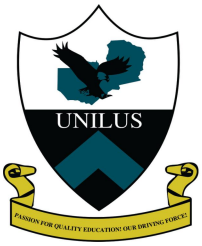


UNIVERSITY OF LUSAKA

MASTER OF BUSINESS ADMINISTRATION IN EDUCATION

***EXAMINING THE FACTORS THAT AFFECT SECONDARY SCHOOL PUPIL'S POOR PERFORMANCE IN MATHEMATICS: A CASE OF SELECTED SCHOOLS IN LUSAKA DISTRICT*.**

A research submitted in partial fulfilment of the requirement for the award of a Master of Business Administration with Education (MBAED)

By

DAVIES MUBANGA

STUDENT NUMBER: MBAE 5241015

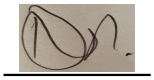
Lusaka, Zambia

Dedication

I dedicate this work to my parents for their care, guidance and moral support rendered to me throughout my life.

Declaration

I, Mubanga Davies, hereby declare that this research thesis is my own original work, that all reference sources have been accurately reported and acknowledged, and that this document has not previously, in its entirety or in part, been submitted to any university in order to obtain an academic qualification.

Name	Signature	Date
Davies Mubanga		12th April,2024

Acknowledgement

I owe many thanks to the almighty God for the protection and power bestowed on me during the writing of this thesis. “May your Holy name be praised forever and ever”. The immeasurable useful suggestions, corrections and excellent supervisory role played by Dr. Abigail Tuchili are highly appreciated. Her immense input in this work is greatly appreciated. May God richly bless her and her family at large. Many thanks and appreciations go to lecturers at the University of Lusaka especially in the business and education departments for their tireless dedication to duty.

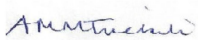
I cannot forget to mention my parents my mother Lydia Musongole, my late father Lovewell Besa Mulenga may His Soul Rest in Eternal Peace. Their efforts, prayers and contributions are highly valued and appreciated. I say a big thank you to the Head teachers, teachers of Mathematics and the learners of the sampled schools under study and the officers at the Examinations Council of Zambia office in Lusaka.

Thank you for your contributions. You are a blessing to me and family.

Once again, I say thanks to all my loved ones, may God richly bless you all.

Approval

I approve that this dissertation by Davies Mubanga be submitted in partial fulfilment of the requirement for the award of a Master of Business Administration In Education at the University of Lusaka.

Supervisor's name	Signature	Date
DR.ABIGAIL M. TUCHILI		15TH April,2024

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List of Abbreviations

ECZ	Examination Council of Zambia
MoE	Ministry of General Education
EPRR	Examinations Performance Report Review
SCT	Social Cognitive Theory
GC	Guidance and Counselling
SPSS	Statistical Package for Social Sciences
CPD	Continuous Professional Development

Abstract

The study examined the factors that affect Secondary School pupil's poor performance in Mathematics in selected Secondary Schools of Lusaka District. The study was led by three research objectives which were to identify the social factors that affect secondary school pupil's poor performance in Mathematics, examine school and pupil's based factors and assess the effect of school management system on pupil's poor performance in Mathematics. Relevant literatures were reviewed on theories and findings that emerged from different authors. A survey design which used both quantitative and qualitative aspects of research was used in the study. The study involved five (5) Secondary Schools, ten (10) teachers of Mathematics and fifty (50) Grade 12 pupils. These were obtained through simple random sampling. Five (5) Head teachers from five Secondary Schools were purposely selected. Questionnaires and interview schedules were used to collect data. The quantitative data were analysed by using descriptive statistics such as frequency and percentage and the qualitative information were analysed by thematic process. The results revealed that there are two major factors affecting Secondary School pupil's poor performance in Mathematics namely school-based and pupil based factors. School-based factors incorporated professional qualification of teachers, knowledge of the subject, teaching method, and experience of teachers teaching mathematics, over-enrolment and motivation of pupils. Pupil-based factors included income, level of education for parents/guardians, absenteeism from mathematics lesson, learner attitude towards mathematics, performance of pupils in mathematics and family status. The findings of the study suggest that use of numerous assessments, motivating pupils and teachers by providing incentives, appropriate leadership style in managing the school and providing necessary learning and teaching material can improve poor performance in mathematics among secondary school pupils. This calls for the teachers of Mathematics, School Administrators, Parents and all stakeholders to get involved in the education of mathematics to pupils at Secondary School level of education.

CHAPTER ONE: INTRODUCTION

1.0 Chapter Overview

This chapter outlines the background to the study, statement of the problem, purpose of the study, objectives of the study, research questions, significance of the study, definitions of terms and then offer a summary of the chapter.

1.1 The study background

Mathematics has been essential or fundamental constituent of the thought of every human being. It is supposed that for many years, mathematics improves the human mind and contribute in developing analytical thinking. Mathematics abilities for everyday life are established in school mathematics curriculum and has always been considered as a core subject as it is applicable to various life situations. Cockroft (1992) observes that there is general consensus that every child should study mathematics in school as it is an essential ingredient in geometrical construction, mental development, logical thinking, accuracy and interpretation of figures, charts graphs, diagrams among others. He highlighted that many humans consider the study of mathematics as Important to human life. However, for this reason, mathematics is an essential subject in various schools in the world and Zambia inclusive for it is obligatory both at Primary and secondary levels respectively.

The perennial dismal performance in Mathematics in Zambia continues to raise a lot of unanswered questions considering the role of Mathematics in technological, economic and industrial development of the country. Literature has also shown that despite the acquisition of higher education qualification among the teacher fraternity and development of the new curriculum which accords pupils a choice according to interest on the career pathways, performance at grade 12 level in Mathematics has remained unsatisfactory for a long time (Sitondo, 2014; ECZ, 2014; MOE, 2012).

Despite secondary schools in Lusaka District practice the abilities related to new leanings in mathematics education for the determination of making the subject easy to the learner, data obtained from Examination Council of Zambia (ECZ) indicates that mathematics still possess a huge challenge even under the reviewed prospectus. The

data showed the uppermost number of candidate failure or lowest performance at Grade 12 level with a percentage mean score of 28.29% in 2018, 25.46% in 2019, 24.19% in 2020, 23.91% in 2021 and 27.51% in 2022. The truth is that mathematics can be applicable to many if not all the academic areas including sciences which has established a controversy of the study as to why such marks are achieved in schools. Hence, this state prompted the researcher to examine the factors affecting secondary school pupil's poor performance in mathematics.

1.2 Problem Statement

There are numerous issues that affect the teaching and learning of Mathematics at secondary school level. Studies on poor performance in Mathematics Studies on poor performance in Mathematics have been conducted and documented by various scholars. While realizing that there has been little formal inquiry into examining the factors affecting secondary school pupil's poor academic performance in Mathematics in Zambia, it is important to acknowledge some writings by eminent scholars like Tembo S. (2016), Wales et al (2016), Begle (1973), Callaghan (1971). However, it is also cardinal to recognize that not only have these writings been few and old, but they have also not provided impeccable evidence or answers to the factors affecting pupil's poor performance in Mathematics.

The following table presents the mean pass percentage in Mathematics for the past five years at Grade 12 National Examinations.

Table 1.1: ECZ Mean Pass Percentages in Grade 12 National Examination

Year	2018	2019	2020	2021	2022
Mean pass %	28.29	25.46	24.19	23.91	27.51

Source: ECZ Examination performance review reports (2018 – 2022)

Over the past five years the performance in Mathematics has been lagging behind in Zambia and most of the schools within Lusaka district. According to the School Certificate Examination Performance Review Report (EPRR) published by the

Examination Council of Zambia as shown above revealed that Mathematics has had a high failure rate with the lowest mean pass percentages of 28.29% in 2018, 25.46% in 2019, 24.19% in 2020, 23.91% in 2021 and 27.51% in 2022. These results were somewhat consistent averaging 25% of the mean pass percentages. If this scenario remains unchecked, the country may continue to produce poor results in the subject and therefore lag behind considering the role of Mathematics in technological, economic and industrial development of the country. At the moment the factors affecting secondary school pupil's performance in Lusaka District have not been clearly examined. It is this knowledge gap, therefore, that this study sought to examine those factors which affect secondary school pupil's poor performance in Mathematics in selected schools in Lusaka district.

1.3 General Objective

The main objective of the study was to examine the factors that affect secondary school pupil's poor performance in Mathematics.

1.3.1 Specific Objectives

Below are the objectives of the study:

1. To identify the social factors that affect secondary school pupils' poor performance in Mathematics.
2. To examine school and pupils based factors.
3. To assess the effect of school management system on pupils' poor performance in Mathematics?

1.4 Research Questions

The questions which guided the research include:

1. What are the social factors that affect secondary school pupils' poor performance in Mathematics?
2. How do school and pupil based factors affect secondary school pupils' poor performance in Mathematics?

3. How does school management system affect pupils' performance in Mathematics at Secondary school?

1.5 **The Significance of the Study**

It is believed that the study is significant to policy makers, educational administrators, mathematics teachers and researchers in Zambia in various ways. The results of this research will help policy implementers in education sectors to re-examine the present teacher training program. The upshots of the study will be useful to the administrators in the education sectors to complement curriculum for teaching institution and policies. The results of the study will guide the teachers of mathematics to the choice of appropriate methods and resources required for teaching and learning and that Mathematics researchers can equally utilized the research as a reference to studies concerning performance of pupils in Mathematics.

1.6 Scope of the Study

This study hinged on examination of factors that affect secondary school pupils' poor performance in Mathematics in selected Secondary Schools of Lusaka District in Zambia. The study was restricted to designated Government and Grant Aided secondary schools (SS) in Lusaka District. The Schools that were selected for the study included; Chilenje South Secondary School, Foxdale Secondary School, Matero Boys Secondary School, Matero Girls Secondary School and City of Hope Secondary School.

1.7 Delimitations

The research was limited to teachers teaching mathematics, school managers and pupils. The research was only conducted in Secondary Schools from Chilenje zone, Chawama zone, Matero, zone and Foxdale zone within Lusaka district. This study is restricted to teachers, school manager, and pupils because they would give information on teaching, learning and managing the process of performance in mathematics.

1.8 Operational definitions

In this study, key terms are defined and should be understood as suggested below;

- **Examining**: Testing the knowledge of someone by requiring them to answer questions or perform tasks.
- **Factors**: An incident, occasion of effect that leads to an outcome
- **Secondary School pupil**: Refers to post Primary formal education learner
- **Poor performance**: Falling below an expected rate of academic performance with respect to the Examination standard board of the country (ECZ)
- **Mathematics**: The study of numbers and how they are related to each other and to the real world.
- **Teacher characteristics**: Teacher's professional credentials and attitudes toward mathematics.
- **Teaching Methods**: It includes the philosophies and techniques used for instruction. Commonly used teaching methods may include class participation, demonstration, recitation, memorization, or combinations of these, teacher centred and pupil-centred methods.

1.9 Chapter Summary

In summation, the chapter outlined the background of the research, problem statement, purpose, study objectives, the study questions, study significance, delimitation and definition of key concepts and then offer a summary of the chapter. It is recognized that examining factors which affect secondary school pupil's poor performance in mathematics will be considered as a valid indicator in improving pupil performance in Mathematics.

CHAPTER TWO: LITERATURE REVIEW

2.0 Chapter Overview

The section observes works significant to this research in relations to factors that affect secondary school pupils' poor performance in Mathematics. It provided empirical review from the global perspective, regional and local. Research gaps during the review are also acknowledged. Furthermore, conceptual and theoretical framework is also recognized.

2.1 Empirical Review of Literature

Empirical works try to examine critical studies of printed sources on a particular theme. This is also considered as an account of what has been available before on a topic by accredited intellectuals and investigators.

2.2.1 Global Perspective

There are many works written on pupil's performance in mathematics in different perspective. Studies conducted by (Asikhia, 2010) previously acknowledged factors accountable for poor performance both at primary and secondary schools in numerous nations. He further added that aspects that influence quality and eventually lowly performance in learning and teaching of mathematics differ from those that are centred on teacher, learner centred, school centred, to family and environmental factors, among others. (Nomsa Mabena et al, 2021) discovered that learner-centred which affect low performance in mathematics in secondary schools (SS) include learner delusions related to mathematics as the most abstract subject, fear and nervousness. Hlalele (2012) stipulated that learners normally develop mathematical nervousness in schools because of learning from instructors who are themselves nervous concerning their mathematical capabilities in particular areas. Another research conducted by Khatoon and Mahmoud (2010) in India showed that pupil's lesser performance in mathematics is affected by their undesirable attitudes to the subject that originates from societal opinions that it is a very problematic subject.

Additionally, (Asikhia, 2010) discovered learner-centred factors that affect low performance in mathematics among senior secondary schools like pupil's misconstructions in mathematics as a problematic subject, fear and anxiety. He further pointed out that, in Britain, particulars for lowly performance in mathematics include absence of learning support; principal teachers' dissatisfaction with the in-career training of teachers in mathematics and pupils educated by educators who have not partaken in career professional progress.

Cascio (2013:152) argued that, "classroom management skills may deter productive class deliberations and co-operative learning from pupils". Furthermore, the research documented that educators are at the centre of this issue. For instance, suppose educator lacks knowledge or desire about teaching, the pupil may not comprehend the subject material. Hence, it is evident that teachers have an effect on the poor performance in mathematics especially let's say one does not possess knowledge and instructional content that s/he may deliver unfitting content or even avoid content, which could lead to poor performance. Asikhia (2010) research recognised language of teaching and learning as yet another factor. Educationalists are likely to utilize pupil's home-based language when teaching such that pupils frequently fail to comprehend the language used in the authorised examination papers and thus fail to respond precisely.

As for Smith (2004) family contextual affected the poor performance of pupils in mathematics it was realized that learner's cultural family contextual differ and contributed to the performance of mathematics. Additionally, learners from different cultural contextual are affected differently centred on parental experiences, interests and attitude to mathematics.

Educationalists, teachers, and investigators have shown interest in examining characteristics affecting quality performance of pupils in mathematics. These characteristics are internal and external of the school environment which influences the quality of academic success. They can be regarded as learner characteristics, family characteristics, school characteristics and peer characteristics (Waters and Marzano

2016). Additionally, a chains of characteristics are regarded when to recognize the influencing characteristics to quality of academic achievement. However, recognizing the most influencing characteristics in quality of academic performance is a very intricate and thought provoking task.

The learners in public schools belong to different experiences dependent on their demography. This variety is abundant massive and intricate as ever before in the Zambian philosophy. Educators also influence the learner performance in mathematics. The supervision from guardians, parents and educators indirectly influence the performance of the learner (Hussain, 2016). According to Effandi and Normah (2016), a learner wants to reason and decide using necessary approaches to resolve mathematic difficulties. They added that learner's achievement in succeeding to their goals motivate them to grow progressive attitudes to mathematics and other difficulty resolving actions.

Effandi and Normah (2016) stated that a student wants to contemplate and make choices with the use of suitable strategies to resolve mathematical problems. Willingness to resolve mathematical difficulties likened to regular and weak learners. Learners' dedication in mathematics means to learners' drive to study mathematics, their certitude in their skill to prosper in mathematics and their passionate emotions concerning the subject. Learner's dedication in mathematics helps in acquiring of mathematics abilities and knowledge (Education Matters 2015). Effandi and Normah (2016) argue that learner's attitudes to mathematics are hugely related to their attitude to difficulty resolving in universal.

Additionally, a bad attitude has to be resolved, such that later in life, learners will not grieve from lowly problem-resolving abilities. Therefore, it is paramount to memorise problem-resolving abilities as such abilities are Important in dealing with daily life encounters. Hence, learner's concern in mathematics is supposed to play an important part in mathematics success and may be one of the characteristics that affect learners in mathematics success. Therefore, the upshots of such action investigation would be foundational for the finest intervention actions to be made such as formulating additional

actions creating instructional resources for the development of the learners' performance generally in mathematics especially grade twelve. Mutungi (1984) argues that attitude as a mental state helps in readiness of establishing through experience pitting an effect on personal reply to matters concerning performance of pupils in mathematics play a vital role. Learners articulated that attitude in mathematics depends on the mode that the content was administered to them. If learners surely view the context to be learned they usually become encouraged to learn. Willis (2010) proclaimed that positive attitude towards the mathematics directed towards positive performance. Nui and Whaome (2006) carried a research in Kenya in secondary school presented that lowly performance in mathematics. This was accredited by learners and educators' attitude to mathematics subject. Learners having positive conduct tend to perform better in examinations are associated with those with negative attitude.

2.2.2 Empirical Studies Conducted in Africa

Attwood quoted by (Sa'ad, et al., 2014) in his international studies credited parental attitude and interrupted teaching to lowly performance in mathematics. In same vein, Karue and Amukowa (2013) in their studies realized that home-based ecological factors and family backgrounds including slight contribution of guardians and parents towards the matters of their children could probably influence lowly performance in mathematics in Kenya.

Cascio, (2013) in South Africa carried out the research and contended that family associated factors play a role in pupils' performance. Guardians and parents who are occupied with their children's performance complement to their children losing their academic focus. The study revealed that families living in abject poverty destructively influence their children's academic performance while other families discovered abusive, that caused pupil's school performance to drop dramatically. The study affirmed that pupils who come from families which are rude usually perform tend to perform poorly at school. The research established that these factors identified differ from situation to situation (Sinyosi 2015). Since the study was done in a various setting, the factors may contain different effect or impact on pupil performance in mathematics. In addition, in

Mpumalanga province specifically Kwagga district carried a study on pupil performance in mathematics but little on the factors influencing involvement of pupil's poor performance in mathematics.

The other studies done by Iheanachor (2007) in Lesotho concerning effect of teacher's circumstantial, professional development and teaching practices on pupils' achievement in mathematics in Lesotho, have definitely linked with pupils' performance in mathematics and the methods of teaching and learning mathematics. His studies revealed that methods of teaching, credentials of the teacher, subject specialization and experience are indicators of pupil's attainment in mathematics. Adding to that, the investigation disclosed that there some teachers specialized in mathematics while others were specialized in other professions other than mathematics were hired to teach mathematics.

In 2006 to 2008, the Tanzanian government executed a training course called crash program (SEDP 2010). However, this project generated unpleasant educators for they completed school in just a month and then were taken to class to teach. In the same way, Tshabalala and Ncube (2013) discovered that performance of pupils in mathematics wssas mostly affected by characteristics such as ways of teaching, resource supplies, and instructor's behaviour enshrined in the matter including their anxiety of the subject. The intermediate characteristics like attitude to mathematics assignment, seen vital of mathematics and period consumed in mathematics assignment were powerful indicators of pupil's performance in mathematics.

Ali, et al (2010) acknowledged that numerous pupils were regarded as underachievers in mathematics. Pupils ranged between regular to beyond average in consideration with their performance but their actual performance couldn't correlate their intelligent capacities. Susan (2014) argues that there are several aspects that appear seem to be the motive for pupil's underachievement in mathematics. The first one being instructor's factors which encompassed the styles of teaching, retention of the subject matter, instructional practices and procedures, schoolroom organisation, skills of communication and temperament or disposition. Another aspect could be a pupil which

comprised learning practices, time management, attitude and interest to mathematics. Third was ecological which consisted of parentages, values, attitudes, schoolroom settings or environment and peer group.

Iheanachor (2007) stipulated that teachers remained accountable to the education and practices the pupils could encompass daily setting of instructive goals and entire temperament growth. This should be linked with expert growth of educators on the instruction and content that takes extraordinary influence on student accomplishment. Suan (2014) quoted in Hill, Ball & Roman (2005) and Quimbo (2003), said educators that possessed mathematical ideas, good attending and played a part in programs growth have learners with a better performance.

Many literatures have been inscribed on pupil enactment in mathematics at various levels and contexts. Scholarships revealed that a variety of factors in various countries accounted for bad performance in mathematics both at primary and secondary levels respectively. Factors influence quality and eventually poor performance in teaching and comprehending mathematical concepts differ from those who are instructor focussed, pupil focused, and school focussed, to family and ecological influences, among others. In the context of South Africa, Khatoon and Mahmoud (2010) conducted a study which showed learners poor performance in mathematics is affected by undesirable insolences to the subject that initiate after social opinions that it is an abstract subject (Luneta & Makhubele, 2014).

2.2.3 Local Perspective

Several studies were done in Zambia by various researchers like Musonda and Mwape and (2014), Mbetwa and Kafata (2016), ECZ (2012, 2016) and Sakayombo (2018) including other research done in other countries by Mbugua et al., (2012), Mutai (2010) plus Otieno and Yara (2010) revealed pupil performance in mathematics to be lowly. They recognized that high teacher to pupil ratio due to congested lessons, undesirable attitude and dogmas of pupils to mathematics, absence of necessary coaching and learning materials in schools and unsuitable attainment of ethnos mathematics among the pupils were among the factors that factors that steered low performance of pupils or

learners in mathematics. Additionally, Sakayombo (2018) contended that the language employed in teaching mathematics was abstract for selected pupils to comprehended leading to mathematics to be considered as the difficult subject.

The implication of such discovery by Sakayombo approved by Davison (1990) argued that a linguistic scarcity in the process of instructing and learning mathematics causes a mathematics insufficiency. Additionally, ECZ (2016) showed that lowly performance amongst learners in mathematics at various stages might be partially attributed to method educators of mathematic use in schoolroom work and responses given to the learners. Since certain factors that steered to lowly performance have been revealed, one could then contemplate on strategies mathematics teachers were equipped to instruct mathematics could in a way ultimately enlighten the results the country documented in recent past.

Changwe & Mulenga (2018) carried out at a certain Universities in Zambia where they revealed that mathematics trainee education curriculum where they perused to discover whether trainee teachers assimilated the necessary skills or proficiencies required for coaching secondary school mathematics. The research exposed that mathematics trainee education curriculum could not fully make ready educators of mathematics for actual instruction of schoolroom mathematics. Eighty per cent of the research subjects that consisted of experts, who taught maths, trainee teachers studying mathematics in final of their study and did their teaching practice as well as educators of mathematics in final year and did their school experience including educators of mathematics that went underwent similar educators curriculum of mathematics and were coaching mathematics in Zambia secondary schools viewed that concepts of teaching mathematics in trainee education curriculum remained significantly overlooked.

The research subjects further highlighted the design of the teacher for mathematics commenting that it made it so hard for educators to assertively impart mathematical knowledge in themes like Linear Programming, Geometrical Transformations, Constructions and Loci Mensuration, Earth Geometry and others. They pointed out that

these topics could not be taught to trainee teacher through their trainee education programme. Despite the research conducted by Mulenga and Changwe (2018) which discovered the probable basis of lowly performance mathematics like undesirable attitudes and dogmas of pupils to mathematics, high pupil teacher proportion is some schools here in Zambia and absence of suitable learning resources and instructing as exposed by Mbugua et al., (2012), Mutai (2010), Yara and Atieno (2010), Mwape and Musonda (2014) & Kafata & Mbetwa (2016), the research further discovered that mathematics trainer educational curriculum also backed problematic which the a particular state faced.

2.3 Research Gaps

Regardless of conspicuous inacceptable performance in mathematics, an evaluation of the interrelated studies directly above showed substantial gap in area research, factors causing poor performance in mathematics and the category of illustrations involved. Such parts need detailed enquiry to educate factors related to lowly performance in mathematics. Investigators regarded effect of system of school management concerning the entire procedure of training or learning and pupil's performance which occurred in mathematics, irrelevant to the studied works. In fact, researches done were not at the level of secondary learning but at primary level education and somewhat place greatly emphasis on additional factors such as teacher's contextual, expert growths, shortage of mathematics educators and instructional practice. Besides, samples that maybe proposed would differ from others studies.

2.4 Theoretical Framework

In the quest to examine factors, appropriate theories of motivation are discussed below.

2.4.1 Social Cognitive Theory (SCT)

The study constituted two motivation models such as Social Cognitive model and attribution theory respectively. Social cognitive model was developed by Bandura (1986). The framework espouses that suppose pupil's exhibit absence of interest and undesirable attitudes to studying mathematics cannot vigorously be concerned with the learning procedure. Hence, there would be no learning manifested. Social Cognitive

(SGT) Model indicates a mental theory of actions emerged after the work of Bandura (2001). Initially the model aimed at establishing the attainment of societal actions. Social Cognitive Theory hinges on numerous expectations about learning and behaviour, one of which is the individual behavioural and ecological issues affecting the other in a bidirectional, reciprocated or mutual style (Hakalo, 2014). This implies that an individual's unending working is an outcome of on-going association within intellectual, behaviour and background factors. Learning is affected by learner's individual sentiments, thoughts and their comprehension of schoolroom background (Bandura, 2001). Bandura (2001) defines self-motivation as people's verdicts of their capacity towards unify then transmit certain actions with the view of achieving goals. Learner's behaviour is formed via anything they ponder besides how they feel. Mathematics self-worthiness has an influence on learning and performance on different levels: self-confidence has an influence on comprehending and performance on numerous stages: intellectual, motivational, emotional and generating decisions (Hakalo, 2014). Mathematics self-beliefs regulate how well pupils motivate themselves and persist on facing of problems, they also influence the decisions pupils make on assignments, educational and career paths and they affect pupil's emotional life (Wigfield & Eccles, 2000).

2.4.2 Attribution Theory

Motivational scholars like Weiner (1986) asserted that if a pupil qualifies his/her achievement towards own effort are probable to apply authentic strength to accomplish a task given or prepare for the test. When a pupil places his/her achievement or disappointment to competence, good fortune or difficult assignment to be out of his/her control, it is anticipated they can do nothing to make improvements of the state of affairs. Therefore, how a pupil contemplates on or construes achievement or disappointment and not the understanding of the result itself regulates the vigour and track their efforts.

2.5 Conceptual Framework

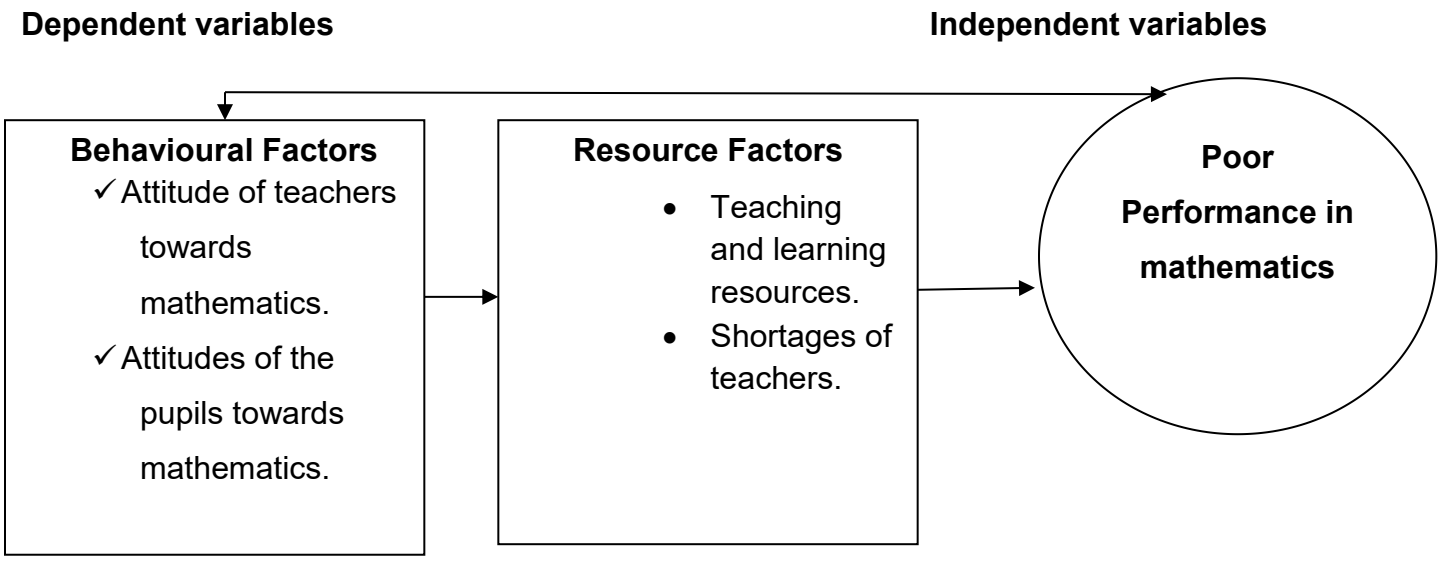


Figure 2.1 Conceptual framework illustrations

Source: Author's compilation (2023)

2.6 Chapter summary

The section of the research offered theoretical framework, empirical readings and conceptual framework which informed the research. In the conceptual framework, the study made an assumption on factors which affected pupil's performance in mathematics. Finally, the research gaps were identified in which the investigator examined issues steering to lowly performance in mathematics aimed at which results shall be universalized to other secondary schools within Lusaka and those nearby.

CHAPTER THREE: METHODOLOGY

3.0 Chapter Overview

The section discussed target population, study design, sample size, data collection tools, Sampling procedures, data examination and presentation, ethical considerations and then conclude.

3.1 Design of Research

Research design is conceptualized as an evocative research for which the study can be adopted. It enabled the study to get and access thoughts, attitude, performance of Mathematics teachers. The research design is a strategy and process concerning the study which tracks the choices from wide range expectations to full methods of collecting data and analysing. The strategy encompasses many verdicts and they do not need to be considered in a sequence in which they derive sense to me and the sequence of the demonstration here. The general verdict comprises which plan can be appropriate to be useful to the research topic. The choice of study plan is also hinges on environment of the research problem or matter being discussed, the researcher's individual encounters or experiences and the audiences for the research (Creswell 2009). Therefore, this research used a descriptive study plan. This will permit the investigator to determine and explain characteristics of variables of attention (Sekaran, 2003).

3.2 Population Target

The population target for this study is drawn from 67 public and grant aided secondary schools within Lusaka district, mathematics teachers, Head teachers and grade 12 pupils. The researcher arrived at these categories because it is believed that the population may give information beneficial to the study.

3.3 Size of the Sample

Kothari (2008) describes a sample size as number of pieces that should be picked out of the cosmos to establish a model. The study sample was resulting from overall population. The study sample size was research subjects from the designated schools sampled. The selected sample for this study was 50 pupils at grade 12 level that is 10 pupils from each of the five secondary schools selected, 2 mathematics teachers from

each school giving us the total of 10 teachers and five Head teachers. These created a foundation for the research sample. The justification for selecting these respondents is assumed that these would have been involved in mathematics in one or the other. Therefore, there is a possibility of collecting useful and credible information for the study.

Table 3.1 shows the distributions of expected sample of the research subjects from Secondary Schools in Lusaka District

Table 3.1 Distributions of Expected Sample Respondents from Secondary Schools in Lusaka District

S/N	Secondary School Name	Number School Managers	Number of Maths teachers	Number of Grade12 Pupils
1	Chilenje	1	2	10
2	Foxdale	1	2	10
3	Matero Boys	1	2	10
4	Matero Girls	1	2	10
5	City of Hope	1	2	10
Total		**5**	**10**	**50**

Source: Compiled by Author (2023)

3.4 Sampling Techniques

The study used two types of sampling procedures which are purposive and simple random sampling methods. Purposive sampling means that respondents are chosen on the basis of their knowledge of the information desired (Calderon, 1993). Moreover, random sampling was used in choosing sample unit from the entire population of teachers and pupils. Purposive sampling was also used in choosing the Head teachers as they were concerned with monitoring of educational service in schools. Pandey and Pandey (2015) argued that random sampling has an influence for it is categorised as chance sampling. In random sampling procedure, each member of the population in the group had an equal chance of being selected (Cohen et al. 2000) which was applied for teachers and pupils except for five Head teachers who were purposively involved.

Through random sampling process ten (10) pupils were selected from each of the five schools sampled. To avoid biasness when choosing pupils to be involved in the study, pieces of paper labeled Yes or No were put in a box and after thorough shaking, a number of pupils were allowed to pick a piece of paper from the box. Those who picked papers written Yes were involved in the study.

3.5 Data Collection Tools

Data was obtained through questionnaires, interview and observation guide. Three dissimilar questionnaires were formulated: one for mathematics teachers, school managers and grade twelve pupils. These questionnaires consisted of open ended and closed questions to allow respondents fill in the detailed required for the research. Note the questionnaires were regarded as the central tool for data collection in the research. The choice of questionnaire as the main instrument is because it offers participant with an upper hand in responding to questions with reassurance of concealment for their feedbacks. Furthermore, questionnaire is quick and suitable and given the standard of education for both teachers and learner in the school, it is not expected for them to misunderstand the queries and produce deceptive responses.

3.6 Data Analysis and Presentation

Data was analyzed both quantitatively and qualitatively using descriptive statistics. Descriptive statistics will be in form of frequencies, percentages, tables, bar graphs and pie charts. Microsoft EXCEL and Statistical Package for Social Sciences (SPSS) software was used to interpret and analyze data.

3.7 Ethical Considerations

Before conducting an assessment in whichever school, consent was sought in whichever schools; consent was sought from the Ministry of Education (MoE) and school managers manning the selected schools. Once this was done, the investigator guaranteed respondents of the highest confidentiality concerning the information obtained. In the quest to give the feedback of the research, names were stated with the view of protecting the distinctiveness of research subjects and the schools.

3.7 Chapter Summary

The chapter deliberated on the methods employed o various stages of research. It is important to mention that the methods earmarked were beneficial in achieving the objectives stated in the study.

CHAPTER FOUR: PRESENTATIONS OF THE FINDINGS

4.0 Chapter overview

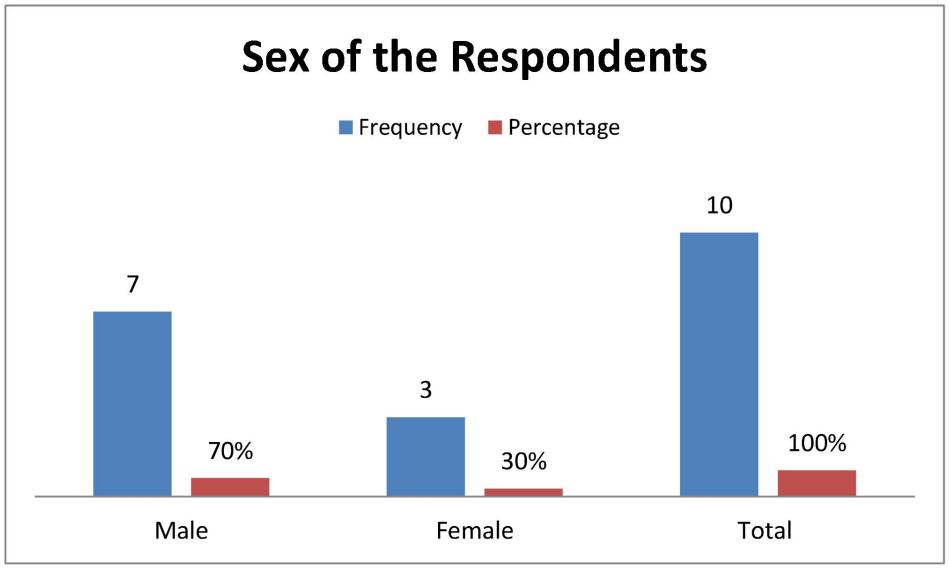
This chapter presents findings, which have been found through questionnaire, Interview guide and observations. Questionnaires were distributed to mathematics teachers, pupils and Head teachers. They filled and returned them to the researcher. Mathematics teachers were interviewed and they heartily participated in the interview session with the researcher. The researcher also made some observations in the schools he visited during data collection process. The findings are presented using tables, pie charts and narrations with regard to the research questions, interviews and observations. Thereafter the findings are discussed by looking at what the literature has exposed.

4.1 Response analysis for teachers

The questionnaire for teachers sought to analyse whether the following characteristics such as sex of the teachers, level of professional qualifications, experience of teachers teaching mathematics, knowledge of the subject, methods of teaching, over-enrolment, absenteeism of pupils from mathematics class and motivational strategies had a bearing on secondary school pupil's poor performance in mathematics.

Figure 4.1Sex of the respondents

In this figure, the study aimed at investigating the sex of the teachers considered to the study as shown in the table below:



Source: Data obtained from the field 2023

Out of the 10 respondents who were teachers 70% represented by 7 were male while 3 signifying a 30% were female. This entails that the study was of male dominance.

Table 4.1 Professional Qualification

Qualification	Frequency	Percentage
Master's Degree	2	20%
Bachelor's Degree	3	35%
Diploma	5	45%
Total		**100%**

Source: Data obtained from the field 2023

The table above shows the level of qualification for mathematics teachers who were involved in the research. The results indicated that 2 respondents denoted 20% possessed Master's Degree, 3 teachers signified 35% were Bachelor's Degree holder and 5 respondents represented by 45% had diplomas. This could have influenced the results because higher qualification guarantees you better teaching.

Table 4.2 Experience of teachers in teaching Mathematics

This table carries information relating to the respondents' years of professional experience. The research intended to establish the experience of teachers teaching mathematics. The findings are revealed below in the table.

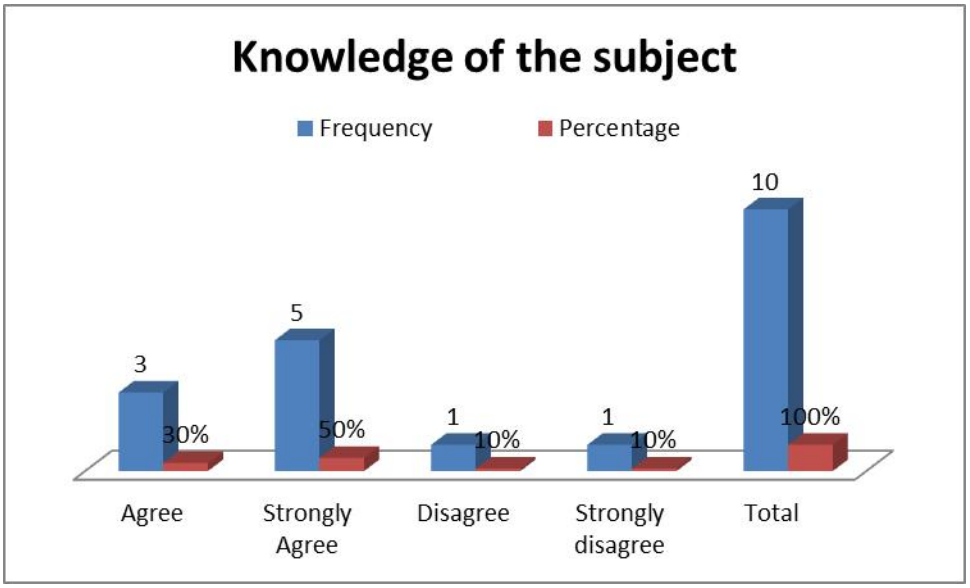
Years of experience	Frequency	Percentage
0-5 Years	2	20%
6-11 Years	2	20%
12-17 Years	5	45%
18 Years	1	15
Total	**10**	**100%**

Source: Data obtained from the field 2023

The study established that 2 respondents signifying 20% had 5 years experience of teaching mathematics. Additionally, 2 respondents echoed that they have been teaching between 6 to 11 years. Furthermore, 5 respondents represented by 45% taught mathematics between 12 to 17 years whereas those with 18 years and above experience in teaching mathematics was only 1 teacher represented by 15%

Figure 4.2 Knowledge of the subject

The study sought to scrutinize whether the instructor's knowledge of the subject influence learner poor performance in mathematics. The table shown below presents the outcomes.

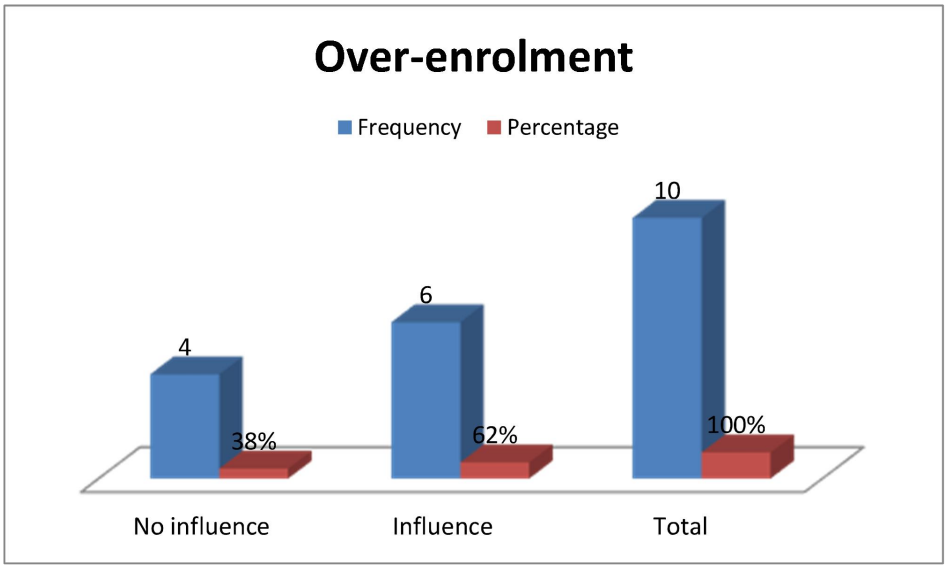


Source: Data obtained from the field 2023

As shown above, the findings were that 3 respondents representing 30% did agree that knowledge of the subject by the teacher did influence the performance of the pupil in class. Adding to that, 5 research subjects denoted by 50% strongly acknowledged said that subject matter affected secondary school pupil's lowly performance in mathematics. On the other hand, 1 respondent out 10 represented by 10% disagreed that knowledge of the subject matter never influenced performance of pupils. Similarly, another respondent signified 10% strongly disagreed to the notion.

Figure 4.3 Over-enrolment

The figure sought to analyse if over-enrolment had influence on secondary school pupil's lowly performance in mathematics. The results are presented in the figure.

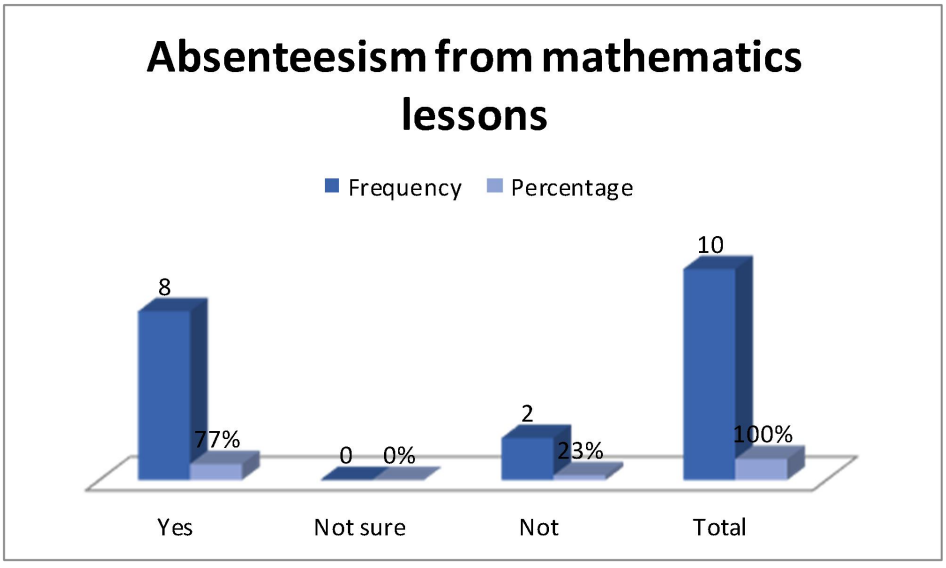


Source: Data obtained from the field 2023

The results revealed that 4 respondents characterized by 38% said there was no influence while 6 out of 10 respondents denoted by 62% agreed that pupil teacher ration had an influence on the performance of pupil in mathematics. This is due to huge number of pupils in class making it hard for a teacher to give individual attention.

Figure 4.4 Absenteeism of pupils from mathematics lessons

The research pursued to evaluate whether absenteeism of pupils from class influenced their poor performance in mathematics. However, the results are presented in the figure below:



Source: Data obtained from the field 2023

The figure revealed that 8 respondents characterised by 77% said that absenteeism of pupils from lessons influenced pupil's performance in mathematics and 0 were not sure. Finally, 2 respondents denoted by 23% were not in agreement.

Table 4 .3 distribution of teacher strategies to improve learner performance in mathematic

The research intended to scrutinize approaches that can be used to improve learner performance in mathematics.

Strategies	Frequency	Percentage
Varieties of teaching methods	7	68%
CPD for teachers	1	15%
Varieties of assessments	2	17%
Total	**10**	**100%**

Source: Data obtained from the field 2023

The results indicated that 68% signified 7 respondents suggested the use of variety of teaching methods. Furthermore, 1 respondent represented by 15% employed CPD as a remedy to the problem and 2 respondents symbolized 17% proposed the use of various assessments.

Table 4.4 Motivation Strategy

Strategies	Frequency	Percentage
Yes	9	90%
No	1	10%
Total	**10**	**100%**

Source: Data obtained from the field 2023

The table above sought to scrutinize if motivation had an effect on improving secondary school pupil's lowly performance in mathematics. Therefore, it was realized that 9 respondents signified 90% confirmed that motivation contributes critically in improving learner performance in mathematics while 1 respondents denoted by 10% denied that motivation has no impact on improving learner poor performance in mathematics. Motivation is vital in every sector of life due to the fact that it helps in achieving the objectives or goals set. This can be done by rewarding the most performing learners.

4.2 Questionnaire Analysis for Grade Twelve Pupils

With the view of achieving the objective set, a questionnaire for pupils who seemed to be more affected was designed. The questionnaire depicted features such as sex of the respondents, age, performance, attitudes, improvement, status, level of education for the guardians or parents, income and individual attention given by the teachers.

Table 4.5 Distribution of Grade 12 pupils by sex

This table carries information on pupil's sex who participated in the study.

Sex	Frequency	Percentage
Female	33	66%
Male	17	34%
Total	**50**	**100%**

Source: Data obtained from the field 2023

However, the results were that girls dominated the study with 66% represented by 33 girls and 34% denoted by 17 boys. This implied that the girls dominated the study in mathematics classes.

Table 4.6 Age of Grade 12 pupils

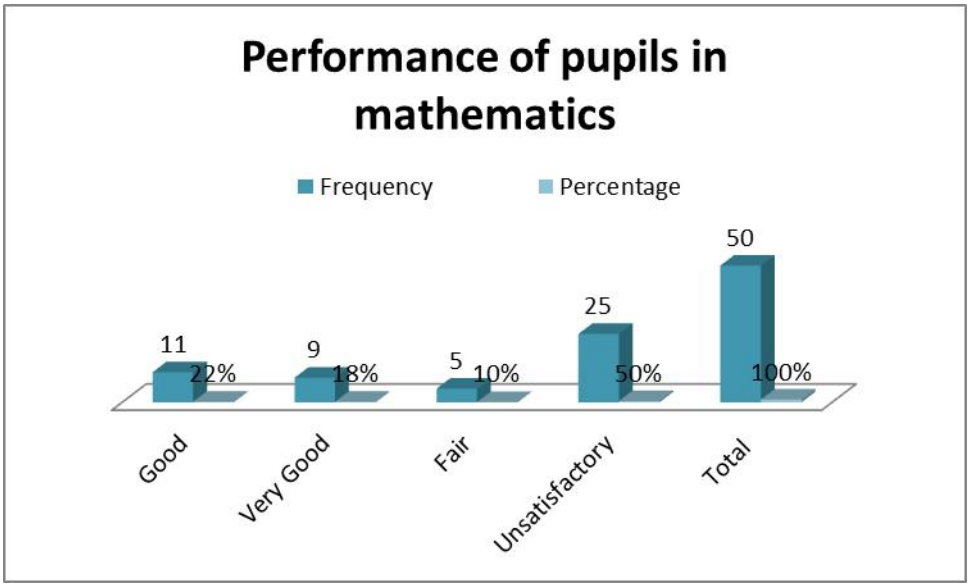
Age	Frequency	Percentage
15 to 16 Years	7	15%
17 to 18 Years	35	69%
19 Years and above	8	16%
Total	**50**	**100%**

Source: Data obtained from the field 2023

The study investigated that 15% of the learners signified 7 respondents ranged 15 to 16, 35 research subjects denoted by 69% were in the range of 17 to 18 years and 8 pupils represented by 16% were between 19 and above.

Figure 4.5 Performance of pupils in mathematics

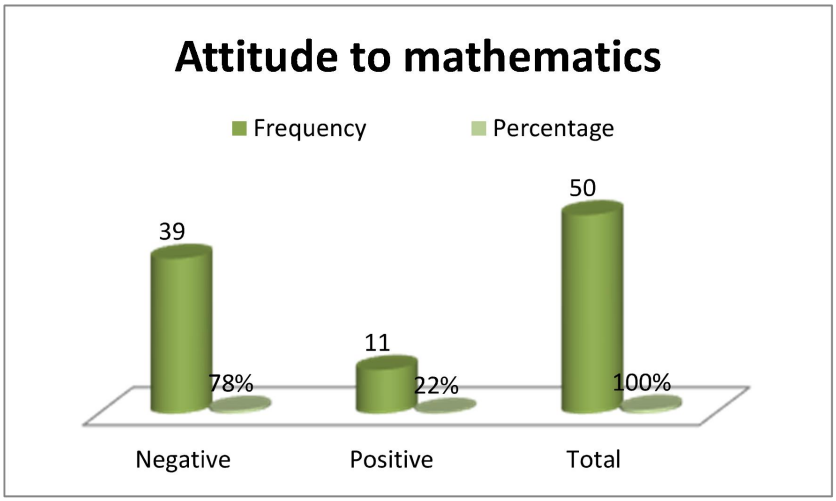
This study sought to scrutinize the performance of pupils in mathematics considering assessments given by the teachers.



Source: Data obtained from the field 2023

After the analysis, the results were that 22% of the research participants denoted by 11 stipulated that their performance was good, 18% represented by 10 said it was very good, 5 of them denoted by 10% stated that it was fair, and 25 characterized by 50 pupils indicated unsatisfactory.

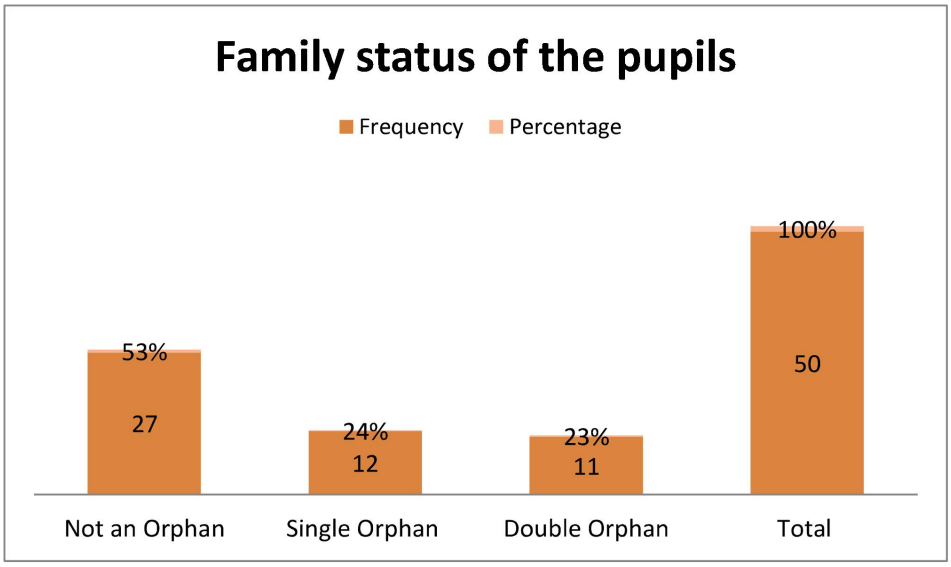
Figure 4.6 Distribution of learner's attitude toward mathematics



Source: Data obtained from the field 2023

Figure 4.6 carries information on learner's attitude towards mathematics. The results revealed that 78% of pupils represented 39 contended to have a negative attitude toward mathematics because it was very difficult and yet 22% denoted by 11 showed positive attitude in the subject.

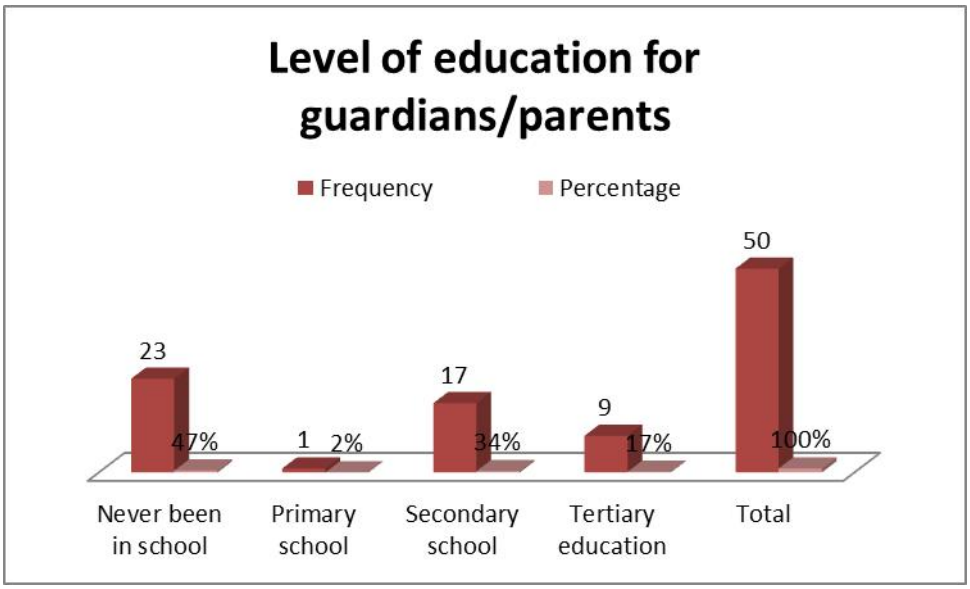
Figure 4.7 Social Status of the pupils



Source: Data obtained from the field 2023

To determine the extent to which socio-economic status affected secondary school pupil's lowly performance in mathematics, learners were asked on their family status. It was realised that 27 learners represented by 53% echoed that they survived by both parents. In addition, 12 learners denoted by 24% were single orphan and 23% of learners characterised by 11 were double orphans.

Figure 4.8 Level of education for Parents/Guardians



Source: Data obtained from the field 2023

In the quest to understand the social factor, learners were asked about their guardians or parents level of education. However, it was discovered that level of education for the guardians or parents affected the secondary school pupil's lowly performance in mathematics. 23 of these denoted by 47% have never been in school, 1 parent or guardian attained primary school represented by 2%, and yet 34% characterized by 17 respondents reached secondary school. But only 9 denoted by 17% indicated that they attained tertiary education. This could have influenced the secondary school pupil's lowly performance in mathematics because guardians or parents play a role as model in the family.

Table 4.7 Income level

This table tried to analyse the level of income among the guardians/parents. Conger et al (1992, 1993 & 1999) think that low parental social status is associated with diminished resources hence contributing to lower academic success. 22 respondents represented by 44% belonged to low income family, 24 respondents classified under 47% and 4 represented by 9% were from high income as seen below in the table:

Level of income	Frequency	Percentage
Low	22	44%
Medium	24	47%
High	4	9%
Total	**50**	**100%**

Source: Data obtained from the field 2023

Table 4.8 Individual Attention Given to Pupils during mathematics lesson

The table sought to analyse if they were given individual attention by the teachers during mathematics lesson and the results are shown below in the table:

Individual Attention By Teachers	Frequency	Percentage
Yes	20	41%
No	30	59%
Total	**50**	**100%**

Source: Data obtained from the field 2023

It was discovered that 20 respondents represented by 41% said yes and 30 respondents by 59% indicated that teachers did not give them individual attention. This would have affected secondary school pupil's lowly performance in mathematics because of over-enrolment and teachers failed to attend to the pupils individually.

4.3 Response Analysis for School Administrators /Head Teachers

The questionnaire for administrators was intended to discover the managerial styles employed in order to improve on secondary school pupil's lowly performance in mathematics. Additionally, suggested strategies employed to improve secondary school pupil's lowly performance in mathematics will be considered.

Table 4.9 Distribution of Administrators sex

Sex of the Administrator	Frequency	Percentage
Male	3	60%
Female	2	40%
Total	**5**	**100%**

Source: Data obtained from the field 2023

Table 4.9 above displays sex of administrators incorporated in the research. The results were that 60% of the administrators represented by 3 were male and 40% denoted by 2 were females.

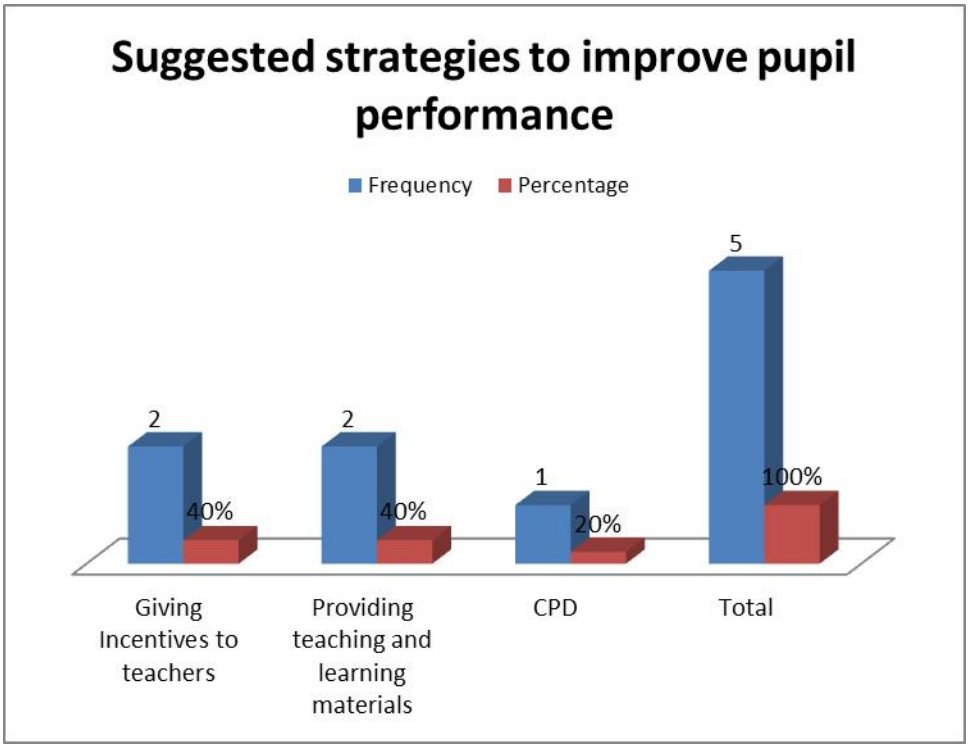
Table 4.10 Preferred Style of leadership by the administrator

Preferred leadership style by the administrators	Frequency	Percentage
Autocratic	1	20%
Democratic	3	60%
Laissez-Faire	1	20
Total	**5**	**100%**

Source: Data obtained from the field 2023

The table contains information on the preferred leadership styles by the administrators managing the schools under study. The results signposted that democratic style of leadership was the most preferred with 3 respondents signifying 60% and 20% characterized by 1 chose Laissez-Faire and autocratic. Democratic is most suited in schools for it is one of the most effective styles in school set up. Pupils feel more comfortable when incorporated in the education process and democratic leadership style permits them to be proactive than passive spectators.

4.9 Suggested Strategies to improve learner performance



Source: Data obtained from the field 2023

The study sought to analyse the suggested strategies which can be employed to improve pupil's poor performance in mathematics. Administrators were tasked to suggest ways to improve pupil poor performance in mathematics. It was discovered that 2 administrators represented by 40% advocated for giving incentives to teachers and similar results were revealed for to provide teaching and learning material. 1

administrator represented by 20% opted for Continuous Professional Development (CPD).

4.4 Chapter Summary

This chapter aimed at analysing data contained in three questionnaires using tables and figures. These data analysis tools have ascertained some of the factors affecting secondary school pupil's lowly performance in mathematics. Therefore, the next chapter will discuss the findings.

CHAPTER FIVE: DISCUSSION OF THE FINDINGS

5.0 Chapter Overview

The section discusses major findings of the study. Therefore, it is important to note that findings are divided into two categories which include school based and pupil based factors.

5.1 School based factors

In this study school based factors affecting secondary school pupil's lowly performance in mathematics should be understood as those factors which pupils have no control and arise from within school environment and school culture or those which contribute to pupil's poor performance in mathematics. These included teacher professional qualifications, subject knowledge, experience of teachers in teaching mathematics, teaching methods, over-enrolment, leadership style and absenteeism of pupils and motivation of pupils in the subject.

5.1.1 Professional Qualification of teachers

The discoveries of the research reveals that there were more teachers who possessed diploma teaching Grade twelve in mathematics subject. Academic qualification was noted as factor because low qualifications can negatively influence performance of pupils in mathematics. The presence of many teachers with higher academic qualifications in mathematics in a school would propose may receive effective teaching instructions. Aliyu et al (2013) affirmed that the level of educational attainment of teachers' qualification is positively related with the pupil's outcomes. This discover also is in correlation with Goldhaber & Brewer (2002) who stated that learners perform better in Mathematics if trained by a teacher with bachelors or master's degree in Mathematics.

5.1.2 Knowledge of the Subject

As observed in the findings the respondents strongly approved that knowledge of the subject affect secondary school pupil's lowly performance in mathematics. Hence,

pupils' whose teachers have superior knowledge of the subject tend to do better than those whose teachers have less knowledge on the content.

5.1.3 Teaching Method

The findings observed that teaching method was yet another contributing factor and the use of variety of teaching methods was dominated. In line with this factor, Branford et al. (2000) argued that teachers not only need knowledge of a particular subject but also need to have varieties pedagogical knowledge and knowledge of their pupils. Teachers' competency in these areas is connected to pupil's intellectual, comprehension of mathematical concepts and learning in Mathematics education. In a similar manner, Mondoh (2005) agrees stating that with numerous years of teaching could have comprehended the subject and pedagogies that might influence pupil's attitudes positively to learning mathematics.

5.1.4 Experience of teachers teaching mathematics

The majority of respondents had many years of experience in teaching mathematics. Adding to the teaching methods and qualification, experience was another contributing factor that could have influenced pupil poor performance in mathematics. Siaw (2009) accept the fact that the longevity of years a teacher had taught in class proposes that the likelihood of them obtaining much needed knowledge and expertise in coaching and mentoring of novice teachers, proactive participation in making decision at school and use rich experience in teaching in assisting less experienced instructors to have high target for academic achievement for the learners.

5.1.5 Over-enrolment

The other factor revealed by this study is over-enrolment in class. The research indicates that large numbers of learners in a class has a negative effect on the performance of learners because it decreases the one to one contact between the learners and instructor. In as much as performance is concerned, it will be chaotic for an instructor to manage a lot of learners in class. For example, some research subjects maintained some teachers fail even to mark work given to pupils but told pupils to swap

books and mark while providing solutions to the problems. This could have contributed to poor performance because teachers did not track the academic performance for learners in mathematics. Various scholars have like Mwape and Musonda (2014), Kafata and Mbetwa (2016), ECZ (2012, 2016) and Sakayombo (2018) including researches carried outside Zambia by Mbugua et al., (2012), Mutai (2010) as well as Yara and Otieno (2010) have all realized the poor performance in mathematics. But all of them seemed to agree that among the factors that led to poor learner performance in mathematics were high teacher to pupil ratio due caused by overcrowded classes.

5.1.6 Motivation of Pupils

Many respondents agreed that motivational strategies should be adopted to improve learner poor performance in teaching mathematics. Among the suggested ways of motivation giving incentives to the most performing pupils would improve performance in mathematics. In the same vein Abdurrahman and Garba (2014) agree that motivation has an influence on the academic attainment of pupils and further stated that extremely motivated pupils perform well.

5.1.7 Strategies to improve learner performance in mathematics

The study pursued to institute strategies which can be adopted with a view of improving secondary school pupil's lowly performance in mathematics at grade twelve levels. The suggestions were providing teachers with Continuous Professional Development (CPD). Affirming this, Gitaari et al (2013) recommended recurrent provision of adequate in-service training such as workshops and seminars in view of improving learner's poor performance in mathematics.

They further added that schools should provide the needed materials for teaching and learning and awarding deserving teachers some incentives as a mean of motivating them to teach with morale and effectively. Similarly, Kita (2004) asserted that numerous schools do not possess adequate and appropriate materials for teaching mathematics and this could be reason as why there have been poor performances in mathematics. On the other hand Mitu (2014) suggested teaching methods to be learner-centred. He

seem to agree that some school may have the needed materials for teaching mathematics but the existing materials particular textbooks does not replicate this method of teaching.

5.2 Pupils based factors

In this study pupil based factors are those factors which affected secondary school pupil's lowly performance in mathematics. In this case they include, attitude towards mathematics, family status, and parents/guardians level of education, income level, absenteeism from mathematics lesson and individual attention. Asikhia 2010) acknowledged that factors causing poor performance in mathematics both primary and secondary are numerous in different nations. He realized that factors that influence the quality and ultimately poor performance in learning teaching mathematics ranges from teacher centred, learner centred, school centred, to family and environmental factors respectively.

5.2.1 Income level

This research designed to explore whether income level had an influence on the lowly performance of pupils in mathematics. The study discovered that level of income for the guardians or parents affected secondary school pupil's lowly performance in mathematics. 22 respondents represented by 44% belonged to low income family, 24 respondents classified under 47% and 4 represented by 9% were from high income. It was agreed by the majority that income level influenced learner's academic performance in mathematics. This is supported by Conger et al (1992, 1993 & 1999), they argued that low parental socio-economic status is connected to reduced resources, therefore, contributing to lower academic achievement. This could imply that certain needs were not met and causing children to fail to succeed in their academic endeavour. Additionally, the level of income might have deterred pupils from accessing educational material.

5.2.2 Level of education for parents/guardians

On this factor the study discovered that level of education for the guardians or parents affected pupil poor performance in mathematics. 23 of these denoted by 47% has never

been in school, 1 parent or guardian attained primary school signified 2%, and yet 34% characterized by 17 respondents reached secondary school. But only 9 denoted by 18% indicated that they attained tertiary education. This influenced learner lowly performance in mathematics due to the fact that guardians/parents would be not actively participated in their children's academic activities because of their inadequate knowledge. Desarrollo (2007) supports this by indicating that degree to which guardians/parents are engaged in pupil's academic positively influence academic success of the pupil. It is held that low socio-economic standing negatively influenced learner's attitude.

5.2.3 Absenteeism from mathematics lesson

Pupil's absenteeism from mathematics lesson was one of the notable factors by the majority respondents. It was observed 8 respondents characterised by 77% said that absenteeism of pupils from lessons influenced pupil's performance in mathematics and 0 were not sure. Finally, 2 respondents denoted by 23% were not in agreement. This had a great affected secondary school pupil's lowly performance in mathematics because being absenteeism from lessons meant pupils missing out a lot. In agreement to this, Costello1991) asserted being absent from class will cause a pupils lagging behind in the mathematics.

5.2.4 Learner Attitude towards Mathematics

The results revealed that 78% of pupils represented 39 contended to have a negative attitude toward mathematics because it was very difficult and yet 22% denoted by 11 showed positive attitude towards the subject. Outcomes of the study indicate that learners themselves contribute to pupil's lowly performance in mathematics. Some learners exhibited no interest in learning mathematics considering the subject to be abstract because of this, pupil developed a negative attitude to mathematics due to the conviction that the subject is difficult. However, negative attitude demonstrated by the certain learners to mathematics and absence of interests in the subject lead to undesirable academic performance. Githua (2002) affirmed this by stating that pupil's negative attitude to mathematics aids bad performance. Adino (2015) is also in agreement adding that attitude of an individual can possibly influence the way a person

will perceive matters, content, procedures and including assessment approaches employed in mathematics.

5.2.5 Performance of pupils in mathematics

In understanding the factors affecting secondary school pupil's lowly performance in mathematics among pupils' results established that 22% of the research participants denoted by 11 stipulated that their performance was good, 19% represented by 10 said it was very good, 5 of them denoted by 10% stated that it was fair, and 25 characterized by 49 pupils indicated unsatisfactory. Therefore, one would say that the lack of interest and a negative attitude cause unsatisfactory performance in mathematics subject. Nicolaido and Philippou (2003) demonstrated that the absence of interest and negative attitude were caused by unsatisfactory performance in handling mathematical tasks and such attitudes and absence of interest slowly become quite eternal. These scholars further argue that if children begin school generally, they possess certain interest and positive attitudes to mathematics. However, as advance, they exhibit less interest and attitude and finally develop negative in higher grade. If this happen they frequently abscond from lessons and class work leading to unsatisfactory performance in mathematics as opted by majority of pupils.

5.2.6 Family Status

The findings established that 27 learners represented by 53% echoed that they survived by both parents. In addition, 12 learners denoted by 24% were single orphan and 23% of learners characterised by 11 were double orphans. This factor contributed because those coming from homes which had single parents could have lacked parental support. Sirin (2005) conquered with these results stating that one of the most stable and consistently observed phenomena in the field of education is the effect of learner's home background on achievement. Learners whose parents have a higher level of education, a more prestigious occupation, or greater income tend to have higher achievement than students whose parents have a lower standing on such socio-economic status indicators.

5.3 Chapter summary

The chapter has identified school based and pupil based factors. It is acknowledged that there could be other factors influencing pupil performance in mathematics.

CHAPTER SIX: CONCLUSION AND RECOMMENDATIONS

6.0 Conclusion

This research embarked on examining the factors that affect secondary school pupil's lowly performance in mathematics. The factors were divided into two categories namely, school based factors and pupil based factors. School based factors consisted of professional qualification of teachers, knowledge of the subject, teaching method, experience of teachers teaching mathematics, over-enrolment and motivation of pupils. On the other hand, pupil based factors encompassed income level, level of education for parents/guardians, absenteeism from mathematics lesson, learner attitude towards mathematics, performance of pupils in mathematics and family status.

Based on the results indicated in study, it has come to light that factors affecting secondary school pupil's lowly performance in mathematics in mathematics at grade twelve levels were kindled by numerous factors. These factors recognized suggest various stakeholders to collaborate with schools in so as to better the performance of pupils in mathematics.

This study also suggested solutions to improve secondary school pupil's lowly performance in mathematics which embraced employing motivation strategies, teachers having Continuous Professional Development (CPD), decrease pupil teacher ratio, using various teaching methods and assessments, use of most appropriate leadership styles in managing the school, giving incentives to teachers and learners and making the teaching and learning materials available in the school.

6.1 Recommendations

This study intended to examine the factors that influencing secondary school pupil's lowly performance in mathematics at grade twelve. Since the pupils exhibited negative attitude to mathematics and that it was an abstract subject. This study therefore, makes the following recommendation so as to alleviate the problems:

- The study encourages teachers to do some extra practice apart from the ones administered in class and learners who seem to be slow should be given extra work to do so as improve in the subject
- It proposes that teachers should give more assessment in order to enhance performance and learner to get acquainted with the expected questions contained in the final examinations.
- Encouraging stakeholders to prioritise providing needed resources in teaching mathematics.
- There is need to facilitate regular seminars and workshops to in-service teachers to train them to the most effective teaching approaches. School Managers/ Head teachers should monitor teachers and ensure that they implement latest knowledge and skills needed to use. Monitoring strategies could include unexpected visits to check on what and they are teaching.
- Attitude towards mathematics by pupils should be redefined through commitment and motivating the most deserving teachers and pupils.
- There is need to reinforce Guidance and Counselling (GS) in order to modify pupil's perception in mathematics subject.

6.2 Recommendations for further research

- Further research should be conducted on other factors affecting lowly performance in mathematics such as school culture and climate.

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APPENDICES

Appendix 1

Work Plan

MONTH	STAGE OF THE DISSERTATION WRITING PROCESS	
September	Writing research proposal	Literature Review
October	Conduct pilot study	Main data collection
November	Analyze data, write dissertation plan, then begin first draft	Complete first draft and discuss with Supervisor
December	Second draft proofing/checking	Final draft for submission

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Appendix 2

Serial No:……

QUESTIONNAIRE FOR TEACHERS

Name of School:_____

District:_____ **Province:** _____

Date: _____

The questionnaire is intended to collect data relating to the factors that affect secondary school pupil's poor performance in mathematics as in the case of selected schools in Lusaka district. Hence, this being part of the academic obligation information obtained will be used sorely for academic purpose and confidentiality is guaranteed. Additionally, information obtained will be directed to improve the learner performance in mathematics and contribute to the concepts and knowledge base required to enhance performance in mathematics among learners in secondary schools.

INSTRUCTIONS

Kindly tick in boxes or write in the spaces provided.

SECTION A: RESPONDENTS BAKCGROUND

1. Indicate your sex?

(a) Male ☐

(b) Female ☐

SECTION B: SCHOOL ESTABLISHED FACTORS INFLUENCING LEARNER PERFOMANCE IN MATHEMATICS

2. What qualification do you possess?

	Yes	**No**
(a) Master's Degree	☐	☐
(b) Bachelor's Degree	☐	☐
(c) Diploma/ School Certificate	☐	☐

3. How long have you been teaching mathematics?

(a) 0-5 years ☐

(b) 6-11 years ☐

(c) 12-17 years ☐

(d) 18 and above ☐

4. Do you think knowledge of the subject influence learner poor performance in mathematics?

(a) Agree ☐

(b) Strongly agree ☐

(c) Disagree ☐

(d) Strongly disagree ☐

5. Does the teaching methods employed in class by mathematics teachers lead to poor learner performance in mathematics?

(a) Agree ☐

(b) Strongly agree ☐

(c) Disagree ☐

(d) Strongly disagree ☐

6. Over-enrolment has an influence on learner poor performance.

	Yes	**No**
(a) Influence	☐	☐
(b) No influence	☐	☐

7. Explain how absenteeism of pupils influences their performance in mathematics?

_____

_____

_____

SECTION C: MOTIVATION OF LEARNERS IN MATHEMATICS CLASS

8. What strategies do you think should be adopted to motivate learners in class?

_____

_____

_____

_____

Thank you for you cooperation

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Appendix 3

Serial No:……

QUESTIONNAIRE FOR GRADE TWELVE LEARNERS

Name of School:_____

District:_____ **Province:** _____

Date: _____

The questionnaire is intended to collect data relating to the factors that affect secondary school pupil's poor performance in mathematics as in the case of selected schools in Lusaka district. Hence, this being part of the academic obligation information obtained will be used sorely for academic purpose and confidentiality is guaranteed. Additionally, information obtained will be directed to improve the learner performance in mathematics and contribute to the concepts and knowledge base required to enhance performance in mathematics among learners in secondary schools.

INSTRUCTIONS

Kindly tick in boxes or write in the spaces provided.

SECTION A: RESPONDENT BACKGROUND

1. Indicate your sex

(a) Male ☐

(b) Female ☐

2. How old are you?

(a) 15 to 16 years ☐

(b) 17 to 18 years ☐

(c) 19 t and above ☐

SECTION B: INFLUENCE OF LEARNER' S ATTITUEDE TOWARDS MATHEMATICS ON THE PERFORMANCE IN MATHEMATICS

3. Do you have interest in mathematics?

(a) Yes ☐

(b) No ☐

(c) Sometimes ☐

4 How is your performance in mathematics?

(a) Very satisfactory ☐

(b) Satisfactory ☐

(c) Unsatisfactory ☐

 ☐

(d) Very unsatisfactory

5. What is your attitude towards mathematics?

(a) Negative ☐

(b) Positive ☐

6. Have you been improving in mathematics or not?

(a) Yes ☐

(b) No ☐

SECTION C: LEARNER BASED FACTORS INFLUENCING POOR PERFORMANCE IN MATHEMATICS

7. What is your status?

(a) Not an orphan ☐

(b) Single orphan ☐

(c) Double orphan ☐

8. What is the level of education for your parents or guardians?

	Yes	**No**
(a) Never been to school	☐	☐
(b) Primary school	☐	☐
(c) Secondary school	☐	☐
(d) Tertiary education	☐	☐

9. How is the level of income for your guardians or parents?

(a) Low ☐

(b) Medium ☐

(c) High ☐

10. Explain if teachers give you individual attention in mathematics

_____

_____

_____

Thank you for you cooperation

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Appendix 4

Serial No:……

QUESTIONNAIRE FOR SCHOOL ADMINISTRATORS/SCHOOL HEADS

Name of School:_____

District:_____ **Province:** _____

Date: _____

The questionnaire is intended to collect data relating to the factors that affect secondary school pupil's poor performance in mathematics as in the case of selected schools in Lusaka district. Hence, this being part of the academic obligation information obtained will be used sorely for academic purpose and confidentiality is guaranteed. Additionally, information obtained will be directed to improve the learner performance in mathematics and contribute to the concepts and knowledge base required to enhance performance in mathematics among learners in secondary schools.

INSTRUCTIONS

Kindly tick in boxes or write in the spaces provided.

SECTION A: RESPONDENT BACKGROUND

1. Indicate your sex

(a) Male ☐

(b) Female ☐

SECTION B: MANAGEMENT BASED FACTORS INFLUENCING LEAERNER POOR PERFORMANCE IN MATHEMATICS

2. Explain how management styles influence learner poor performance in mathematics.

_____

_____

_____

3. Suggest strategies which can be employed with a view to improve poor learner performance in mathematics.

_____

_____

_____

Thank you for your cooperation