POOR LEARNER PERFORMANCE IN MATHEMATICS AT GRADE 12 LEVEL: A STUDY OF A SECONDARY SCHOOL IN NDOLA DISTRICT OF THE COPPERBELT PROVINCE

BY

LUCAS LOMBE

A DISERTATION SUBMITTED TO THE UNIVERSITY OF ZAMBIA AND ZIMBABWE OPEN UNIVERSITY IN PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE AWARD OF A DEGREE OF MASTER OF EDUCATION IN EDUCATIONAL MANAGEMENT.

The University of Zambia

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SUPERVISOR: Dr. NALUBE PHIRI.

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AUTHOR'S DECLARATION

I, Lucas Lombe, do hereby declare that this dissertation is the result of my own work and that it has not been previously presented for a degree at any level at this or another University and that all published work or materials incorporated in this report have been acknowledged by references.

Signed: …………………………… Date: …………………………………………………...

CERTIFICATE OF APPROVAL

This dissertation of Lucas Lombe has been approved as fulfilling the partial requirements for the award of the degree of Master of Education in Educational Management of the University Zambia and Zimbabwe Open University.

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DEDICATION

This dissertation is dedicated to my wife, Flaviour, and our children Michael, Regina, Mapalo and Lucas Jr. for their unwavering support and encouragement during this academic journey. I also dedicate the work to my late mother, Magdalena Musonda, who had always wanted me to excel in life.

ABSTRACT

The study investigated poor learner performance in mathematics at grade 12 level at Secondary School A. The study adopts a Mixed Method Approach by employing the Convergent Parallel Design. The target population comprised all stakeholders in the provision of secondary education including teachers, the district and provincial educational offices and union representatives, the pupils and parents. Purposive sampling was used to select key informants to the study. Probability sampling techniques were used to select pupils and teachers from Secondary School A. The total study sample was 125. Two instruments were used for data collection in the study: the self-administered questionnaire and semi-structured interviews. Qualitative data were collected and analyzed on an on-going process as themes and sub-themes that emerged through thematic analysis. Quantitative data were analyzed in Strata by way of binary logistic regression. The findings showed that Quality of Instruction, Teacher Motivation, Teacher Qualification, Peer Pressure, Pupil Attitude, Pupil Age, High Teacher/Pupil Ratio, Low Parental Involvement and high Exposure to Social Media had bearing on poor learner academic performance in mathematics. On the other hand, Parental involvement, Pupil attitude, Exposure to social media and Teacher/pupil ratio were significant predictor variables for poor learner performance at $p < 0.05$. Based on the findings of the study, it was concluded that, the barriers to improving learning outcomes in Zambia are many and cut across both the demand and supply side, and interact across the school, district, provincial and national levels.

The study recommended that parents should get involved in pupil's education in order to help monitor children's performance through homework as well as monitoring the time spent on social media and other vices.

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ACRONYMS/ABBREVIATIONS

BESSIP: Basic Education Sub-Sector Investment Programme Implementation Plan

CI: Confidence Interval

ECZ: Examination Council of Zambia

EFA: Education for All

MoE: Ministry of Education

SACMEQ: Southern and Eastern Africa Consortium for Monitoring Educational Quality

SDGs: Sustainable Development Goals

TEVET: Technical Education, Vocational and Entrepreneurship Training

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CHAPTER ONE
INTRODUCTION

1.0 Introduction

This study focuses on the poor learner performance in Mathematics at grade 12 level with a specific focus on Secondary School A of the Copperbelt Province in Ndola district. The first section, presents the background to the study, after which, the subsequent section brings to the fore, the problem statement, the aim and objectives of the study, research questions, purpose of the study, research hypothesis, identification of variables, the scope and limitations of the study.

1.1 Background to the study

Education is one phenomenon that has been perceived to be an avenue to yield enhanced productivity, economic growth, social development and poverty reduction. Many of school outcomes that teachers are accountable for are influenced by incentives and constraints operating both inside and outside the school system. Each of the different incentives and constraints influence different aspects of education reforms: whether policy design, financing implementation, or evaluation (Kingdon et al, 2014). This forms the political economy of education and it is influenced by a number of internal and external actors. Kingdon et al, (2014) note that the key stakeholders in education systems within a country include inter alia both bureaucrats and political entities: voters (parents and others), government officials (Minister of Education, other ministry officials, local government officials authority), school officials/school management (head teacher, governing body and teachers) and teacher unions which basically constitute the political economy of the education system.

Good performance in mathematics as an outcome by learners or indeed any other academic discipline, therefore, forms the basis of any priority concern of education planning and management world over, in light of the role that education plays in occupational success. In the

recent past, Zambia has scored some huge success in expanding access to formal education, despite the significant challenges that the education system is still grappling with in relation with learning outcomes especially in the Science and Mathematics. Zambia's Education for All (EFA) review report highlights important progress made by the government in implementing the United Nations Educational, Scientific, and Cultural Organization's (UNESCO) Education for All (EFA) 2000 Dakar framework of action. The report evaluates Zambia's performance against targets and milestones outlined in the 2005 EFA National Framework. According to Wales et al., (2016) as a follow through on the Dakar framework for action, Zambia has established an EFA Secretariat to supervise and facilitate a country effort of operationalizing the global and country effort of EFA and SDGs (Sustainable Development Goals). The EFA National Framework is hinged on national educational aspirations espoused in various policy documents including Educating Our Future (1996), the Technical Education, Vocational and Entrepreneurship Training (TEVET) Policy (1996), the Ministry of Youth, Sport and Child Development Policy, the Ministry of Community Development Policy, the Basic Education Sub-sector Investment Programme (BESSIP) Implementation Plan, the Education Sector Plan (2002 -2007) and the Six National Development Plan (2011-2015) (MESVTEE, 2015). Some of the policies advocate for the improvement and emphasis in developing skills in science and mathematics which have been a source of concern for the government and stakeholders, if this country has to realize and cope with the developmental agendas on the global stage.

The country ranks at the bottom in terms of academic achievement in the field of mathematics and science as measured by the Southern and Eastern Africa Consortium for Monitoring Educational Quality (SACMEQ) assessment. For instance, in the latest round of SACMEQ assessments conducted in 2007, the Zambian learners scored an average of 435 in Mathematics, far below the

southern Africa regional mean of 500 (Wales et al, 2016). National assessment results for grade five also show students consistently scoring below the minimum standard of 40 percent in English, mathematics, life skills and Zambian languages. Poor performance during the middle stage of primary education thereof, is of particular concern as it suggests learners are not grasping key foundational skills and this may therefore impact negatively on the learning outcomes of the pupils at a much higher or indeed secondary level.

Against this background, the EFA review report in Zambia coincides with major educational reforms that include the introduction of a new national curriculum in 2014, phasing out of basic education and introduction of a two tier system that offers academic and skills education up to secondary school level. Despite this development, the chief examiners' reports (ECZ: 2012-2016) have still documented poor academic performance at grade 12 level with a significant decline in performance in the field of Mathematics. The national proportion of candidates obtaining School Certificates for the 2014 examination session has also decreased from 60.21 percent in 2013 to 55.87 percent in 2014 (Examinations Performance Report, 2014).

The perennial dismal performance in Mathematics has raised 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). Studies conducted across the country have also shown that the education sector in Zambia faces a number of severe challenges for improving education outcomes, with high level political interference and patronage contributing to distortions in the teacher hiring and deployment process, problems of

resource shortages, poor classroom conditions, a lack of teacher discipline and disruption associated with rapid turnover of teachers and administrative staff (Wales et al., 2016). Moreover, pupils who have performed well in mathematics at grades seven and nine are also performing lower than would be expected based on their grades at grade 12 level.

Public pressure on school administrators and teachers to improve academic performance in mathematics has led to schools coming up with various performance improvement strategies including free supplementary tuition and rewards for well performing students. However, some of the strategies employed by the school management systems to improve academic performance are not grounded on research evidence. There is need therefore, to pin down what is getting in the way of pupils' performance so that it can be addressed and help pupils achieve their full potential. This scenario is undoubtedly eroding the confidence of the general public in the education sector of the country considering the role Mathematics plays in tertiary technological and business courses. In light of the foregoing, it is not clearly known what factors could be responsible for influencing poor learning outcomes in Mathematics from a political economy perspective in Ndola city as a whole and the selected Secondary School in particular. To confirm, the determinants of poor performance in Mathematics in a unique setting, and provide a holistic understanding of this problem to the management in schools it is important that an evaluative case study be conducted. It is this knowledge gap, therefore, that this study sought to contribute to. The following table presents both the qualitative and quantitative results obtained at the selected secondary school from 2012 to 2016.

Table 1.1: ECZ results performance at the selected secondary school for the past five years (2012-2016)

Year	2012	2013	2014	2015	2016
Quality Pass Percentage	48.3	34.5	28.5	27.5	56.3
Quantity Pass Percentage	54.6	63.6	44.5	38.1	60.0

Source: ECZ, 2012-2016

1.2 Problem Statement

Studies on poor performance in Mathematics have been conducted and documented by various scholars. While realizing that there has been little formal inquiry into the factors influencing 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 determinants of poor performance in Mathematics. The writings in question have also largely been based on qualitative methods with very little or no quantitative data derived from extensive and systematic investigation of the subject at hand. At the moment, the determinants of poor performance in Mathematics at micro level have not been clearly established. Literature also shows that despite the acquisition of higher education qualifications among the teachers and the 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). 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.

1.3 Objectives

The study seeks to answer the following objectives.

1.3.1 General objective

The general objective of this study is to assess factors that influence poor leaner academic performance in Mathematics at secondary school level in Ndola District, of the Copperbelt province of Zambia.

1.3.2 Specific objectives

i. To identify the supply side factors of the education system and how they influence poor learner performance in Mathematics at the selected secondary school.

ii. To assess the demand side factors of the education system and how they influence poor learner performance in Mathematics at the selected secondary school.

iii. To evaluate environment based factors of the education system influencing poor academic performance in Mathematics at the selected secondary school.

1.4 Research Questions.

Arising from the background of the research study, the literature reviewed and the statement of the problem, the following questions have evolved:

i. Are there any supply side factors of the education system that influence poor learner performance in Mathematics at the selected secondary school?

ii. Are there any demand side factors of the education system that influence poor learner performance in Mathematics at the selected secondary school?

iii. How do the environmental based factors of the education system influence poor academic performance in Mathematics at selected secondary school.

1.5 Purpose of Study

The focus of this investigation is on comprehending the role the psychological environment plays coupled with the dynamics of two inter-locking domains from the political economy perspective namely, the supply side of the education system which includes teachers, bureaucrats at the district, provincial and national level, unions as well as politicians and the demand side of education which includes, students, parents, Parents Teachers Associations (PTA), District Education Boards, traditional leaders, politicians and Civil Society with a particular focus on how they influence poor learner performance in Mathematics at grade 12 level.

1.6 Significance of the study

It is hoped that the study findings would contribute to the existing body of knowledge in the area of Mathematics in Ndola district and the country as a whole in the following ways;

1. Firstly, the research findings would help to create awareness among students and school managers concerning opportunities to improve in the ECZ examination in the field of Mathematics.

2. Secondly, the findings of the study would also help in guiding policy formulation in the area of Mathematics in the education in Ndola district which school managers may adopt in their schools in order to overcome the shortcomings.

3. The study would also help in opening research gaps for future research in the area of mathematics.

1.7 Theoretical framework

Several educational researchers have proposed theoretical models to explain linkages between the environment and educational outcomes. Walberg's (1993) theory of educational productivity posits that psychological characteristics of individual students and their immediate psychological environment influence educational outcomes (cognitive, behavioural and attitudinal). Walberg (1993) identified nine key variables or proximate determinants that influence educational outcomes including (student ability/prior achievement, attitude, motivation, age/developmental level, quantity of instruction, quality of instruction, classroom climate, home environment, peer group and exposure to mass media). These variables are therefore cardinal in enhancing educational out comes or educational achievements and form part of the political economy of the education sector. Fullarton (2002) observes that research on psychological characteristics of classroom learning environments demonstrate incremental validity in predicting student achievement. Research has also shown that academic environments contribute to gains in student abilities, interests and attitudes (Feldman, 1988, Ethington and Smart, 2001). The key to this model is the identification of a set of proximate determinants or intermediate variables that directly influence educational outcomes in the context of the political economy. This framework, therefore, identifies 3 groups of mechanisms or proximate determinants that may influence educational outcomes at the selected secondary school. The proximate determinants are therefore grouped into three categories namely: Supply side which includes the quality of instruction, teacher motivation, and teacher qualification. The Demand side which includes peer pressure, pupil attitude, pupil age as well as the environment based factors that include teacher/pupil ratio, parental involvement and exposure to social media.

1.8 Conceptual Framework

Based on the theoretical framework and the literature review, the following conceptual framework was formulated and the resultant variables are derived. The framework shows both the supply side (Quality of Instruction, Teacher Motivation, Teacher Qualification) and demand side factors (Teacher/Pupil Ratio, Parental Involvement, Exposure to Social Media) influencing academic performance. It was not plausible to discuss academic performance without factoring in the presence of the various environmental factors. In this respect, therefore, the study proposed a framework to include as one of the determinants of poor academic performance, intervening variables in form of environment based factors so as to assess its effects on academic performance as well, which in this case include teacher/pupil ratio, parental involvement as well as exposure to social media in the following manner. The relationship between Independent and Dependent variables are shown in figure 1.1 below.
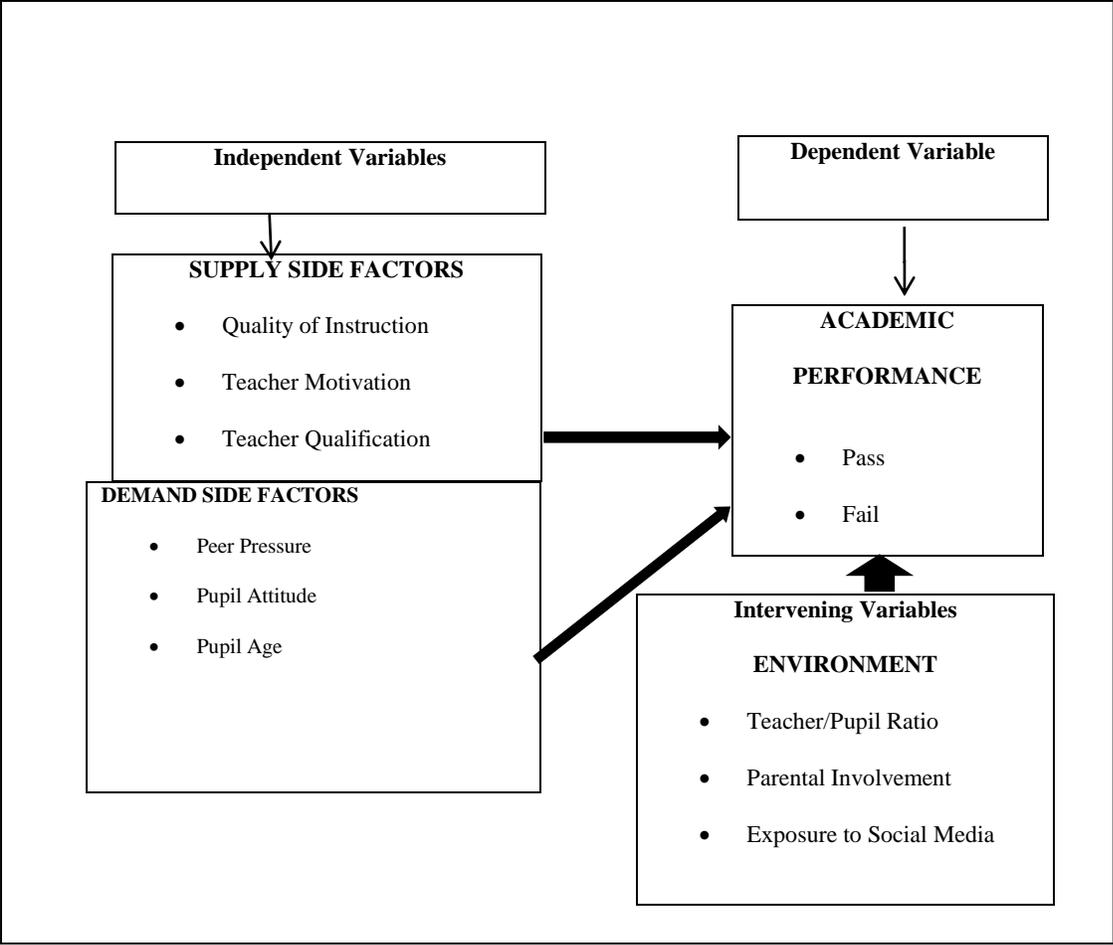
Figure 1.1: Conceptual framework on Determinants of Academic Performance.

 Source: Author's compilation

1.9 Operational definition of key terms

Secondary education: refers to post-primary formal education offered to persons who have successfully completed seven years of primary education and have met the requisite entry requirements (Tilya, 2003).

Academic performance: The indicators of academic performance are marks scored, grades and divisions obtained by candidates with respect to the examination standard board of this country

known as Examination Council of Zambia (ECZ). The ECZ criteria of awarding divisions is as follows: A candidate who sits for examinations is awarded divisions I, II, and III and fail for a person who does not fulfill the conditions for awards of the divisions (I-III) (ECZ; 2009).

Poor academic performance: Aremu and Sokan (2003) describe poor academic performance as that adjudged by the examinee/testee and some other significant bodies that shows as falling below an expected standard. This study therefore adopts anything below division II as poor performance.

Political economy: In this study political economy of education refers to the complex relationship of education, economic growth and income distribution and the formulation of effective policies to improve financing and provision of education.

1.10 Justification

Factors contributing to poor academic performance in Mathematics on the Copperbelt province have not been adequately investigated from a micro perspective at school level. Much research has focused on educational outcomes from a broader perspective of overall performance in various subjects. For example, studies on poor learning outcomes, was undertaken by ECZ in 2013 and by Wales et al, in 2016, respectively. The study by ECZ only demonstrates the General Examination Performance Analysis while the study by Wales, 2016 underlines the accountability solutions to collective action problems of poor learning outcomes. Therefore, this study is worth undertaking as it is a ground breaking study in Zambia to contribute to scholarly literature on poor academic performance in Mathematics from a political economy perspective. Further, the study endeavors to bridge the knowledge gap on knowledge of poor academic performance in mathematics in relation to environment related issues. The study proposed recommendations to redress the factor

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influencing poor leaner performance in Mathematics. As such, examining the factors influencing poor learner performance in Mathematics in Ndola district is worth investigating.

1.11 Organization of the study

Chapter one, provides a background to the factors influencing poor learner performance in mathematics at grade 12 level. The statement of the problem is given in the context of why they have been perennial poor pupil academic performance despite various interventions put in place. The significance of the study is given after the research questions. Additionally, the main objective is stated together with the specific objectives. Chapter one also outlines the theoretical and conceptual framework of the study to generate the hypotheses. This guided the collection and analysis of data. In Chapter two, the detailed literature review concerning the factors influencing poor learner performance in mathematics at grade 12 which include the supply side, demand side and environmental factors is presented. Chapter three presents the study methodology which includes the research design, sampling procedure, the target population and the research instruments used in the study.

CHAPTER TWO
LITERATURE REVIEW

2.0 Introduction

The previous chapter introduced and presented the background to the problem to the study. This section presents a review of literature relevant to the study based on the following themes; The general overview, importance of Mathematics, the factors influencing academic performance under the following heads, the supply side factors, the demand side factors and the environment based factors of the education system and how they influence poor academic performance in secondary schools. The themes adopted in reviewing the literature of the study are core to the specific objectives of the study and are based on the theoretical framework (Walberg, 1993) and empirical evidence from relevant literature as potential predictors of educational outcomes in view of the political economy of education. It presents what is known about the subject and how it relates to the proposed study and also helps to show the existing gaps in the literature.

2.1 General Overview.

Poor pupil academic performance in the education sector as a whole dates back from many years ago in the history of the country and many researchers and educationist have studied and published work on various aspects that contribute to the situation. During the last decades much of the research has focused on lowering the failure rate and closing the achievement gap in nearly all disciplines. In light of the foregoing, Zambia's education sector is constantly changing especially with the development of the current education policy in 1996. Along the way, the government has made several major policy decisions including the declaration of free primary education in 2002, the legal recognition of community schools in 2011, introduction of early childhood education (ECE) in 2014, and reversion to the primary and secondary school structure in 2011 (MESVTEE, 2014). The latter policy decision is the result of criticism of the performance of the basic education system that was introduced in 1983. At that time, the government sought to expand access to basic

education to enable more Zambian children undergo skills training that would lead to employment after nine years of education (grades 1-9). Even as the government planned to gradually upgrade primary schools into basic schools, the investments required outstripped the resource envelope.

District Education Boards include education officials and a range of high profile individuals including local religious leaders, teachers unions and other leading citizens involved in making recommendations and scrutinizing decisions on issues such as discipline and teacher deployment. However, their independence is limited by the fact that their members are nominated by the district education authorities and then appointed directly by the Minister of Education. The performance of the Boards also seems to vary greatly, some play an active role while others lack knowledge of their role and powers meaning that the DEBS has almost complete control over the agenda and decisions. Wales et al, (2016) have argued that the proposed shifting of DEBS responsibilities to District Councils may improve accountability.

2.2 Importance of Mathematics

Mathematics 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 (Irumbi, 1990). Not only has there been increased progress over the past years, but its fields of application have also grown considerably making it an invaluable discipline whose relevance cannot be underestimated in society.

2.3 Factors influencing academic performance.

There are several factors that affect academic performance in secondary schools and may include the supply side factors of the education system which include teachers and all their attributes including (teacher motivation, the quality of instruction they dispense and qualification they possess), bureaucrats at the district, provincial and national level, unions as well as politicians and the demand side of education which includes, students, parents, Parents Teachers Associations (PTA), District Education Boards, traditional leaders, politicians, civil society and the environment based factors which form the general surrounding under which learning takes place and therefore include poverty levels, parents' level of income, parents' level of education, household chores and child labor, exposure to social media and family structure and stability among others. In order for a good academic performance to take place, most if not all of these variables must be redressed. According to Abagi and Odipo (2007) the indicators of academic performance in education include good examination results, positive exhibition of knowledge, skills and attitudes.

2.3.1 The supply side factors of the education system and how they influence poor learner performance in mathematics in secondary schools.

From the political economy perspective the supply side of the education system includes teachers, bureaucrats at the district, provincial and national level, unions as well as politicians among others (Wales et al, 2016). Based on the theoretical framework and empirical evidence from relevant literature, the study narrowed down the focus on the quality of instruction from the teachers, teacher motivation and qualifications.

2.3.1.1 Quality of Instruction

The combination of high-level political dynamics; a lack of support and coherent policy making; and a poor quality teaching workforce pose major challenges to improve educational outcomes. The capacity of teachers, schools and districts is limited and so, as a consequence, their ability to meaningfully respond to citizen pressure is compromised. According to Wales et al (2016), the effect of patronage networks and political transfers undermine the efforts to improve the quality

of education through main mechanisms. First, it contributes to inequity in teacher deployment by facilitating official or unofficial transfers from rural and remote areas to urban areas, blocking teacher places in rural schools in the case of all transfers. Second, it affects mechanisms for teacher oversight and discipline undermining accountability relationships at the school and district level. This interference can involve the over-turning of pay-freezes that are imposed for disciplinary reasons, arranging for teachers who are subject to disciplinary proceedings to be transferred to other areas or preventing the imposition of transfers that are put in place for disciplinary reasons.

A study by the World Bank (2015b) found that teacher absenteeism undermines the quality of instruction in Zambia is correspondingly high as 16 percent of primary school teachers were found to be absent for more than 50 percent of school days in a given month. It must be noted, however, that the study by World Bank did not investigate the effect of the quality of instruction on educational outcomes from a secondary school level. This, therefore, is the information gap the researcher is trying to fill. This had a negative effect on pupil performance. Frequent turnover of staff at the school, district and province level has a disruptive effect on leadership and the consistency of policy implementation undermining progress on learning outcomes (Wales et al., 2016). Another study by Franklin et al., (1996) revealed that quality of instruction, quantity of instruction and motivation had moderate to strong effects on academic achievement of the pupils. However, Franklin et al's study did not investigate the using both the qualitative and quantitative approach. The Quality of instruction that a child receives has a bearing on the educational outcomes of the child. The constant use of the lecture teaching method by teachers as opposed to employing modern methods have been attributed to poor pupil academic performance. Clear instructions and the eclecticism in the teaching methodologies that the teacher employs may result in good pupil performance while poor methodologies and instructions that the teacher offers results

in poor academic performance in Mathematics and indeed other subjects. It is, therefore, cardinal to conduct this study to assess the influence of the quality of instruction on poor academic performance.

2.3.1.2 Teacher Motivation

While the demands on teachers are increasing there is mounting evidence that teacher's morale and status are falling in most developing countries (Fry 2003, Mosha, 2004). Declining morale has serious implications for the recruitment and retention of teachers as well as for teacher performance. Alongside the impact of high-level political dynamics there are a range of interlinked issues at the school and district level that undermine education quality and lead to challenges in resolving problems between these actors. Teacher absenteeism in Zambian schools is high as noted above but the teaching workforce also faces significant challenges without receiving sufficient support. There is significant dissatisfaction as a result with teacher attrition rates being consistently around 11 percent despite two major increases in teachers' salaries, and with less than 20% of this figure being due to retirement, illness or death (World Bank, 2015b).

Teacher salary levels were raised as an issue that has a bearing on academic performance though it is contested that an average teacher pay in Zambia is high relative to other sub-Saharan African countries (World Bank, 2015c). However, the real value of teacher pay has been eroded by high inflation and elements of the salary such as allowances for housing and transport are often not accessible due to funding constraints. This failure to honour commitments can undermine mechanisms designed to improve teacher deployment and morale, such as rural and remote allowances. There is also dissatisfaction with existing systems for performance evaluation; target setting and rewards (Wales et al, 2016). This also affects the academic performance of pupils negatively. The way a teacher is motivated in a secondary environment through various incentives

both locally, at school level or nationally from the Central Government may have a significant impact on the performance of pupils at the secondary school under investigation. It is therefore imperative to conduct this study to assess the influence of teacher motivation on poor academic performance in Mathematics in the district.

2.3.1.3 Teacher Qualification

A study by the World Bank (2015b) revealed that a further challenge for improving learning outcomes is that teachers' subject knowledge is low overall and support to improve the teaching workforce is inadequate and poorly targeted. The World Bank (2015b) further points out that only 27% of teachers received any training in the last year and these tended to be those who were better qualified, rather than those with less education. Interviews highlighted a lack of resources; concerns over the quality of pre-service training and that revision to the national curriculum had not been accompanied by support for teacher re-training. This had a negative impact on learning outcomes. The study by World Bank however, did not look at how teacher qualifications affect poor academic performance specifically in Mathematics. A new national Teaching Council has been created to assess and certify teachers, but there are concerns over the cost that accreditation has imposed on the teachers. Debate on the link between teacher qualifications and pupil performance has taken center stage in the country. The notion of acquiring higher qualifications such as first and second degrees seem not have changed the educational outcomes in a positive manner. This study therefore, investigated the effects of teacher qualification on poor academic performance in Mathematics by the pupils in the selected secondary school A.

2.3.2 The demand side factors of the education system and how they influence poor learner performance in mathematics in secondary schools.

The demand side of education includes, pupils, parents, Parents Teachers Associations, District Education Boards, traditional leaders, politicians, Non-governmental Organizations. Based on the theoretical framework and empirical evidence from relevant literature, this study narrowed down the focus to the following variables peer pressure, pupil attitude and pupil age.

2.3.2.1 Peer Pressure

Peer pressure is defined as students taking actions that deviate from what they privately consider to be the optimal action (what they would do if others would not observe their actions) Adolescence is believed to be the period of greatest vulnerability to peer pressure, during which the desire to be popular or fit in is felt most acutely (Brown, 2004). A study by Bursztyn (2014) examined how the introduction of a system that revealed top performers/leadership affected subsequent performance in the United States of America (USA). The natural experiment considered was applied to a computer based learning system used in over 100 high schools located predominantly in one American state. The system is used primarily for remedial English and Mathematics courses, particularly in preparation for a high stakes, statewide high school exit examination. Prior to the change, students would answer multiple choice questions and receive private feedback on whether their answers were correct. About one month into the 2011-12 school year, without any advanced notice or explanation, the system was changed slightly. Students were now awarded points for correct answers. Simultaneously, home screens provided tabs that revealed the names of top three scorers in the classroom, the school and among all users of the system as measured by cumulative points received for the past week, month and all time. Finally, each tab showed students their own rank (in the classroom, school and among all users, for the past week, month and all

time); there were no other changes to the system. The findings point to the fact that the introduction of the leadership led to a 23% decline in performance. The results showed that students are highly responsive to who their peers are and what the prevailing norm is when they make decisions (Bursztyn, 2014). Another study by Waringu (2014) in Kenya found that peer pressure has a significant effect on pupil academic performance. This study therefore assesses the effect of peer pressure on poor academic performance in Mathematics in Ndola district.

2.3.2.2 Pupil Attitude

Many educators agree that attitude plays an important role in the teaching and learning of mathematics. Attitude refers to how one thinks, feels about and acts towards objects and ideas. Keil, (1985) defines attitudes as positive or negative feelings that individuals hold about objects, persons or ideas. The effect of attitude on performance is an important aspect, Pritchard (1935) argues that boys and especially girls dislike arithmetic because of a feeling of incapacity and strain when dealing with difficult items in the curriculum. Oketch (1982) quoting Aiken noted that there was a modest positive relationship between attitudes and achievement in elementary school Mathematics. It must be noted, however, that Aiken's study did not investigate the subject at secondary level. This, therefore, is the information gap that the researcher is trying to contribute to. In Kenya, Mwangi (1986) also observed that a very significant relationship existed between attitudes towards Mathematics as a process of enjoyment and performance. This study therefore investigates the influence of pupil attitude on poor academic performance in Mathematics in a suburban setting.

2.3.2.3 Pupil Age

Debate on pupil age and performance has been ongoing for a long time. Various studies have found different results in different areas. A study by Momanyi et al (2015) showed that pupil age had a

significant effect on pupils' academic performance. The study investigated the effect of age on the student's academic performance in the teacher made tests. From the findings age had a significant effect on the students' academic performance. The youngest students had higher scores in academic performance than the oldest students. Momanyi et al's study did not investigate the link between pupil age and poor performance in Mathematics. It is this knowledge gap that the researcher has identified and is trying to contribute to. Contrary to this, a study by Rumberger (1995) found that late entrance and repetition do not exert negative effects on academic performance. He found that the older students performed better than those who go to school at an early age. The study also showed that those students who have opportunities to repeat some grades perform better at secondary school level and that late entrance and repetition improved academic performance especially among older students. Another study by Clark and Ramsay (1990) detected a negative relationship between age and academic performance. It is therefore not known whether pupil age has an influence on poor academic performance in Mathematics at the secondary school under investigation.

2.3.3 The environment based factors of the education system and how they influence poor academic performance in mathematics in secondary schools.

Based on the theoretical framework and empirical evidence from relevant literature, the environmental based factors adopted for the study specifically focused on Teacher/pupil ratio, parental involvement as well as exposure to social media.

2.3.3.1 Teacher/Pupil Ratio

Based on the National policy on education the Teacher-Pupil ratio in Kenya is pegged at 1:35 pupils against the public schools where the pupil to teacher ratio stands at an average of 52:1 and is as high as 72:1 in some regions (Nyandwi, 2014). The study by Nyandwi (2014) found that due to population boom there has been a substantial increase of pupils overweighing classrooms in

place in all the visited primary schools in the state as a result of large numbers of pupils in classes where others have to sit on the floor some very close to the chalkboard. This means that most teachers use lecture method while teaching. The study also observed that most teachers employed the lecture teaching method; they rarely applied modern methods. Some of the respondents argued that the use of lecture method was attributed by several factors such as overcrowded classrooms, and lack of teachers 'motivation and hence poor academic performance**.** The outcome of the study revealed that primary schools are overcrowded and that overcrowded classes retard effective teaching- learning activities. Teachers were therefore facing instructional, physical and evaluation problems. It must be noted, however, that Nyandwi's study also did not investigate the link between teacher/pupil ratio and poor academic performance at secondary school level. This is the information gap that this research is designed to fill.

High enrolment ratios directly affect the performance of pupils and academic achievement. Bigger classes usually affect pupils' performance negatively while small classes have a positive influence on academic achievement as teachers have time on individual pupils. Dabo (2015) found that in Nigeria, the expansions of enrolments of pupils have negative effects on teaching-learning process in relation to quality of teaching-learning progress. Dabo (2015) further contends that, the massive enrolment of school pupils led to shortage of resources both human and material resources which constitute problems in the overall progress of teaching-learning process in primary schools. Waringu (2014) in Kenya found that with a high enrolment pupil no longer participate actively in the process of teaching-learning most teachers ended up employing lecture method to the detriment of modern methods of teaching.

However, these factors differ depending on the region under study as well as school. There is therefore need to carry out the study to ascertain how the teacher/pupil ratio affect academic performance in Mathematics at the school under study.

2.3.3.2 Parental Involvement

The home is an institution of equal importance to education just in the same way the school is. In the home, the child is provided with security or denied it and it is the environment where emotional needs are satisfied, denied or strived and waywardness corrected or neglected. (Wales et al., 2016). Wales et al (2016) further found that the overall impression of PTAs from interviews was that these were largely ineffective in terms of the operation of the school and pupil performance and instead focus on raising school funds through PTA fees and on the oversight and implementation of school construction projects. This could have a negative effect on the pupil's academic performance. Their effectiveness is limited by the fact that they are composed entirely of parents who are constantly shifting as children arrive at and leave school and had no representation from community leaders who could exercise stronger influence. PTAs met only rarely and had limited influence, despite the mandate of activities given them including PTA participation in monitoring, facilitating parental complaints of teacher absenteeism and calling on the District Education Board Secretary (DEBS) to resolve disputes at the school level. As stated earlier, these factors differ depending on the region under study as well as school. There is therefore need to carry out the study to ascertain how parental involvement affect poor academic performance in Mathematics at the school under study.

2.3.3.3   Exposure to Social Media

Social networks are becoming major tools for education, and entertainment. The human nature is keen on interacting with people and finding common areas and interests. In education, two streams

are prevailing: the use of social networks as a tool supporting activities deemed important for the purpose of educational institutions, instructors, and students. The second stream is the bad influence social network inflicts on student's behaviors and time management. Facebook resulted in a significant improvement in students' performance in universities. A study in a Vietnamese university concluded that students using Facebook as a social media has improved substantially with respect to their grades (Tuan and Tu, 2013). The same study also concluded that the improvements and value of social network sites was not related to the academic performance but to the adaptation to the social environment of school.

The same argument relating to social absorption by students is reached by Gafni and Deri (2012), where they emphasized the role of social networks in socializing students and opening channels for finding more academic resources, thus improving their academic achievement. Such result was not supported for senior students, where social absorption is less relevant at later years and student experience might benefit more in academic area. Social network is a strong tool for social interaction and connection, where it can improve family ties and friends in a rich social context. Gafni and Deri's study investigated the subject of exposure to social media and academic performance at university level and did not investigate the subject at secondary level under Mathematics. This is another information gap that the research has identified and is trying to fill. A study on 161 Tunisian students concluded that performance was improved because of students' satisfaction with their family and friend relations (Rouis, 2012). The author emphasized the role of multitasking as a moderator of such relationships, where multitasking and students interest in university would help enhance performance based on Facebook use. The use of Facebook was associated with co-curricular activities, which might be considered a positive influence by social media (Junco, 2012a). A study by Al-Tarawneh (2014) found that Social media in general and

Facebook use in particular have bad influences like addiction, wasting time, information overload, and isolation from physical society which may in turn affect student performance in schools. Such results call for more research to see the tradeoff between Facebook advantages and disadvantages. Prevailing factors differ depending on the region under study as well as school. There is therefore need to carry out the study in Ndola to ascertain how exposure to social media affect poor academic performance in Mathematics at the school under study.

2.4 Strategies that could address poor performance in Mathematics.

Having looked at the various factors affecting the general poor academic performance of pupils in different regions it is imperative to discuss the strategies that have been devised in other areas to redress the issue.

High quality studies in recent years have indicated that building incentive mechanisms into teacher salary structures can help improve student outcomes. A randomized evaluation of a teacher incentive programme by Muralidharan and Sundararaman (2011) in Andhra Pradesh, India shows that implementing teacher performance paying in government run schools led to significant improvement in student test scores, with no evidence of any adverse consequences from the programme. In the same vein Duflo et al, (2011) also found that attendance related bonuses to teachers boost teacher attendance rates and student learning outcomes in Rajasthan, India.

A study by Dabo (2015) found that after evidence of poor academic performance of pupils due to population increase, as the population/pupils' enrollment increased so also Government/Stakeholders established new schools, equipped them and recruited adequate qualified teachers for effective teaching and learning. This has led to increased good pupil performance in Bauchi State in Nigeria. The Government designed strategies that enhanced

teachers' capacity and interest to utilize available teaching-learning resources within and outside the school. These strategies included organizing school-based training programs for teachers in the use of varied teaching learning resources and teaching methods. The strategies ultimately led to the improvement in academic performance.

Continuous professional development programmes for teachers as well as leadership development in the education system have become central in the general delivery of education. A study by the Education for All (2015) found that the development of the legal instruments for the creation of the teaching regulation bodies enhanced the status, morale and professionalism of teachers which ultimately improved pupil performance in most subjects across Asia.

A study by Dikgale (2012) found out that the majority of inadequately trained educators are appointed in the rural schools which affect academic performance of Grade 12 learners. According to Dikgale (2012) in the year 2000 the Department of Education in Limpopo Province sent educators who were not adequately qualified to a 3-year period of teaching training after matriculation Certification. Since the number of educators who failed to meet this level of qualification was found to be high in the Limpopo Province that both the University of Limpopo and the University of Vhenda for Science and Technology had to offer a special teacher training program known as National Professional Diploma in Education (NPDE) to enhance the quality of certificates of these educators. The program started in the year 2002 and slowly started improving pupil performance.

A study by Just (2005) identified the role of parents in enhancing good performance including encouraging children to do their homework, attending teacher meetings and to participate in parent groups at school. Just (2005) also emphasizes the adoption of the school-parent compact, a

legislation that encourages schools to reach out to parents by implementing practices that support strong parent participation such as flexible scheduling of home-school conferences. The compact recognizes that families and schools need to work together towards mutual goals and that they share responsibilities for each students' academic performance. These and other strategies have been employed in various countries and could therefore be tried at the school to try and improve performance in Mathematics.

2.5 Gaps identified in the Literature

Critical interrogation of the literature reviewed here shows that very little or no information is directly discussing studies conducted on Zambia in particular. Undeniably most of the studies reviewed in the literature above have provided a lot of insight into factors influencing poor academic performance in general in the respective countries. However useful these studies have been, the analysis was mostly conducted at primary school level. Consequently, very little is known about the situation at secondary school level such in the district. This study is therefore a significant departure from most previous studies in that it investigated factors influencing poor pupil academic performance in Mathematics at secondary school level which earlier studies seem to have overlooked. While there are examples where studies have been conducted to produce the literature in reference, it is also true that majority of what has been reviewed have focused more on poor pupil performance generally.

Moreover, this study is a significant departure from most of the studies reviewed above in that it seeks to address the subject of the factors influencing poor learner performance in Mathematics at Grade 12 level using both qualitative and a quantitative research designs separately via the parallel divergent research design which collects, compares and analyses both the qualitative and quantitative data as opposed to employing one study design.

It is also cardinal to recognise that not only have these writings been few, but they have also not provided impeccable evidence or answers to the factors influencing poor academic performance in Mathematics. In addition, the writings in question have also largely been based on qualitative methods with very little or no quantitative data derived from extensive and systematic investigation of the subject at hand. In view of these weaknesses, this study, therefore, aimed at addressing and answering not only questions on the supply and demand factors influencing poor academic performance but also applies and uses scientific data collection methodologies to articulate the environmental factors and how they are factored in the problem.

There is clearly evidence from the above cited studies that the supply, demand and environment based factors influence secondary schools academic performance of pupils in some parts of the world in various subjects including Mathematics. Factors such as, teacher motivation, teacher qualifications, quality of instruction, parental involvement, high exposure to social media, peer pressure, pupil age, pupil's attitude and high teacher/pupil ratio affect education achievement of pupils as they cause their academic performance to be poor and limit them from progressing to colleges and universities in the country.

CHAPTER THREE
METHODOLOGY

3.0 Introduction

The previous chapter reviewed literature relevant to the study. The current chapter presents the methodology which include the research design, target population, sampling techniques, study sample and procedure, methods of data collection, data analysis techniques, validity testing and ethical considerations.

3.1 Research Design

Research design forms a plan or the blue print on the research process and how it is precisely carried out. Kasonde-Ng'andu (2013) sees it, as the glue that holds the research project together, while Creswell (2008) views it as the section that involves the intersection of philosophical strategies of inquiry and specific methods. This study therefore, adopts a Mixed Method Approach by employing the Convergent Parallel Design (Cresswell and Clark, 2011).
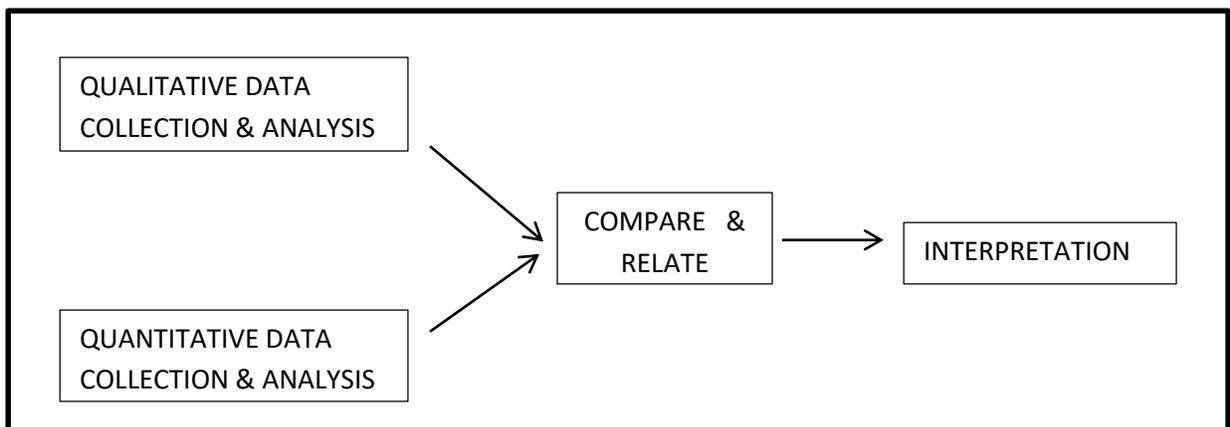
Figure 3.1: The Convergent parallel design

 Source: Cresswell and Clark: 2011.

The convergent parallel design involves collection of both qualitative and quantitative data and later analyzing, comparing, relating and interpreting. The convergent parallel design was very appropriate to this study especially that it is concerned with exploration of views and comparing them to the quantitative data (Cresswell and Clark, 2011). Moreover, the research method is the systematic methodological and accurate execution of the employed design. This study employed methodological triangulation in order to have in-depth and breadth of understanding of the presented research questions (Bryman, 2008). Cohen et al., (2007) posits that triangulation refers to use of two or more methods of data collection in the study of some aspect of human behaviour. The use of both qualitative and quantitative approaches has been necessitated by the differences in the research questions to be addressed and the desire of a diverse range of views in order to cross validate findings and ensure completeness (Bryman, 2008).

3.3 Location (Research Site)

The study was conducted in Ndola district. The research site was selected on the basis that it is home to one of the prominent public secondary schools on the Copperbelt province being the first public secondary school established in Kabushi constituency. Due to ethical considerations the name of the school was withheld throughout the study and was pseudo-named secondary school A (Bowling, 2002).

3.4 Target Population (Participants)

Boasavanthappa (2007) defines population as the category of persons or objects that meet the criteria for study established by the researcher. It can include any set of persons, objects or

measurements having observable characteristics in common. The target population for this study comprised all stakeholders in the provision of secondary education including, teachers, the district and provincial educational offices and union representatives which comprise the supply side of education and the pupils, parents and communities representing the demand side of education.

3.5 Sampling

A sample is defined as a strategically and systematically identified group of people or events that meet the criterion of representativeness for a particular study (Merriam and Simpson, 1995). It can be taken as a subset of the population that represents the entire population under study. The study adopted both probability and non-probability sampling techniques to select actual participants in the study through purposive and random sampling techniques.

3.5.1 Purposive Sampling

The purposive sampling technique was used to select key informants to the study who are information rich in higher educational planning, administration in Zambia such as DEBS, PTA chairpersons, NGO's representatives and the head teacher.

3.5.2 Probability Sampling

Probability sampling techniques was used to select pupils from Secondary School A and teachers of Mathematics, Business studies and Natural sciences were targeted. The reason for this choice is based on the fact that these teachers teach mathematics by virtue of handling the subjects they teach. The systematic and simple random sampling techniques were used to come up with a stratified sample of male and female students.

3.5.3 Study Sample and Sampling Procedure

Within the scope of the research, for sample size determination, Tabachnick and Fidell (2007) have established that a sample size of $N >= 5\,0+8*M$ is adequate for regression analysis, where M is the number of independent variables. Nine (9) independent variables or potential predictors based on the Conceptual Framework (Figure1.1) and empirical evidence from relevant literature, of educational outcomes were identified. Since the study has 9 independent variables as stated earlier, a sample size of $50 + 8 * 9 = $ **122 or more** was adequate for the regression analysis.

On that score therefore, the study sample comprised one respondent from the DEBS' office, one from the Provincial Education Office, one unionist, one respondent from an NGO, one respondent from the PTA, the head teacher, 30 teachers and 100 pupils both male and male. The total study sample arrived at therefore, is 136.

3.5.4 Inclusion criteria

The study sample included all teachers of mathematics, natural sciences and business studies who teach subjects that have some mathematics related concepts or calculations at school A and pupils who sat for the 2017 Examination Council of Zambia (ECZ) Mathematics final Examination .

3.6 Research Instruments

The Semi-Structured Interview Schedule, the Questionnaires and document analysis was used to collect data from the 136 participants.

3.6.1 Semi-Structured Interview

Interviews: Chilisha and Preece (2005) define an interview as a conversation or interaction between the researcher and a research respondent. In this study semi-structured interviews were conducted to officers from DEBs, PEO and CDC. The researcher used this instrument to collect

data from above mentioned officers because a semi structured interview has the following advantages; it is flexible, the respondent feels part of the team since no rigidity is displayed and it allows respondents to respond freely in a relaxed atmosphere, the answers given are more reliable and in-depth (Kombo and Tromp, 2006: 92-93). This allows the researcher to gather enough information as the above officers are key stakeholders in the learning process and implementation of policy. During the interviews, permission to do the voice recording was sought. All the data was captured through voice recording for those who agreed to be recorded while for those who did not give consent to recording was written down.

Semi-structured interviews were employed to collect qualitative data from the key informants such as DEBS, unionists and the PTA among others. Using the interview guide, one-on-one interviews was conducted to collect data for the study. Due to its flexibility, both open and closed-ended questions were included in the interview schedules to collect in-depth information so as to get a complete and detailed understanding of the issue at hand (Kombo and Tromp, 2006). Refer to appendix 2 for details.

3.6.2 Questionnaire

 A questionnaire represents a self-report data collection instrument that is filled out by research participants. Buchi (1974) refers to, a questionnaire as a written document comprising questions seeking answers on a particular subject. Being a paper-and-pen instrument, a questionnaire is supposed to be filled in by respondents in written form and the researcher collects the form with the completed information. This instrument is suitable for use in data collection from a large population within a given time frame. Kombo and Tromp (2006) argue that a questionnaire has the ability to be used to collect information from a large sample and diverse regions as well as saving time. A self-completion questionnaire was administered to pupils at secondary school A in

order to collect quantitative data. A questionnaire was used as the instrument for primary data collection. The questionnaire included two types of questions including the use of the variable and ranking questions. The use of likert scale helped to have a better perspective of pupil performance and the factors affecting it (Neuman, 2007). Refer to appendix 1 and 3 for details.

3.6.3 Document analysis

Lastly, official reports, publications and other important secondary sources relating to the study was examined to collect vital secondary data through the document analysis method. Key official reports and publications and documents were also analyzed to provide valuable information for discussion. The triangulation of different methods of data collection yielded in depth information on society's perception of poor pupil academic performance in Mathematics.

3.7 Data Collection Procedure

Before embarking on data collection, permission was sought in advance from the relevant authorities to access and conduct the research in the institution.

Weimer (1995) observes that data collection is the process of gathering and measuring information on variables of interest, in an established systematic fashion that enables one to answer stated research questions, test hypotheses and evaluate outcomes.

The data collection exercise was undertaken over a period of eight weeks. The actual procedure was done by getting an introductory letter from the Directorate of Research and Graduate Studies (DRGS) which was used to seek authority from the District Education Board Secretary (DEBs) to carry out research at the selected secondary school in Ndola district.

In order to achieve the study objectives, the instrument was administered in the following order; administering of the semi–structured interviews were done first to the 30 teachers, the unionist,

the Head teacher, the DEBS' office, and the Provincial Education Office because interview schedules are likely to take some to be completed by the respondents and the researcher was highly involved despite having fewer interview respondents compared to those who used the questionnaires. Thereafter, the questionnaires for the 100 pupils, the PTA and Civil Society Organization were administered last because collection of data using these instruments was done instantly and may last a short while. The researcher used the interview guide because it is flexible, allows depth to be achieved by providing the opportunity on the part of the interviewer to probe and expand interviewee's responses (Patton, 2002).

3.8 Data Analysis

Data analysis is an important aspect of the research process. Kombo and Tromp (2006) describe it as the process of bringing order, structure and meaning to the mass collected data. In this study qualitative and quantitative data collected was analyzed differently. This refers to examining data that has been collected in a research survey and make deductions and inferences. Charles and McCleland (1989) are of the view that data analysis is a practice in which raw data is ordered and organized so that useful information can be extracted from it. Adèr, (2008) perceives it as a process of inspecting, cleaning, transforming, and modelling data with the goal of discovering useful information, suggesting conclusions, and supporting decision-making

3.8.1 Qualitative Data Analysis

Qualitative data from semi-structured interviews was collected, coded into themes and sub-themes that emerged by processing the data into a form that allows common themes or patterns. This means that the data are not coded sentence by sentence or paragraph by paragraph but for meanings through thematic analysis (Stake, 2006). Outstanding themes were kept in their form. Original quotes or verbatim were used to establish credibility of the emerging themes.

3.8.2 Quantitative Data Analysis

Quantitative data on the other hand, was collected through a questionnaire. The data from questionnaires collected, was analysed in Strata by way of regression analysis. Descriptive statistics in form of frequency tables, means and charts was generated using Strata.

Combining the two methods is called triangulation. Jick (1983) notes that triangulation can uncover a unique variance that might not have appeared in a single method of investigation. This increases confidence of results and allows for creative methods.

3.8.2.1 Regression analysis

Hair et al., (1995) points out that regression analysis is a statistical technique used to analyze the relationship between a dependent and one or more independent variables. The general equation of the linear multiple regression analysis is as follows.

$$Yi = \alpha + \beta1X1 + \beta 2X2 + \beta3X3 + \ldots + \beta nXn$$

Where Yi is the predicted value of the dependent variable, α is the value of the dependent variable, when all the independent variables are zero. That the Y intercept β represents the regression coefficient, and the Xs are the independent variables. The intercepts and the regression coefficients are constants during the examination of a particular sample. But the different values for the dependent variable are predicted for each case by substituting the corresponding values for independent variables (Hair et al., 1995). To aid the interpretation of data, data was analyzed using descriptive statistics. Frequency tables and percentages were used.

Model

In this study a logistic regression model was fitted. Logistic regression estimates the odds of an event occurring and it was used to predict poor academic performance. The rationale for using binary logistic regression stems from the fact that the dependent variable is binary or dichotomous (Hosmer and Lemeshow, 2000) for which the outcome was dichotomized as "pass or fail". The dependent variable noted "1" if the pupil passed and "0" if the pupil failed. The general form of a logistic regression equation is as follows;

Log (p /1- p   ) – b0 +b1 x1 + b2 x 2 + ……+bkxk

Where b0 is constant, b1, b2……..bk are the coefficients of x1 x2…….. xk. p is the estimated probability of any measures of poor academic performance. In this study, representation of odds ratios is as follows. Estimated odds ratios equal to 1 indicate that the academic performance is no different from the reference category. Estimated odds ratio >1, means the likelihood of poor academic performance is higher relative to the reference category whereas the estimated odds ratio < 1, means the probability of poor academic performance is lower relative to the reference category. All odds ratios were rounded to three decimal places.

3.7.3 Identification of variables

Based on the theoretical framework and empirical evidence from relevant literature, nine potential predictors of educational outcomes are identified. The researcher conducted a search for various published work in the existing literature. On the basis of this review, the researcher identified valid and reliable measures for some of the research constructs that was variable) while the exposure (predictors) or independent variables used in the analysis included Quality of Instruction, Teacher Motivation, Teacher Qualification, Peer Pressure, Pupil Ability, Pupil Age, Teacher/Pupil Ratio, Parental Involvement and Exposure to Social Media.

Table 3.1: Description and Measurement of Study Variables

Variables	Description	Measurement
Dependent variable		
Pupil performance	The indicators of academic performance are marks scored, grades and divisions obtained by candidates with respect to the examination standard board of this country known as Examination Council of Zambia (ECZ).	A binary indicator created showing whether a pupil performed well or not distinguishing between **"1"** for PASS and **"2"** for **FAIL.**
Independent variables		
Quality of Instruction	Refers to the quality of instruction delivered to the pupils by the teachers.	Nominal variable distinguishing quality of instruction categorized on the likert scale as, 1 = Good 2= Poor.
Teacher Motivation	This is motivation which is provided to teachers by the school management in an educational institution. Motivation:- is a psychological feature that arouses an organism to act towards a desired goal .	Nominal variable categorized on the likert scale as 1=Good 2 = Poor
Teacher Qualification	Refers to the highest level of education obtained by the teaching staff for the purpose of teaching	Ordinal variable that has classified on the likert scale as 1=Certificate 2=Diploma (**LOW**)

		3= Bachelor's degree 4 = Masters' degree 5= Phd. **(HIGH)**
Peer Pressure,	Peer pressure refers to the influence or pressures that students of particular age cohorts may be forced to copy behaviors from other students found in the same school environment.	. Nominal variable that is categorized on the likert scale as 1=Strongly agree 2=Agree 3=Neither 4= Disagree to 5= Strongly disagree. .
Pupil Attitude	refers to the manner feeling with regard to a person or thing	Ordinal variable that is categorized on the likert scale as 1=Good [ ] 2= Poor [ ].
Pupil Age,	.refers to the age of the pupil at the last birthday	An ordinal variable that is categorized on the likert scale 1 = [15 -19] 2= [20+]
Teacher/Pupil Ratio	Refers to high enrollment ratios based on the number of teachers in relation to the number of pupils in the school.	An ordinal variable that is categorized on the likert scale from 1= High [ ] 2=Low [].
Parental Involvement	Refers to how much parents are involved in terms of moral and material support towards the education of their children and how it affects education performance	Nominal variable that is categorized on the likert scale as 1= Not involved 2=Highly involved
Exposure to Social Media	Refers to the amount of time pupils spend on social media and how they use it and how it affects academic performance	Nominal variable that is categorized on the likert scale as 1=Less exposure. 2= High exposure.

3.8 Validity and Reliability of Results

The concepts of validity and reliability were thoroughly addressed throughout the study process. Validity of an instrument means the degree to which an instrument measures what it is intended to measure. Cohen et al., (2008) observe that validity entails the extent to which an instrument fairly and comprehensively represents the factors under study. Validity focuses on the integrity of the conclusions that are produced from a piece of research (Bryman, 2008). Reliability is concerned with the consistency of the results obtained from a measuring instrument.

To achieve content validity, the Questionnaire and Semi-Structured Interview Schedules were used as key instruments for data collection.

In addition, the researcher made sure that these instruments have all the questions necessary to comprehensively answer the three research questions of the study. In addition, in order to ensure that the results obtained by means of a questionnaire were valid and reliable, a pilot study was conducted with 10 grade eleven pupils. The pilot study helped the researcher to correct the errors which were identified by rephrasing, adding and omitting some questions from the questionnaire prior to their use.

More so, the content of the questionnaire, Semi-structured Interview Schedules and Focus Group Discussion Guide, were examined by research experts from the Department of Educational Administration and Policy Studies. This helped the researcher to refine questions which were found faulty by the research experts in order to improve on the correctness and consistency of the responses given during the actual data collection (Cohen et al., 2007).

Furthermore, to ensure reliability of findings in a study which is both qualitative and quantitative, the researcher made sure that the processes of sampling, data collection and analysis are done

correctly and accurately. For instance, a random sampling technique was used carefully to select 100 pupils. The researcher also ensured that only people who are more knowledgeable about factors influencing poor pupil academic performance are selected as key informants to the study. Lastly, by triangulating the different methods of collecting qualitative and quantitative data, the researcher was able to cross-validate the results to ensure their credibility for generalization.

3.9 Ethical Considerations

Throughout the research, ethical principles relating to issues of informed consent, non-deception and confidentiality of participants was strictly adhered to. Participation in the study was voluntary and based on informed consent, with right of withdrawal at any time (Bryman, 2008). Participants were told about the benefits of participating in the study and the names of participants were withheld in order to protect their confidentiality. The information collected was purely used for academic purposes.

3.10 Summary

The chapter presents the methodology that was used in undertaking the study from data collection to data analysis. It provides a detailed focus on the research design, sampling techniques and data analysis procedures.

CHAPTER FOUR

RESEARCH FINDINGS

4.0 Introduction

The preceding chapter provided the methodology employed for collection and analysis of data in the study. The data were collected from the civil society officials, the Head teacher, teachers and pupils at Secondary School A. The present chapter presents the results of the study of the Poor Learner Performance in Mathematics at Grade 12 level: The convergent parallel design model was employed at Secondary School A in Ndola District of the Copperbelt Province.

The results are presented using the thematic approach in line with the three objectives set out in chapter one of this dissertation, namely:

i. To identify the supply side factors of the education system and how they influence poor learner performance in Mathematics in secondary schools.

ii. To assess the demand side factors of the education system and how they influence poor learner performance in Mathematics in secondary schools.

iii. To evaluate environment based factors of the education system influencing poor academic performance in Mathematics in secondary schools.

In this chapter, the researcher begins by first presenting the demographic characteristics of the participants in the study. Thereafter, the presentations of both qualitative and quantitative results follow. Under each theme derived from the three objectives above, qualitative results are presented first. In doing so, some key quotes from interview conversations with respondents have been

highlighted to illustrate their importance to the study. Thereafter, quantitative data are presented using statistical tables, frequency counts and charts.

The results are carefully presented without any attempt to discuss them.

4.1. Demographic Characteristics of Respondents

Table 4.1: Percentage Distribution of Gender of Respondents

Category	Key informants			Head teachers	Teachers	Pupils	Total
	Civil society	Unionists	Parents Teachers Union (PTA) representative				
Male	00	01	01	01	15	46	**64 (51.2%)**
Female	01	00	00	00	09	50	**61(48.8%)**
Total	**01(0.8%)**	**02(1.6%)**	**01(0.8%)**	**01(0.8%)**	**25(20.0%)**	**96(76.8%)**	**125(100%)**

Source: Field Data

From Table 4.1 above, this study had a total number of 125 respondents. These included one (0.8 %) key informant from the civil society and two unionists (1.6 %), one Head teacher (0.8%), 25(20.0%) teachers and 96 (76.8%) pupils. In terms of gender, there was a fair representation of the respondents as 64 respondents were males which comprised 51.2% of the total number while 61 (48.8%) were females.

4.2.1 Level of Education and Age of Respondents

In this study, 96 (76.8%) were categorized as having obtained grade 12 certificates, 01(0.8%) respondents indicated having obtained primary certificates, 07 (5.6%) reported as having obtained secondary diplomas, while 21 (25.0%) had obtained first degrees while none of the respondents had obtained a master's degree as shown in table 4.2 below. The age distribution of respondents was more confined to the youths. The majority of the respondents were aged less than 20 years, (75.2%), followed by those aged between ages 30-39 (17.6%) while those between 40-49 years (7.2%). There were no respondents aged 60 years and above.

Table 4.2: Level of Education of Respondents by Age

		Age of participant (Years)				Total
		< 20	**20-39**	**40-59**	**60+**	
Level of Education	Grade 12 certificate	94	02	00	00	**96 (76.8%)**
	Primary certificate	00	01	00	00	**01 (0.8%)**

		00	05	02	00	07 (5.6%)
	Secondary diploma	00	05	02	00	07 (5.6%)
	First degree	00	14	07	00	21 (25.0%)
	Post-graduate	00	00	00	00	00 (0.0%)
	Total	**94(75.2%)**	**22(17.6%)**	**09(7.2%)**	**00(0.0%)**	**125 (100%)**

Source: Field data

Having presented the demographic characteristics of the study participants, the next section presents the results of the study.

4.3 QUALITATIVE ANALYSIS

This section presents the qualitative results of the study.

4.3.1The supply side factors of the education system and how they influence poor learner performance in Mathematics at Secondary School A.

One of the three objectives of the study was to identify the supply side factors of the education system and how they influence poor learner performance in Mathematics in secondary schools in Ndola District. This objective was guided by the research question: What supply side factors of the education system influence poor learner performance in Mathematics in secondary schools? To get well informed responses, the researcher targeted key informants to the study to provide answers to this question.

When the question was asked regarding the supply side factors of the education system and how they influence poor learner performance in Mathematics in secondary schools, the majority of the respondents acknowledged that: Quality of Instruction, Teacher Motivation, Teacher Qualification influence poor learner performance in Mathematics at Secondary School A.

4.3.1.1 Quality of Instruction

Three key informants to the study revealed that the quality of instruction had a direct influence on learner achievement of performance in mathematics. Poor teaching results in poor academic performance where as good teaching or instruction results in good pupil performance. They stated that teachers as vehicles of instruction had an obligation to provide quality set of instructions to ensure quality performance from the pupils.

To illustrate this, the representative from the PTA asserted that:

> *The teachers should be able to teach effectively and consistently so that pupils can perform well in subjects such as mathematics that we considered being difficult. Poor teaching begets poor results.*

He further added that:

> *There has to be commitment by the school administration in ensuring that teachers are teaching effectively using various teaching approaches and methods.*

One of the administrators suggested:

> *The quality of instruction directs pupil's thinking and hence poor instructions have a bearing on academic performance and vice versa.*

When asked if teaching colleges were obligated to produce quality teachers, unionists from one teacher union firmly opined:

> *Education is a social service that requires serious planning. As such, teaching colleges and universities have no option but to get involved in the provision of quality education as much as possible in order to get quality teachers. This can uplift the low academic achievement in mathematics in the country.*

The research results indicate that 21(84%) of teacher respondents admitted that poor quality of instruction has an influence to poor academic performance and that it has major bearing on academic performance whereas, 4 (16%) of the teacher respondents disagreed with the concept of poor quality of instruction leading to poor academic performance in the school.
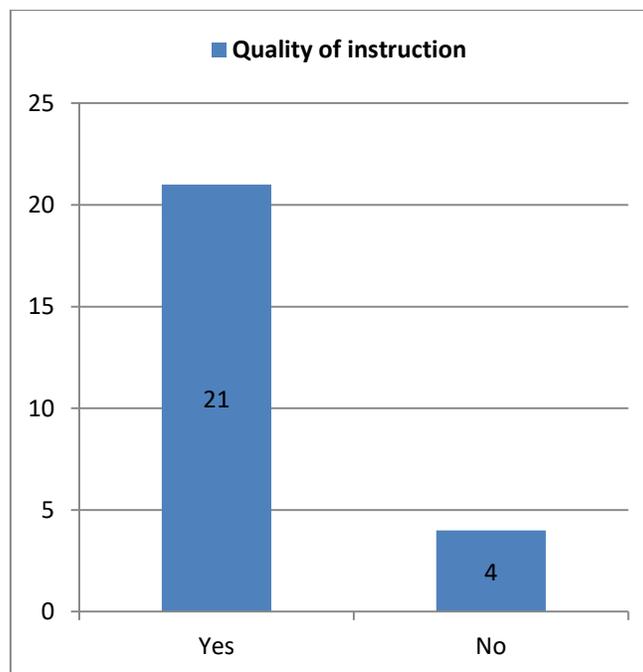
Figure 4.1: Quality of instruction and poor education performance

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There is a relationship between the quality of instruction and poor academic performance.

The relationship is not statistically significant shown in 4.1, but it has a negative effect on the academic performance in the study area.

4.3.1.2 Poor Teacher Motivation

The need for teacher motivation both locally and at national level to improve learner performance in Mathematics was equally supported by the majority of the teacher respondents (64.1%). The findings show that poor teacher motivation had a significant influence on poor learner performance in mathematics.

During the interview, when asked about how poor teacher motivation influences learner performance in mathematics, one of respondent from the civil society stated that:

> *Good management relationship and good work culture among teachers enhances good learner performance. On the other hand, teachers who are de-motivated will not deliver as expected in the classroom.*

The respondent from the civil society's point of view was equally echoed by an educationist who also believed that a poorly motivated teacher results in poor pupil academic performance:

> *It is important to have both institutional and national motivation for teachers so that they can put in much which can be translated in learner achievement. There should be administration support and commitment to providing learning materials in order to enhance a good learner performance.*

A similar view was held by one teacher who noted that:

The administration should provide an enabling environment; both verbal and material encouragement is vital. De-motivated teachers may not put more effort in achieving the set objectives.

4.3.1.3 Low Teacher Qualification

The other factor which has been stated to influence poor learner performance in Mathematics was low teacher qualification in Mathematics (Diploma in mathematics and below). The research results indicate that (64%) of teacher respondents reported that low teacher qualification had an influence on poor academic achievement in Mathematics whereas, 36% of the teacher respondents disagreed with the concept of low teacher qualification, low performance in mathematics or higher teacher qualification in Mathematics and higher performance in the subject.

One teacher was of the view that:

The higher the academic qualification the larger the knowledge base and vice versa. This influences delivery to pupils.

Another teacher argued:

Good teacher qualification will raise a good pupil.

Another teacher had a similar view:

The most exposed the teacher is, the more easily they can explain concepts, so, low teacher qualification may lead to poor academic performance especially in subjects like mathematics.

4.3.2 The demand side factors of the education system and how they influence poor learner performance in Mathematics in secondary schools.

Apart from identifying the supply side factors of the education system and how they influence poor learner performance in Mathematics in secondary schools in Ndola district, the second research objective of the study sought responses to the question: What demand side factors of the education system influence poor learner performance in Mathematics in secondary schools? To thoroughly answer this question, the respondents were targeted for responses by means of semi structured interviews.

The results revealed that the majority of the teachers thought: peer pressure, pupil attitude and pupil age had an influence on learners' educational achievement.

4.3.2.1 Peer Pressure

All the teachers and the two key informants form the civil society and the teachers union shared a similar view that peer pressure had a negative bearing on the learner performance in mathematics. Regarding this particular situation, one head of department substantiated that:

Because a lot of pupils follow the multitude, it may lead to copying bad habits which may generally affect pupil performance. Peer pressure has power to transform character either negatively or positively.

The head of department further added that:

Some pupils can discourage their friends that mathematics is difficult and hence affecting leaner achievement in the subject.

Similarly, another head of department remarked that:

Pupils indulge in monotonous behavior such as dodging classes because they copy their friends' negative behavior resulting in poor performance.

4.3.2.2 Pupil Attitude

Another factor that was prominent among the teacher respondents regarding poor performance is the attitude of the pupils towards the subject. A number of teachers suggested poor pupil attitude resulting in poor academic performance in mathematics.

For instance, one teacher remarked:

The attitude towards a particular subject significantly affects the performance of the child in that particular subject and Mathematics happens to be one of them.

Another teacher had a similar view:

Pupils who have a negative attitude towards any subject including mathematics perform badly. This can result from lack of interest in the subject.

The head teacher of the school shared a similar view.

Poor attitude by pupils will lead to failure in mathematics. This could result from unwillingness of pupils to attend and participate in class lessons.

4.3.2.3 Pupil Age

The age of the pupil was one aspect that most respondents thought had a bearing in influencing academic performance in Mathematics by the pupil. When spelling out the requirements for good performance in Mathematics.

One senior teacher stated that:

> *Most pupils have phobia in mathematics and so the age of the pupil has a bearing on the academic performance of the pupil as the cognitive development plays a significant role in enhancing good academic performance.*

Another teacher stressed:

> *Cognitive abilities match with age.*

4.3.3 The environment based factors of the education system influencing poor academic performance in Mathematics at Secondary School A.

The third objective of the study provided the researcher an opportunity to explore environmental based factors of the education system influencing poor academic performance in Mathematics in secondary schools. This was guided by the research question: How do the environmental based factors of the education system influence poor academic performance in Mathematics at Secondary School A.

The responses from respondents indicated that mechanisms such as having: a high Teacher/Pupil Ratio, Lack of Parental Involvement and Exposure to Social Media are the environmental factors that influence poor academic performance in Mathematics at the school.

4.3.3.1 Lack of Parental Involvement

The findings show that lack of parental engagement in issues pertaining to school has an influence on poor academic performance from the pupils as they lack guidance and encouragement to perform better. For instance

The Head teacher commented:

Learners become serious with studies when parents keep on monitoring the books of children.

Parental involvement increases pupil interest in the subject. When parents are involved pupils feel motivated and encouraged.

A respondent from the civil society on educational outcomes said that:

Parental involvement influences positively because parents provide counsel and materials required to the child as recommended by the teacher. Parents give academic guidance and support to pupils, this greatly improves performance.

A respondent from the union thought:

Parents can motivate pupils through support and encouragement. The more they interact with their parents the lesser the burden.

4.3.3.2 Exposure to Social Media

Another key finding agreeable by all the respondents to influence academic performance was exposure to social media when wrongly used. Some of the responses from the respondents are as follows;

One teacher said;

Pupils do not devote their time to studies because of social media including Facebook and watsap. Pupils waste a lot of time chatting on social media instead of studying.

The pupil responses regarding how much time they spend on social media is presented in figure 4.2 below. 75 pupils representing 78% reported to have spent over 4 hours on social media while 21 pupils representing 22% reported to have spent less than 4 hours on social media.

Pupil Time spent on social media platforms

- Spends less than 4 hours on social media 22%
- Spend over 4 hours on social media everyday 78%
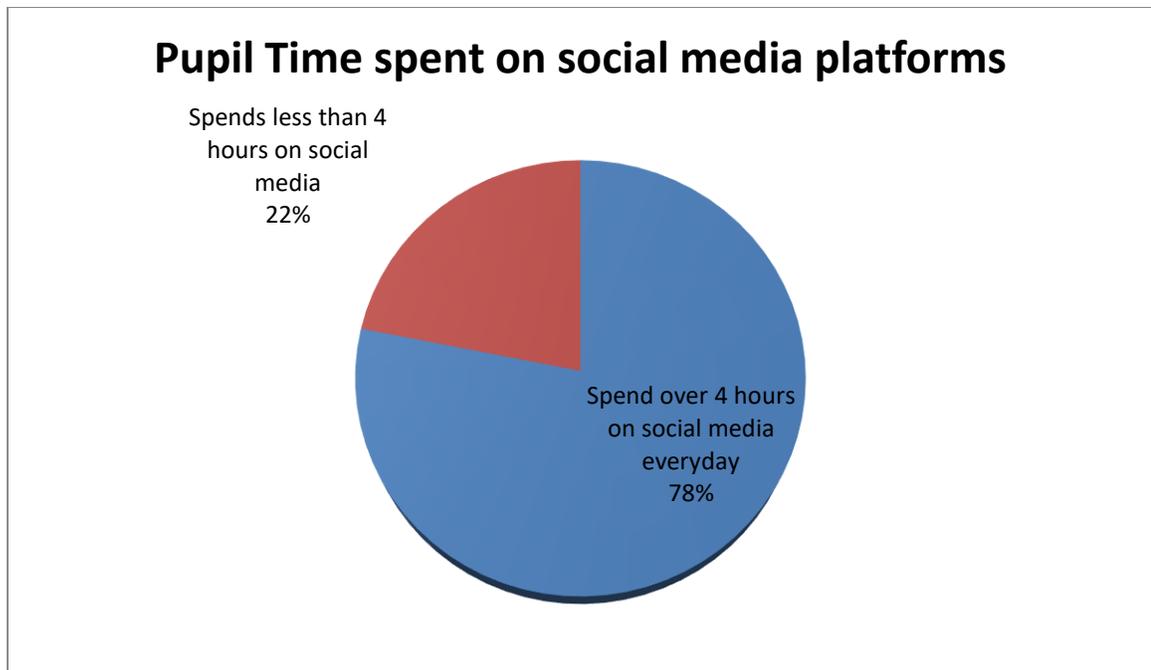
Figure 4.2: Pupil time spent on social media platforms

4.3.3.3 Teacher/Pupil Ratio.

The study also sought to establish the influence of Teacher-Pupil Ratio in the determination of teachers work load in his/her job on performance of the pupils. They were therefore asked to indicate the average size of the class they are teaching if it is manageable and if they are comfortable with their work load and if they are able to give each pupil individual attention. The data is presented in Table 4.3 below.

Table 4.3: Teacher-Pupil Ratio and Poor Academic Performance in Mathematics

Statement	SA		A		UD		D		SD		Total	
	f	%	f	%	f	%	F	%	f	%	**F**	**%**
The average size of the class you are teaching is **NOT** manageable?	19	76%	03	12%	-	-	03	12%	-	-	**25**	**100%**
Source: field data												

KEY: SA = Strongly Agree, A = Agree, UD = Undecided, D = Disagree, SD = Strongly Disagree

Data revealed that majority of teachers were in agreement that the average size of classes which they are handling is not manageable. 19 (76%) strongly agreed, 03 (12%) disagreed and 03 (12%) agreed. The findings revealed that teachers are not able to manage the number of pupils in their classes. This indicates that the number of pupils per class is very large and the teachers during the lessons are not able to manage them in the best way possible.

Some of the responses from the teachers regarding teacher–pupil ratio were as follows;

A teacher remarked:

> *Teacher- pupil ratio has an influence because having a large number of pupils to be controlled by one teacher leads to less concentration as there is too much noise.*

Another teacher echoed similar sentiments that:

> *There is limited contact time between the teacher and the pupil. It is much easier to manage a*
>
> *small group of pupils and pupil participation depends on the population. Teacher should be able*
>
> *to interact with the pupils on a one-on-one basis.*

In summary, the pupil respondents were asked to choose a variable which they felt had a bearing on academic performance. These results are presented below.

Table 4.4: Pupil Reasons for Poor Academic Performance in Mathematics

Factor	Frequency	Percentage
Quality of Instruction	09	9.4%
Teacher Motivation	02	2.1%
Teacher Qualification	13	13.5%
Peer Pressure	09	9.4%
Pupil Attitude	30	31.3%
Pupil Age	01	1.0%
High Teacher/Pupil Ratio	26	27.1%
Low Parental Involvement	04	4.2%
Exposure to Social Media	02	2.1%
	96	100%

Table above shows that pupil attitude as a reason for pupils poor academic performance in Mathematics had the highest frequency (30) representing 31.1% which is the highest percentage The second, third and fourth on the list were high teacher/pupil ratio (27.1%), teacher qualification (13.5%) and peer pressure and quality of instruction both at (9.4%) while the least among the reasons was low parental involvement (4.2), teacher motivation and Exposure to social media both at 2.1% respectively and pupil age (1.0%).

4.4 QUANTITATIVE ANALYSIS

Having presented the results from the qualitative analysis, this section presents the results of the study from the quantitative analysis. Factors Influencing Poor Learner Performance in Mathematics at Grade 12 level are first presented at bi-variate level to check for the association between the dependent and independent variables. Those that were significantly associated with poor learner performance at $p < 0.05$ were advanced for analysis at multivariate level.

4.4.1 Bi-variate relationships between the factors and poor academic performance.

The bi-variate analysis shows the effect of each single independent variable on poor learner performance. All the categorical predictor variables were dummy coded with the lowest category as the reference. In all the analyses, 1.000 was the proportional odds ratio for the reference group. Table 4.5 below presents the results of the odds of poor academic performance with p-values at Secondary School A. The pupil respondents (N) and the proportional percentage (%), the p -values, odds ratios (OR) and 95 % confidence intervals are presented. The binary logistic regression analysis, detected a significant association between poor academic performance and the following factors at $p < 0.05$: Teacher/Pupil Ratio, ($p = 0.001$) Peer Pressure ($p < 0.001$), Pupil Attitude ($p <$

0.001), Parental Involvement (p < 0.001), Quality of Instruction (p < 0.001), Poor Teacher Motivation (p < 0.001) and Exposure to social media (p = 0.002). On the other hand, the bi-variate analysis did not detect a significant association between Teacher Qualification (p = 0.734), Pupil Age (p = 0.777) and poor academic performance by pupils in Mathematics at Secondary School A.

Table 4.5: Odds of factors influencing poor pupil performance at p-values.

	FACTORS INFLUENCING POOR ACADEMIC PERFORMANCE				
	Variable Name N	%	OR	95% CI	P-value
Teacher/pupil ratio					
Low	16	17	**1.000**		
High	80	83	0.969	0.797 – 0.118	< 0.001
Peer pressure					
SA	74	77	**1.000**		< 0.001
SD	22	23	2.401	1.998 – 2.886	
Exposure to social media					
Low exposure	12	13	**1.000**		
High exposure	84	87	1.743	1.380 – 2.201	= 0.002
Pupil attitude					
Poor attitude	50	52	**1.000**		
Good attitude	46	48	1.021	0.904 – 1.154	< 0.001
Low parental involvement					
Not involved	70	73	**1.000**		
Highly involved	26	27	0.732	0.650 – 0.825	< 0.001
Quality of Instruction					
Good					
Poor	70	73	**1.000**		
	26	27	0.732	0.650 – 0.825	< 0.001
Teacher motivation					
Poor	85	86	**1.000**		
Good	11	14	2.038	1.805 – 2.300	< 0.001
Teacher qualification					
Low	46	48	**1.000**		
High	50	52	2.504	0.904 – 1.154	=0.734
Pupil age					
15-19	87	91	**1.000**		
20+	09	9	0.954	0.648 – 0.932	= 0.777

4.4 Multivariate relationships between various factors and poor academic performance.

This section presents results of the multi-variate analysis for those variables that were significant at bi-variate level. It must be noted that the four predictor variables clearly indicated in the table had a high influence on the poor academic performance in mathematics at Grade 12 level than others. Data regarding results of the multi-variate analysis are summarized in Table 4.6 below

4.4.2.1 Predictors of poor pupil academic performance.

Table 4.6: Factors Influencing Poor Academic Performance.

FACTORS INFLUENCING POOR ACADEMIC PERFORMANCE FINAL MODEL			
	OR	P	95% CI
Teacher/pupil ratio Low High	**1.000** 8.994	< 0.001	3.681-21.979
Exposure to socio media Low exposure High exposure	**1.000** 2.499	< 0.001	1.605 – 3.892
Pupil attitude Poor Good	**1.000** 0.418	= 0.001	0.626 – 0.853
Parental involvement No involvement Highly involved	**1.000** 0.637	<0.001	0.596 – 0.799

Source: Field data

As shown in Table 4.6, a Logistic regression analysis was performed to ascertain the effects of teacher/pupil ratio, exposure to social media, pupil attitude and parental involvement against poor

academic performance. All the categorical predictor variables were dummy coded with the odds of poor academic performance in the lowest categories as the reference. In all the analyses, 1.000 was the proportional odds ratio for the reference group. Table 4.6 above contains results of the final model (only includes factors that are significant using the stepwise backward regression).

In the final model, four factors were associated with poor performance in mathematics namely teacher pupil ratio, exposure to social media pupil attitude and parental involvement:

For the predictor High teacher/pupil ratio (OR = 8.994, 95% CI: 3.681-21.979) versus low teacher/pupil ratio. The odds ratios for teacher/pupil ratio indicate that while holding all other variables constant, at Secondary School A, a pupil who has agreed to have belonged to a class with a high teacher/pupil ratio has nine times the odds of poor academic performance than is a pupil who comes from a class with low teacher/pupil ratio and this difference is statistically significant at $p < 0.05$.

The predictor variable Exposure to social media (OR =2.499.95% CI:1.605 – 3.892) indicates that whilst holding all other variables constant, pupils with higher exposure to social media have two and half times more odds of likelihood to perform badly in mathematics at Secondary School A than pupils with low exposure and the result is statistically significant at $p < 0.05$.

The predictor variable Pupil attitude indicates that those with a good attitude (OR = 0.418, 95% CI: 0.626 – 0.853) are less likely to fail compared to those with a poor attitude towards the subject and this difference is statistically significant at $p < 0.05$. This means that at Secondary School A, pupils with a poor attitude towards Mathematics are more likely to fail compared to those with a good attitude towards the subject.

For the predictor variable parental involvement indicates that pupils whose parents are highly involved in their academic affairs (OR = 0.637, 95% C 0.596 – 0.799) are less likely to fail compared to those whose parents are not involved at all and this difference is statistically significant at $p < 0.05$. This means that at Secondary School A pupils whose parents are not involved in their school work are more likely to fail Mathematics compared to those whose parents are highly involved.

CHAPTER FIVE
DISCUSSION OF FINDINGS

5.0 Introduction

The previous chapter presented the results of the study. The present chapter discusses the findings presented in chapter four by relating them to the literature reviewed in chapter two and also to the theoretical framework in chapter one in the light of the three objectives of this study. The major findings are discussed under three (3) headings derived from the research questions. This is meant to provide adequate answers to the three objectives and realize the purpose of this study.

5.1 The supply side factors of the education system and how they influence poor learner performance in Mathematics at Secondary School A.

The first objective was to establish the supply side factors of the education system and how they influence poor learner performance in Mathematics at Secondary Schools A. The research findings from the qualitative analysis show that the quality of instruction, low teacher motivation and teacher qualification influence poor learner performance in Mathematics at Secondary School A. The results are consistent with the conceptual framework and the literature as reviewed by Wales et al (2016), Franklin et al., (1996), Fry (2003), Mosha, (2004) and the World bank (2015b) who found similar results. On the other hand, the quantitative analysis did not detect any significant relationship between the quality of instruction, low teacher motivation, low teacher qualification and poor academic performance. The qualitative results are at variance with the quantitative results. This is attributable to factors from other variables that have changed the general picture despite these variables being significant at bi-variate level.

From these findings it entails that poor pupil performance in Mathematics at Secondary School A could be attributed to various factors by opinion of the respondents through the qualitative analysis

but should be subjected to further quantitative analysis to establish the existing relationship for confirmation.

5.2: The demand side factors of the education system and how they influence poor learner performance in Mathematics at Secondary School A.

The second objective examined the demand side factors of the education system and how they influence poor learner performance in Mathematics at Secondary School A. It was established from the qualitative analysis that Peer Pressure, Pupil Attitude and Pupil Age have an influence on poor academic performance. The results are also in line with the theoretical framework and the literature by Waringu (2014) in Kenya found that peer pressure has a significant effect on pupil academic performance and Mwangi (1986) also observed a very significant relationship between attitudes towards Mathematics as a process of enjoyment and performance in Kenya.

Similarly the quantitative analysis also found significant association between poor pupil attitude and poor academic performance in Mathematics at Secondary School A. The analysis could not, however, detect a significant relationship between pupil age and poor performance in Mathematics.

These findings therefore entail that the attitude of the pupil towards a particular subject is a major contributor to poor pupil performance in a particular subject. It is therefore incumbent upon teachers to develop interest in pupils by applying eclectic approaches and methods that could stimulate pupil interest in the classroom.

5.3 The environment based factors of the education system influencing poor academic performance in Mathematics at Secondary School A.

The third and final objective was to determine environment based factors of the education system influencing poor academic performance in Mathematics at Secondary School A. Both the qualitative and quantitative analysis showed that high Teacher/Pupil Ratio, low Parental Involvement and high Exposure to Social Media influence poor academic performance in pupils. The results are consistent with the theoretical framework and the literature review. For instance Al-Tarawneh (2014) found that Social media in general and Facebook use in particular has a bad effect, such as addiction, which may consume pupils time and therefore influence poor academic performance. Furthermore, the theoretical framework depicts attitude as one of the predictor variables on poor academic performance in mathematics at Grade 12 level. These results are also at variance with Tuan and Tu, (2013) who found that Facebook as a social media has improved substantially pupil grades.

Social media when badly utilized wastes pupil's time, leads to information overload, and isolation of individuals from physical society which may in turn affect student performance in schools, particularly in mathematics.

CHAPTER SIX

CONCLUSIONS AND RECOMMENDATIONS

6.0 Introduction

The preceding chapter presented the major discussions of the study on the factors influencing poor learner performance in Mathematics at grade 12 level at Secondary School A in Ndola district of the Copperbelt province. This chapter draws conclusions from the study, provide recommendations based on the research findings and make suggestions for further research.

6.1 Conclusions

The purpose of this study was aimed at investigating factors influencing poor learner performance in mathematics at Grade 12 level at Secondary School A. Based on the findings and discussions, the following conclusions were drawn:

After a careful analysis of the findings in the light of the study purpose, the researcher is of the view that, the barriers to improving learning outcomes in Zambia are many and cut across both the demand and supply side, and interact across the school, district, provincial and national levels.

While Secondary School A has the potential to improve the results in Mathematics drastically, the following major findings pose a serious threat to learner academic achievement: Poor pupil attitude, High Teacher/Pupil Ratio, low Parental Involvement and high Exposure to Social Media influence poor academic performance in pupils. The large classes of pupils have a negative bearing on the teaching and learning process in relation to quality of teaching. Consequently, the massive enrolment of school pupils leads to shortage of resources both human and material resources which constitute problems in the overall teaching and learning process in secondary schools.

Furthermore, pupils at Secondary School A seem to no longer participate actively in the learning process and exhibit poor attitude to the detriment of learning outcomes.

6.2 Recommendations

In the light of the major findings above, the following recommendations are being proposed to ensure good academic achievement in Mathematics at the school. Moreover, Parental involvement in education management must be strengthened and encouraged in order to enhance and improve pupils' performance. Other than that, Parental involvement must further be enhanced in order to regulate abuse of social media by pupils.

Over and above, the enrolment of pupils in schools by the administrators must be commensurate with available human resource in order to minimize the high teacher/pupil ratio. In the same line, there is need to build more secondary schools in the country by both the government and cooperating partners in order to absorb the high number of pupils in the existing secondary schools and those in the out of school.

Furthermore, there is need for the administrators in schools to see to it that teachers in secondary school stimulate interest in Mathematics through the use of different teaching methods. In a similar manner, there is need to train more teachers by the Examination Council of Zambia in the marking of Grade 12 mathematics examinations so that they could get insight of what is needed during marking. Since the findings in line with supply factors (Quality instruction), pose a challenge, it would be prudent to enhance teacher training in marking in order to enhance quality instruction; to empower them with knowledge that would be transmitted to the pupils, who are key in the equation of academic performance in mathematics. In that way, pupils would know what to expect, which approach to use and how to present the work in the examinations for better results at Grade 12 level.

6.3 Recommendations for further study

Finally, it is highly recommended that a similar study be conducted to investigate factors affecting poor academic performance particularly at a primary school in the district. This may allow comparison of the results of studies between different levels of education in Ndola District. The studies could pave way for a deep clear check on how Primary education impacts the result output at Grade 12 level in mathematics. This implies that there would be balance checking whether the mathematical concepts learnt at primary school really have a bearing on the mathematical concepts at Secondary school level and consequently, a bearing on results at Grade 12 level.

Furthermore, it is recommended that an experimental study be conducted where clear interventions, such as close monitoring of staff and intensification of CPD in secondary school A could be put in place. Thereafter, a follow-up of result comparative analysis could be done to ascertain what indeed affects poor academic performance in mathematics at Grade 12 level.

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APPENDICES

Appendix 1: Questionnaire for Pupils

This questionnaire is designed to assist me to find out the factors influencing poor performance of Mathematics in the examinations council of Zambia (ECZ) IN Ndola. The information that you provide will be used for research purpose only and will be treated with utmost confidentiality. Please do not write your name. Kindly respond to all the items in the questionnaire as correctly and honestly as possible.

You reserve the right to accept or refuse to participate in this study. You may terminate your participation in this study at any time without having to give an explanation. Please do not enter your name or contact details on the questionnaire. Your identity as a participant will be kept confidential as far as the law allows. To declare your willingness to freely take part in this study, sign below. Your participation is deeply appreciated. The findings of the study would help in guiding policy formulation in the area of Mathematics in the education sector in Ndola district which school managers may adopt in their respective schools in order to overcome the problem of poor performance in the subject.

Yours sincerely

……………………. Lombe Lucas

Respondent to Sign I ………………………….do hereby declare that I have voluntarily accepted to provide responses to the questionnaire administered to me by the said Lucas Lombe. I understand the purpose of the study as explained to me. I also understand that I can withdraw from the study at any time without having to give any prior notice and that participation in this study is purely voluntary. I further understand that the information I give will be used for purely academic purposes.

Please tick whichever you think is appropriate in the boxes provided.

SCETION A: PUPIL 'S DEMOGRAPHIC CHARACTERISTICS

Q1. What is your gender? 1= Male [   ]   2 = Female [   ]

Q2. What is your age on your last birthday? **1**= Below 15years [   ]   **2**= 15-17 years   [   ]

3= 18-20 years   [   ]   **4**= 21years and above [   ]

Q3. Whom do you live with? 1= Both parents [   ] .2=single parent .3= Relative .4= Other, specify……

Q4.What is the occupation of your parents/guardian? 1=formal employment   [ ].

2= informal employment [ ]

Q5. How far is your home to school? 1= Not far[   ] .2= Far [   ]. 3= very far [   ]

SECTION B: PERFORMANCE IN MATHEMATICS

QUE No	QUESTIONS	RESPONSE	FOR OFFICIAL USE
Q6	What grade did you score in mathematics at Grade 12 final exams	(1= Div 1 [ ] Div 2 [ ]) (2= Div 3 [ ] Div 4 [ ] 9 [ ])	

Below are statements about characteristics of instruction in your school. For each item, indicate the extent to agreement, from strongly agree to strongly disagree by checking the appropriate category. Kindly respond to all items.

Key :SA. = Strongly Agree,   A = Agree,   UD = Undecided D = Disagree,   SD = Strongly Disagree

:VG = Very Good, G = Good, NS = Not Sure, P = Poor, VP = Very Poor

SECTION C: QUALITY OF INSTRUCTION

QUE No	QUESTIONS	RESPONSE					FOR OFFICIAL USE
		SA	A	UD	D	SD	
Q7	Teachers handle mathematics well at this school						
Q8	Teachers' subject knowledge is good						
Q9	Teachers explain concepts well						
Q10	In your opinion poor quality of instruction contributes to poor academic performance in mathematics						
Q11	How do you rate the teaching of mathematics in this school	VG	G	NS	P	VP	

SCETION D: PEER PRESSURE

QUE No	QUESTIONS	RESPONSE					FOR OFFICIAL USE
		SA	A	UD	D	SD	
Q12	It is important to be popular in school						
Q13	I did what my friends do						
Q14	I did things my own way						

Q15	I used to skip school with my friends						
Q16	On a scale of 1-5 how would you rate friends influence on the performance of mathematics in secondary school	5	4	3	2	1	

SECTION E: PUPIL ATTITUDE

QUE No	QUESTIONS	RESPONSE		FOR OFFICIAL USE
		YES	NO	
Q17	Mathematics was my favorite subject in school			
Q18	Mathematics is easy			
Q19	Mathematics is just difficult and boring			
Q20	I don't care whether I pass or fail Mathematics			
Q21	I'm satisfied with my grade in Mathematics			

SECTION F: PUPIL AGE

QUE No	QUESTIONS	SA	A	UD	D	SD	FOR OFFICIAL USE
Q22	Mathematics at grade 12 is advanced for pupil 's reasoning						
Q23	Age has an influence on performance in mathematics						

Q24	Mathematics performance at lower grades is always good						

SECTION G: PARENTAL INVOLVEMENT

QUE No	QUESTIONS	RESPONSE		FOR OFFICIAL USE
		Not involved	**Highly involved**	
Q17	My Parents/guardians assist with mathematics homework			
Q18	My Parents/guardians consulted teachers regularly about progress in mathematics			
Q19	My parents/ guardian provide textbooks, uniforms and other materials required by the school administration			

SECTION H: EXPOSURE TO SOCIAL MEDIA

QUE No	QUESTIONS	RESPONSE		FOR OFFICIAL USE
		Less exposed	Highly exposed	
Q20	Are you exposed to social media			
Q21	Social media takes my study time			

Q22	The large size of groups on social media makes it easy to collaborate			
Q23	Finishing my school tasks is easier through social media			
Q24	Social media is more helpful than people think			

SECTION I: TEACHER / PUPIL RATIO

QUE No	QUESTIONS	RESPONSE		FOR OFFICIAL USE
		High	Low	
Q25	What was the number of pupils in your class			
Q26	Chances of Teachers having problems in marking class work on time			
Q27	Chances of class size making it difficult for teachers to teach well.			

SECTION J: TEACHERS MOTIVATION

QUE No	QUESTIONS	RESPONSE			FOR OFFICIAL USE
		Low		High	
Q28	How do you rate teacher motivation at your school				
Q29	Teachers were rarely absent				
Q30	Teachers always encouraged pupil to perform well				
SECTION H: TECAHER QUALIFICATION					

QUE No	QUESTIONS	RESPONSE					FOR OFFICIAL USE
		SA	A	UD	D	SD	
Q31	We had competent teachers in mathematics						

Thank you for your cooperation

Appendix 2: Interview Schedule for Teachers and Administrators and Unionists.

This questionnaire is designed to assist me to find out the factors influencing poor performance of mathematics in the examinations council of Zambia (ECZ) examination at this school. The information that you provide will be used for research purpose only and will be treated with utmost confidentiality. Please do not write your name. Kindly respond to all the items in the questionnaire as correctly and honestly as possible.

You reserve the right to accept or refuse to participate in this study. You may terminate your participation in this study at any time without having to give an explanation. Please do not enter your name or contact details on the questionnaire. Your identity as a participant will be kept confidential as far as the law allows. To declare your willingness to freely take part in this study, sign below. Your participation is deeply appreciated. The findings of the study would help in guiding policy formulation in the area of Mathematics in the education sector in Ndola district which school managers may adopt in their respective schools in order to overcome the problem of poor performance in the subject.

Yours sincerely

……………………. Lombe Lucas

Respondent to Sign I …………………………..do hereby declare that I have voluntarily accepted to provide responses to the questionnaire administered to me by the said Lucas Lombe. I understand the

purpose of the study as explained to me. I also understand that I can withdraw from the study at any time without having to give any prior notice and that participation in this study is purely voluntary. I further understand that the information I give will be used for purely academic purposes.

Name of Department: ……………………………………………

 Gender: ……………………………………………….

Qualification: Cert [   ] Dip [   ] 1ˢᵗ Degree [   ]   Master's Degree [   ] PhD   [   ]

Position held: ………………………………………………………………………

Questions

Please answer the following questions on how you are personally feel about your school

Q1. How has been the Teacher-Pupil Ratio (TPR) in this school? ....

Q2. Does the teacher/pupil ratio have an influence on pupil performance?

If yes explain briefly …………………………………………………...............................

…………………………………………………...

Q3 . How would you rate the quality of instruction in mathematics in the school ?

    ……………………………………………………………………………………….

Q4.Do you think the teachers of mathematics are competent enough to handle the subjects in the school?   ………………………………………………………………………………

Q5. In your opinion do you think peer pressure has an influence on pupil performance in secondary schools? …………………………………………………………………………………….

Q6. If so, how ……………………………………………………………………………………

Q7. How is the community perception towards education in your area?

Q8. Do parents/guardians consult you regularly about their children's progress?

Q9.Do you involve the parents of learners who fail your mathematics?

Q10. In your opinion how does parental involvement influence academic performance in mathematics?

………………… …………………………………………………………………………

Q11. What is the response of Parents to school issues when asked for help? ……………..

……………………………………………………………………………………………

Q12. What personally gives you motivation in your school? ....

Q13 .What factors make teachers de-motivated in your school? ....

Q14. What type of motivation do you get from the School Management Team? ………………

Q15. What type of support do you expect from the School Management Team that will add value to the academic performance of learners in mathematics? …………………………

Q16 According to you, is there any relationship between teachers institutional motivation and the performance of pupils at ECZ Grade 12   at this school?........................

State the reasons for your answer:

…………………………………………………………………………………………………

Q17. Are teachers motivated because of students' performance in mathematics at this school?

………………………………………………………………………………………..

Q18. How is the pupil ability in academic performance compared to other schools?

………………………………………………………………………………………..

Q19. How have the pupils been performing previously in mathematics in this school?

…………………………………………………………………………………………………

 Q20. In your opinion, does pupil age have an influence on pupil performance ?.......................

Q22. If yes explain…………………………………………………………………………..

Q23. Does social media impact on pupil Academic performance?...

Q24. If yes explain briefly…………………………………………………………………….

Q25. Does teacher qualification have an influence on pupil academic performance?.....

If yes explain…………………………………………………………………………..

Q26. Has pupil performance improved in mathematics as a result of Mathematics teachers acquiring higher qualifications? …………………………………………………

Q27 What could be some of the major problems that hinder good pupils' performance in mathematics at this school? ………………………………………………………….

Q28 Which strategy do you think can remedy the poor academic performance of learners in mathematics in secondary schools? …………………………

Q29 What should parents do to improve on the academic performance of their children in mathematics at this school? …………………………………………………….. ……

Q30. What are your suggestions for improving academic performance in mathematics at this school?

i ……………………………………………………………………………………

ii ……………………………………………………………………………………

Thank you for your cooperation.

Appendix 3: A Questionnaire for Parents/Guardians and CSOs.

This questionnaire is designed to assist me to find out the factors influencing poor performance of mathematics in the examinations council of Zambia (ECZ) IN Ndola. The information that you provide will be used for research purpose only and will be treated with utmost confidentiality. Please do not write your name. Kindly respond to all the items in the questionnaire as correctly and honestly as possible.

You reserve the right to accept or refuse to participate in this study. You may terminate your participation in this study at any time without having to give an explanation. Please do not enter your name or contact details on the questionnaire. Your identity as a participant will be kept confidential as far as the law allows. To declare your willingness to freely take part in this study, sign below. Your participation is deeply appreciated. The findings of the study would help in guiding policy formulation in the area of Mathematics in the education sector in Ndola district which school managers may adopt in their respective schools in order to overcome the problem of poor performance in the subject.

Yours sincerely

……………………. Lombe Lucas

Respondent to Sign I …………………………..do hereby declare that I have voluntarily accepted to provide responses to the questionnaire administered to me by the said Lucas Lombe. I understand the purpose of the study as explained to me. I also understand that I can withdraw from the study at any time

without having to give any prior notice and that participation in this study is purely voluntary. I further understand that the information I give will be used for purely academic purposes.

A: Background information of the respondent

Q1. Gender of respondent (parents)……1.Male [   ]   2. Female [   ]

Q2. Marital status 1. Single [   ] 2. Married [   ] 3. Divorced [   ] 4. Widowed [   ]

Q3. Age 1. 21 - 40 [   ] 2.41- 60   [   ] 3. 60 and above [   ]

Q4. Occupation of parent/guardian………………………

Q5. Education level…………… (1=Informal, 2=Primary, 3=Secondary, 4=Tertiary)

Q6. Main source of income……………………………………………

Q7. (a). Do you provide your child with school facilities (fees, uniforms etc.)?

       1. Yes [   ], 2. No [   ]

  (b). If the answer is no, give reasons…………………………………………….

Q8. Do you check your child's school work to determine his/her school progress?

       1. Yes [   ], 2. No [   ]

Q9. How often do you visit your child's school for his/her attendance and general

schooling (put a tick)   i. very often [   ], ii. Few times [   ], iii. Not at all/ never [   ]

SECTION C: QUALITY OF INSTRUCTION

QUE No	QUESTIONS	RESPONSE					FOR OFFICIAL USE
		SA	A	UD	D	SD	
Q10	Teachers handle mathematics well at this school						
Q11	Teachers' subject knowledge is good						
Q12	Teachers explain concepts well						
Q13	In your opinion poor quality of instruction contributes to poor academic performance in mathematics						
Q14	How do you rate the teaching of mathematics in this school	VG	G	NS	P	VP	

SCETION D: PEER PRESSURE

QUE No	QUESTIONS	RESPONSE					FOR OFFICIAL USE
		SA	A	UD	D	SD	
Q15	Types of friends pupils have influence performance in mathematics						
Q16	Your child does what his/her friends do						
Q17	Your child is influenced by friends in most school activities.						
Q18	My child skips school with my friends						
Q19	On a scale of 1-5 how would you rate friends influence on the performance of mathematics in secondary schools	5	4	3	2	1	

SECTION E: PUPIL ATTITUDE

QUE No	QUESTIONS	RESPONSE		FOR OFFICIAL USE
		YES	NO	
Q20	Mathematics was your child's favorite subject in school			
Q21	My child showed interest in Mathematics			
Q22	Mathematics is just difficult and boring for my child			
Q23	I don't care whether my child passes or fail s Mathematics			
Q24	I'm satisfied with my child 's grades in Mathematics			

SECTION F: PUPIL AGE

QUE No	QUESTIONS	RESPONSE					FOR OFFICIAL USE
		SA	A	UD	D	SD	
Q25	Mathematics at grade 12 is advanced for pupil 's reasoning						
Q26	Age has an influence on performance in mathematics						
Q27	Mathematics performance at lower grades is always good						

SECTION G :PARENTAL INVOLVEMENT

QUE No	QUESTIONS	RESPONSE		FOR OFFICIAL USE
		Not involved	Highly involved	
Q28	I do assist my child with mathematics homework			
Q29	I do consult teachers regularly about progression mathematics			
Q30	I do provide textbooks, uniforms and other materials to my child required by the school administration			

SECTION H: EXPOSURE TO SOCIAL MEDIA

QUE No	QUESTIONS	RESPONSE		FOR OFFICIAL USE
		Less exposed	Highly exposed	
Q31	Is your child exposed to social media			
Q32	Social media takes my time for your child			
Q33	The large size of groups on social media makes it easy to collaborate			
Q34	Finishing school tasks is easier for your child through social media			
Q35	Social media is more helpful than people think			

SECTION I: TEACHER / PUPIL RATIO

QUE No	QUESTIONS	RESPONSE		FOR OFFICIAL USE
		High	Low	

Q36	What was the number of pupils in your child 's class		
Q37	What are the chances of Teachers having problems in marking class work on time		
Q38	What are the chances of class size making it difficult for teachers to teach well.		

SECTION J: TEACHERS MOTIVATION

QUE No	QUESTIONS	RESPONSE		FOR OFFICIAL USE
		Low	high	
Q39	How do you rate teachers motivation at your child's school			
Q40	How do you rate teachers morale at your child's school			

SECTION H: TECAHER QUALIFICATION

QUE No	QUESTIONS	SA	A	UD	D	SD	FOR OFFICIAL USE
		RESPONSE					
Q41	The school has competent teachers in mathematics						

Thank you for your cooperation

Appendix 4

UNIVERSITY OF ZAMBIA – ZIMBABWE OPEN UNIVERSITY
(UNZA-ZOU)

Date: 5 | 06 | 18

The Head Teacher

Masala Secondary School

Ndola – Zambia.

Dear Sir/Madam,

RE: CONFIRMATION OF STUDY – LUCAS LOMBE

Reference is made to the above subject.

This serves as a confirmation that the above mentioned person of NRC No: 512257/11/1 and computer number 71681567 6 is a bonafide student of the University of Zambia in collaboration with Zimbabwe Open University (UNZA-ZOU).

The student is pursuing a Master of Education in Educational Management programme that he/she will be doing internship/carrying out a research on

POOR PUPIL ACADEMIC PERFORMANCE IN MATHEMATICS: A CASE OF SELECTED

SECONDARY SCHOOL IN NDOLA DISTRICT

Any assistance rendered to him/her will be greatly appreciated.

Yours faithfully
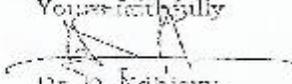
Dr. D. Ndhlovu
ASSISTANT DIRECTOR (PG)
INSTITUTE OF DISTANCE EDUCATION

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Appendix 5

UNIVERSITY OF ZAMBIA - ZIMBABWE OPEN UNIVERSITY
(UNZA ZOU)

Date: 7/6/18

THE District Education Board Secretary,

NDOLA - ZAMBIA.

Dear Sir/Madam

RE: CONFIRMATION OF STUDY — Lucas Lombe

Reference is made to the above subject.

This serves as a confirmation that the above mentioned person of NRC No.
512757/10/1 and computer number 716815076
is a bonafide student of the University of Zambia in collaboration with
Zimbabwe Open University (UNZA ZOU).

The student is pursuing a Master of Education in Educational Management
programme that he/she will be doing internship/carrying out a research on
POOR PUPIL ACADEMIC PERFOMANCE IN MATHEMATICS:A CASE OF SELECTED

SECONDARY SCHOOL, IN NDOLA DISTRICT

Any assistance rendered to him/her will be greatly appreciated.

Yours faithfully
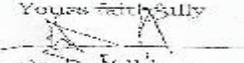
Dr. D. Ndhlovu
ASSISTANT DIRECTOR (FO)
INSTITUTE OF DISTANCE EDUCATION

Appendix 6

The University Of Zambia
P.O Box 32379
Lusaka
Zambia.

4th June, 2018

The District Education Board Secretary
P.O Box 71970
Ndola.

Dear Sir/Madam,

Re: PERMISSION TO CONDUCT AN EDUCATIONAL RESEARCH IN ONE SECONDARY SCHOOL IN NDOLA DISTRICT

TOPIC: POOR PUPIL ACADEMIC PERFOMANCE IN MATHEMATICS: A CASE OF SELECTED SECONDARY SCHOOL IN NDOLA DISTRICT.

I am hereby asking for permission to conduct an educational research on the above stated topic in a secondary school in Ndola district. The information which participants will provide will be treated in confidence and will be used for academic purposes only.

Thank you in advance for your contribution to this study.

Yours faithfully,

LOMBE LUCAS
M.Ed.Ed.Mgmt Candidate-The University of Zambia (UNZAZOU)