic, C. (1994). ***Ethical Issues in Research***. London: Sage Publishers.

Williams C.B. **(2014)** ***Effective delivery of public education services.*** A review by AfriMAP and the Open Society Initiative for West Africa, Sierra Leone.

Wilson, E. (2009). ***School-Based Research: A Guide for Education Students***. Thousand Oaks,
California: SAGE Publications.

World Bank (2005). ***Expanding opportunities and Building competencies for young people. Anew Agenda for secondary Education.*** Washington D.C: The World Bank.

Yin, R. (1994). ***Case Study Research: Design and Methods***. New York: SAGE.

APPENDICES

APPENDIX II

UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION (POSTGRADUATE)
DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES

Interview Schedule for the District Education Board Secretary (DEBS)

Dear respondents,
The researcher is a post-graduate student at The University of Zambia. The interview consists of various questions. Be assured that the information you give will be treated confidential and will be used for the purpose of the research only.

Title of the Research: The Provision of Education in upgraded Secondary Schools of Muchinga Province: Examining Infrastructure and the Learning Environment.

Part One: General Information

Name of district:……..……

Part Two: Interview on the state and adequacy of infrastructure

1. How many upgraded secondary schools do you have in the district?
2. What is the state of these schools in terms of infrastructure?
3. Do these schools have the following: libraries, laboratories, enough classrooms, teacher houses, desks and electricity?
4. In terms of adequacy, are you comfortable?
5. Out of upgraded schools in the district, how many have newly built infrastructure?
6. What are the effects of this situation you have explained on education provision?

7. Are you certain there is proper provision of education obtaining in these schools just as in those other schools?
8. How has been the teacher accommodation situation in these schools?
9. What has been the retention rate of teachers in these schools looking the accommodation situation?

Part Three: Interview on the state of learning environment

1. Are you guaranteed of good environment where ever these schools are found? For instance; bars or other disturbing activities around the school premises.
2. Do you have adequate teachers in these schools in all the subjects as indicated in the new revised curriculum?
3. What is the pupil-teacher ratio on average?
4. Are learning and teaching materials adequate in these upgraded schools?
5. How has been the passing rate of the pupils in the upgraded schools in the district?
6. In terms of academic performance, do you think the difference can be attributed to infrastructure adequacy or inadequacy?

Part Four: Interviews on the challenges faced by the upgraded schools

1. What could you say are the challenges faced in these newly upgraded secondary schools in your district?
2. How are these challenges being addressed?
3. Do you think the way the government has been upgrading schools a best way?
4. If you were given a chance to upgrade a school what would you consider first?

Part Five: Interviews on the strategies employed to manage the situation

1. What strategies are been put in place to deal with the scenario
2. What kind of help do you lobby from somewhere to address the infrastructure situation?
3. How has been the government's intervention on the matter?
4. How has been the funding in these upgraded schools?

APPENDIX III

UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION (POSTGRADUATE)
DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES

Interview Schedule for Head Teachers

Dear respondents,
The researcher is a post-graduate student at The University of Zambia. The interview consists of various questions. You are assured that the information you give will be treated confidential and will be used for the purpose of the research only.

Title of the Research: The Provision of Education in upgraded Secondary Schools of Muchinga Province: Examining Infrastructure and the Learning Environment.

Part One: General Information

Name of the School……

Part Two: Interview on the state and adequacy of infrastructure

1. How many classroom blocks do you have?
2. Are the classrooms adequate? In what state are they?
3. How is the situation in terms of office space for the departments?
4. Generally, what is the state of infrastructure in the school?

5. How are teachers accommodated? Are they adequately accommodated?
6. If not, what effects does this have on education provision?
7. Do pupils have boarding houses? What is the state of these houses? Are they adequate?
8. Do you have a library? If **not**, how do pupils access books at their own spare time?
9. Do you have a laboratory? If **not**, how are science subjects taught?
10. What concerns do the teaching staff and the management raise on the state of infrastructure?

Part Three: Interviews on the state of learning environment

1. Are you comfortable with the environment in which the school is found in, in terms of bars and other human activities that may affect education provision?
2. How is the learning environment in terms; availability of water and electricity?
3. Is space enough in each classroom for all pupils?
4. Are the classrooms conducive in terms of the floor, light system, black board / white board and ventilations?
5. What is the enrolment on average per class?
6. Do you have enough teachers for all the subjects to fulfil the provisions of the new revised curriculum?
7. What is the pupil-teacher ratio?
8. Are all the subjects in the curriculum being taught?
9. If not, why?
10. Do teachers have teaching materials? How adequate?
11. Do pupils have learning materials? How adequate?
12. What is the Pupil-book ratio?
13. Do pupils have adequate desks?
14. How many pupils does each desk accommodate?
15. How has been the passing rate?
16. In terms of academic performance, do you think the difference can be attributed to infrastructure adequacy or inadequacy?

Part Four: Interview on the challenges

1. What challenges do the school face in the provision of education in relation to infrastructure and the learning environment?
2. Are these challenges known to the DEBS and the Provincial offices?
3. What has been the intervention?
4. Do you think upgrading of this would have come a bit later? Or how would like the upgrading to be?

Part Five: Interview on the strategies employed to make sure education is provided.

1. In the midst of these challenges, what has the school done to ensure the provision of education is not disturbed?
2. What is the participation of parents in the provision of education?
3. What is the Province, DEBS offices doing about the situation?

APPENDIX IV

UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION (POSTGRADUATE)
DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES

Interview Schedule for Teachers

Dear respondent,
The researcher is a post-graduate student at The University of Zambia. Please read the instructions for each question. You are assured that the information you give will be treated confidential and will be used for the purpose of the research only.

Title of the Research: *The Provision of Education in upgraded Secondary Schools of Muchinga Province: Examining Infrastructure and the Learning Environment.*

Part one: General information

1. Name of the school…….

2. Position……

Part two: Interview on the state and adequacy of infrastructure.

1. What kind of infrastructure do you have for learners?
2. Do think the existing infrastructure adequately support the teaching and learning processes? Explain.

3. Do you have teacher accommodation? How many are they?
4. What are the effects of not having teacher houses in school?
5. What is the state of the school teacher houses if any?
6. How would you rate the adequacy of the following physical facilities or infrastructure: Class rooms, Furniture, Electricity, Laboratory, Teacher house and Water?
7. How satisfied are you with the general condition of the school physical infrastructure?
8. What situation in terms of funding to enable the school deal with issues of infrastructure?
9. How would you explain the pupils' academic performance in the midst of the state of infrastructure?

Part Three: Interview on the Learning Environment

1. What sanitation facilities does the school have?
2. Apart from blackboards in classes, what other learning and teaching facilities do you have?
3. What learning and teaching facilities would you wish to have, which you do not have in order that teaching and learning takes place effectively?
4. How adequate are the teaching and learning materials like text books.
5. Would you be in position to determine the Pupil-book ratio?
6. What can you say is the environment in which education is being provided? Does it have any effect to the learning process in terms of noise, bars, and moving machines?
7. How adequate is the teaching staff?
8. Do you have teachers who do not stay due to some factors related to infrastructure?

Part Four: Questionnaire on challenges faced by the upgraded schools

1. What challenges do teaching staff face?
2. What challenges do pupils face?
3. What challenges are related to the teaching and learning process?

Part Five: Interview on strategies schools have employed to cope with the issue of infrastructure and learning environment.

1. How has been the relationship with the parents in the area?
2. Have the parents expressed concern over the state of infrastructure?
3. What have they proposed to do about it?
4. How has been the relationship between the school and the Parents Teacher Association?
5. What are some of the plans the school and the PTA have to see to it that learners have access to education in a good environment?

APPENDIX V

UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION (POSTGRADUATE)
DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES

GROUP FOCUS DISCUSSION FOR PARENTS (PTA Members)

Dear Respondents,
The researcher is a post-graduate student at The University of Zambia. The group focus discussion consists of various questions. You are assured that the information you give will be treated confidential and will be used for the purpose of the research **only**.

Title of the Research: *The Provision of Education in upgraded Secondary Schools of Muchinga Province: Examining Infrastructure and the Learning Environment.*

Part one: General information

1. Name of the school……

Part two: Interview on the state and adequacy of infrastructure.

1. What would you say is the state of school infrastructure at this school?
2. Do you think it is adequate? If not what is missing?
3. What have you seen is a problem in the whole idea of upgrading schools?
4. Which type of infrastructure would make education provision to be of high standard?
5. Do teachers have accommodation? What is the state of these houses?

Part Three: Group Focus Discussion on the Learning Environment

1. Are you comfortable with the site at which the secondary school is located? If **yes** what makes it well placed?
2. In terms of sanitation, what would you say is the situation in the school?
3. Does the school have water?
4. Are there toilets? What kind of toilets?
5. What is the level of staffing? Is there any problem with staffing?
6. Do you have any idea about the teaching and learning materials? Do you have any idea whether they are enough or not?

Part Four: Focus Group discussion on the challenges faced by the upgraded schools as they provide education

1. What challenges do teachers face in relation to infrastructure?
2. What challenges are faced by the school in education provision?
3. What would be your comments on the government's idea of upgrading of schools?

Part Five: Group Focus discussion on the strategies the school have employed to manage the provision of education.

1. How is the community's response to school projects?
2. What are you doing as Parents to provide infrastructure?
3. What programmes or activities have you lined up to help manage the issue of infrastructure?
4. Do you actively participate in the administration of the school to an acceptable level?
5. Given a chance to upgrade a school, what strategies would you put in place?

APPENDIX VI

UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION (POSTGRADUATE)
DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES

FOCUS GROUP DISCUSSION FOR PUPILS.

Dear Respondents,

The researcher is a post-graduate student at The University of Zambia. The group focus discussion consists of various questions. You are assured that the information you give will be treated confidential and will be used for the purpose of the research **only**.

Title of the Research: The Provision of Education in upgraded Secondary Schools of Muchinga Province: Examining Infrastructure and the Learning Environment.

Part one: General information

1. Name of the school ……..
2. Grades ……

Part two: Questions on the state of infrastructure

1. How many classrooms do you have?
2. Are they enough? If not give reasons.
3. What other facilities do you think are missing?
4. Are there some pupils who come from far places? If Yes, how do they find accommodation?
5. Have you ever paid fees towards the construction of boarding facilities?

Part three: questions on the state of the learning environment.

1. How is the sanitation in school?
2. Are the toilets enough?
3. Do you have water in school
4. What is the behaviour of the community surroundings the school?
5. Do you have disturbance in terms of noise or violence from the people around?
6. Do you have adequate teaching staff?
7. Do you have adequate learning materials?
8. How do you share text books?

Part four: questions on the challenges the school faces in proving education in the upgraded school

1. What has been your difficulties as pupils in this school?
2. What have been the challenges faced by the school in in general?
3. Explain how the boarding system here works?

Part five: questions on the strategies the school has employed to manage the situation

1. What are your parents doing about the issue of infrastructure?
2. What has the school asked you to do to ensure education is provided in a conducive environment?
3. What is the school doing to provide infrastructure?

APPENDIX VII

UNIVERSITY OF ZAMBIA
SCHOOL OF EDUCATION (POSTGRADUATE)
DEPARTMENT OF EDUCATIONAL ADMINISTRATION AND POLICY STUDIES

Title of the Research: *The Provision of Education in upgraded Secondary Schools of Muchinga Province: Examining Infrastructure and the Learning Environment.*

OBSERVATION SCHEDULE ON SCHOOL INFRASTRUCTURE AND LEARNING ENVIRONMENT

	School	A	B	C	D	E
State						
STATE AND ADEQUACY OF INFRASTRUCTURE						
No. of classroom blocks						
No. of Classrooms						
No. of Pupils						
No. of Teacher Houses						
Staff room						
No. of Departmental offices						
Boarding house						

STATE THE LERNING ENVIRONMENT						
Laboratory						
Pupil – book ratio						
Water supply						
Electricity						
Toilets for Pupils	M					
	F					

Play field						
Industrial arts kit						
Computers						
No. of Sports kits						
No. of Science kits (Mobile lab)						
Pupil – book ratio						
No of Teachers						