

BINDURA UNIVERSITY OF SCIENCE EDUCATION

FACULTY OF EDUCATION



DEPARTMENT OF MATHEMATICS AND SCIENCE

FACTORS CAUSING LOW PASS RATE IN MATHEMATICS AT GRADE SEVEN
LEVEL IN SEKE RURAL DISTRICT.

BY

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The undersigned certify that they have supervised, read and recommended to Bindura University of Science Education for acceptance as a research project entitled: Factors causing low pass rate in Mathematics at grade seven level in Seke Rural District.

Submitted to Bindura University in partial fulfilment of the requirements of the Bachelor of Science Education Honours Degree in Mathematics.

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BINDURA UNIVERSITY OF SCIENCE EDUCATION



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DECLARATION

I Rwambiwa Tendayi declare that this research report herein is my own work and has not been copied or lifted from any source without the acknowledgment of the source.

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DEDICATIONS

I dedicate this work to my lovely son, Kunashe Israel Rwambiwa and my wife Marvellouse Kundeseyo.

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ABSTRACT

The researcher conducted a study to assess the causes of high failure rate in Mathematics among grade seven learners in Seke Rural District Mashonaland East Province. The study sought to establish the strategies that can be adopted to improve the pass rate of grade seven mathematics in the district under investigation. In this study, a sample of 36 grade seven teachers, were purposively sampled from three schools in Seke Rural District. The study's goal was to determine the factors that contribute to the low pass rate in mathematics at the Grade Seven level in Seke Rural District. The study was of significance due to the observed trend of low pass rates in mathematics from 2019 to 2023. The study employed a qualitative research design to generate data in detail, using techniques such as document analysis, observation guides, and interviews.

According to the study's findings, teachers were qualified and experienced to instruct seventh-grade pupils; therefore, their credentials and experience did not contribute to the low maths pass rate. However, the main causes of the poor maths pass rate at the seventh grade level include teacher-centred approaches, students' unfavourable attitudes about the subject, and insufficient teaching and learning resources in schools. The researcher suggests that frequent in-service training and refresher courses in mathematics instruction be mandated by the Ministry of Primary and Secondary Education. Fundraising initiatives should be organized by the school development committees in order to purchase instructional resources for classrooms.

When teaching mathematics, educators should employ learner-centred approaches. It is the responsibility of school administrators to oversee and mentor maths teachers.

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CHAPTER ONE

1.0 THE RESEARCH PROBLEM

1.1 INTRODUCTION

The study's background and issue statement were mentioned, along with the research questions, importance, and assumptions; the study's delimitation and limitations were also addressed; and, finally, definitions of important terminology were given.

1.2 BACKGROUND TO THE STUDY

In Zimbabwe, mathematics has long been regarded as a crucial topic in all fields. According to Kitta (2004), mathematics is the language that enables us to explain concepts and connections derived from the outside world. The aforementioned definition makes it abundantly evident

that mathematics is a crucial subject since it makes it possible to solve issues that would otherwise be impossible. Nonetheless, compared to other courses, mathematics is thought to be more challenging. The problem of low seventh-grade maths pass rates has spread around the world and is constantly getting worse (Mukeredzi, 2013).

How to address the causes that contribute to low maths pass rates is the biggest worry? As pupils advance through school and enter adult roles at home and at work, the demand on their mathematical skills rises (Lambin, 2009). This demonstrates unequivocally that mathematics is an important topic in one's life and is not just studied or learned for amusement. In Zimbabwe, one must be proficient in mathematics in order to train as a teacher, nurse, police officer, or soldier. It is also a prerequisite for admission to universities.

Even though mathematics is a fundamental topic, many pupils in Zimbabwe and the neighbouring countries are failing it in examinations (Chinamasa, 2008). The nation's economy has been impacted by the low maths scores. Students are compelled to pursue careers in fields that do not demand mathematical skills. When the researcher was learning the material, at the time when he was preparing to become a teacher, and even today, when he is teaching, pupils were failing the subject. Other high school pupils have dropped mathematics as a result of their poor performance. Additionally, the majority of students in rural areas drop out of school after seventh grade, according to the researcher's observations.

Additionally, students who struggle with mathematics frequently face numerous obstacles when it comes to making a professional decision. For this reason, the researcher is motivated to investigate the reasons behind the poor mathematics pass rate in Seke Rural District. Compared to other disciplines like Shona, English, and Content disciplines, Mathematics has a poor pass rate. Failures in mathematics are causing students to fail their grade seven exams.

In contrast to other courses like content subjects, which are only taught three times a week, students are failing mathematics even though it is taught every day on the class schedule.

Since mathematics serves as the foundation for other topics, it is crucial for all students.

Mathematical underperformance is a worldwide issue, not only in Zimbabwe. According to research, principals and instructors in the United States of America are also complaining about the majority of their kids' poor maths performance (Jackson & Wilson, 2012). Not every student excels in mathematics. This reality can be confirmed by the bulk failure statistics gathered from national internal and external examinations. The arithmetic scores for three of the District's schools in grade seven are displayed in the table below. According to the data, children in the three schools are performing well below average in mathematics, indicating that many schools are having difficulty with the subject.

Table 1.1 Grade Seven Pass Rate Statistics

	YEAR	YEAR	YEAR
Name of school	2019	2020	2021
A	15%	10%	9%
B	10%	20%	11%
C	11%	15%	10%

Seke District statistics (2022)

1.3 STATEMENT OF THE PROBLEM

Mathematics performance is low among seventh-grade pupils in remote elementary schools. Due to this subpar performance, the researcher conducted a study to determine the causes of the low mathematics pass rate, specifically in Seke Rural District.

1.4 Aim of the Study

The main aim of this study is to explore the causes of high failure rate among grade seven students studying mathematics at primary level in a rural District in Mashonaland East in Zimbabwe.

1.5 Research Objectives

This study is guided by the following objectives:

- To establish environmental factors that cause high failure rate in grade seven mathematics in Seke District rural schools.
- To establish psycho-social factors that contribute to high failure rate in mathematics at grade seven level in Seke District rural schools.
- To explore those economic factors that contribute to high failure rate in mathematics among grade seven students in Seke District rural schools.
- To establish school-based factors that affect grade seven students' performance in grade seven level mathematics in Seke District rural schools.
- To establish strategies that can be adopted to improve pass-rate in grade seven level mathematics in Seke District rural schools.

1. 6 PRIMARY RESEARCH QUESTIONS

1.6.1 What credentials and backgrounds do the teachers of the seventh-grade classrooms possess?

1.6.2 Which teaching methods are employed when teaching mathematics to seventh graders?

1.6.3 What resources are accessible for teaching and learning mathematics at the seventh grade level?

1 . 7 SIGNIFICANCE OF THE STUDY

In Zimbabwe, mathematics is regarded as a fundamental subject and is required for admission to practically every industry. From elementary school until the ordinary level (Form Four Level), mathematics has been regarded as a required subject ever since (Rudhumbu, 2014). Students can become numerate and literate through mathematics as well. According to the grade seven maths syllabus, students can learn mathematical concepts and skills that they can use as tools for their daily transactions, employment, pleasure, and education. Students must therefore be proficient in mathematics since they will require it to calculate change while purchasing and selling products. How people handle the different aspects of their private, social, and civil lives is greatly influenced by mathematics (Antony & Walshaw, 2009).

For this reason, mathematics is now considered a required subject in many nations, including Zimbabwe. Through sufficiently difficult mathematically linked tasks, mathematics fosters the development of qualities such as cooperation, confidence, honesty, neatness, self-reliance, and perseverance. It's also important to remember that mathematics helps children become better thinkers. Students that possess mathematical knowledge are also better equipped to analyse current facts and gain a deeper understanding of their surroundings (Iren, 2015). The curriculum review aims to position mathematics as a means of acquiring 21st century skills, stimulating critical thinking, and creating well-rounded learners who can effectively develop

through improved numeracy skills and precision of thought, according to former education minister Dr. Lazarus Dokora (The Herald, 2014).

This claim unequivocally demonstrates that mathematics is an essential topic since it boosts the national economy. The research of the elements that contribute to poor maths pass rates was conducted because the low maths pass rate can impede the nation's progress. There are social benefits associated with increasing access to post-school education and training opportunities for a large number of people and strengthening the foundation of skills for lifelong learning, in addition to the economic benefits of better preparing people for the numeracy demands of the modern workplace and raising the overall skill levels of the workforce (Manoah, Indoshi & Othuon, 2011).

However, it is crucial that elementary school pupils learn the fundamentals of mathematics so they can understand a dynamic world. Mathematics is especially important for students who want to work in the sciences, technology, or other fields. Author sought a deeper comprehension and effective application of mathematical knowledge and abilities while upholding suitable values and attitudes, mathematics education promotes personal growth (Rikhotso, 2015). Through this study, teachers will be able to identify the variables contributing to poor math pass rates and look for strategies to raise them. The results of the study will help teachers and students alike believe that mathematics is a simple subject.

Additionally, the study will support students in cultivating favourable attitudes toward mathematics, which will raise the passing rate in the subject. In order to support socioeconomic transition, Zimbabwe, which is currently experiencing economic recovery, needs workers with rudimentary mathematical skills (Mupa, 2015). Since mathematics is taught at the primary level, Zimbabwe requires children who excel in grade six in order to support national development. If pupils fail mathematics at the seventh grade level, the nation will not advance.

By reducing the lack of scientists, including engineers, astronomers, and many others, students' meaningful engagement in mathematics will help the entire nation.

1.7.1 Education Administrators

They will find the recommendations of this project useful in enlightening schools administrators on the important methods that can be used to improve pass rate in mathematics at grade seven Level. The findings of this study will provide information to rural primary schools or learning institutions on how best to be prepared in-terms of teaching and learning of mathematics. This study will advise schools on the basic infrastructural requirements. This study will also provide information to head teachers on how their administrative support affects the performance of grade seven learners in mathematics subject.

1.7.2 Parents

The findings of this study prepared parents to be involved in their children's learning. Some rural parents still have a mind-set that when a child fails, it is always the teachers' fault. It is therefore important that this study will help them appreciate the contribution of other factors in the performance of learners in mathematics at grade seven level.

1.7.3 To the Researcher

The research will be beneficial to me as a researcher. This means that the study will expose me a plenty of literature on the challenges that contribute to high failure rate in mathematics in rural schools and the methods that can be used to mitigate the problem of high failure rate.

Most importantly, the research will allow me to fulfil the requirements of my degree programme.

1.7.4 To The Teachers

The research would be of great importance to teachers as it would help them with a clue on how to improve pass rate and it will also help since it would shade light on the best teaching methods that can be used, weakness of learners and teachers would be supplied with useful resources like text book. By so doing the pass rate would increase. UNESCO (2001) is of the view that the teachers are the implementer of the curriculum reforms. Hence the research would be useful to teachers to boost pass rate.

1.7.5 To The Ministry of Primary and Secondary Education

The Ministry of Primary and Secondary Education would also benefit since they would be able to establish factors that lead to high failure rate in mathematics at grade seven level in rural primary schools and establish solutions. By so doing this would improve pass rate of mathematics country wide since they would have solutions to the problems.

1.7.6 To other Researchers

The study will be useful as it will provide literature that can be used by other researchers interested in finding factors that contribute to low pass rate in mathematics in rural settings. The study will also help to close knowledge gaps in the area and open some that can later be filled by others.

1. 8 ASSUMPTIONS OF THE STUDY

1.8.1 Grade seven learners in the three schools selected are essentially the same as those in the whole district of Seke.

1.8.2 The credentials of teachers in the three schools selected are essentially the same as those of instructors in other schools in the same district.

1.8.3 Resources in rural schools are essentially the same as those found elsewhere in the same district.

1.8.4 The amount of time allotted to mathematics in Seke District is essentially the same in all schools found in the district.

1. 9 DELIMITATION OF THE STUDY

Only three schools in Seke Rural District were included in the study, and only grade seven teachers received particular attention. The study's main goal was to identify the contributing variables to a poor grade seven maths pass rate. To gather data for the study, a sample of the target population—including teachers, was taken.

1.10 LIMITATIONS OF THE STUDY

The researcher ran across a number of obstacles while doing this investigation. Below is a discussion of some of the restrictions.

1. 10.1 Duration - Due to his roles as a classroom teacher, part-time student, parent, and husband, the researcher had little time. In order to do his research, the researcher typically worked after regular business hours. Lesson observations and interviews took up a lot of the researcher's time because he is a classroom teacher, a thing which both the students and the school administration found problematic.

1.10.2 The Cost- Since money was needed to go from one institution to another, the researcher's limited financial resources had an impact on the research mobility. However, in order to save money, the researcher chose schools that were near to one another. Another obstacle the researcher faced during his research was the expense of producing interview materials for teachers.

1.10.3 The Official Secrecy Act - The researcher encountered difficulties in attempting to get accurate and reliable information because teachers are not permitted to disseminate school information unless authorized by the Ministry of Education. However, the researcher received a letter from the college stating that the Ministry had given him authorization to conduct the study.

1.11 DEFINITION OF KEY TERMS

The following terms were defined as they are used in the study: -

1.11.1 Performance : According to Michael (2015), is the accomplishment of particular goals and objectives set in any academic endeavour involving basic mathematics. The standing of schools in relation to others was also examined in this study.

1.11.2 Resources: According to Rudhumbu (2015), a resource is a supply source that yields benefits. The term "resource" in this study refers to the instructors, tools, supplies, and facilities that are utilized to improve and facilitate the teaching and learning process.

1.11.3 Elementary Schooling : The initial years of mandatory schooling are known as primary education (Usman, 2012). The level of formal education that comes before secondary education is referred to in this study as primary education.

1.12 SUMMARY

The poor math pass rates across the country have stoked the researcher's interest in investigating the elements that contribute to low math pass rates, specifically in Seke District. The study's statement and background were described. Related literature will be reviewed in the upcoming chapter.

CHAPTER TWO

REVIEW OF RELATED LITERATURE

2.1 INTRODUCTION

The researcher examines the causes of students' subpar performance in mathematics at grade seven level. Themes were drawn from the research topics. These topics include student attitudes toward mathematics, educational strategies, instructor credentials and experience, and the resources for instruction and learning.

2. 2 THEORETICAL FRAMEWORK

The study was guided by two theories namely Atkinson's Theory of Achievement Motivation and Attribution Theory.

2. 2. 1 Atkinson's Theory of Achievement Motivation

The theory was developed by Atkinson in 1957. It is a theory of motivation based on attributions for success and failure in achievement situations. Achievement behavior is defined as behavior directed at developing or demonstrating high rather than low ability (Coleman and Coleman, 2013). This theory assumes that ability can be conceived either with reference to the

individual's own past performance or knowledge. This theory is assumed to be appropriate in achievement situations, that is, in situations in which an individual does not see himself as responsible for a somewhat uncertain outcome but knows that the outcome for which he is accountable will be evaluated against a standard of excellence, or in other words, achievement situations are situations which require skills and competence. An individual has a motive to approach success and a motive to avoid failure. From the theory it can be deduced that student's performance in mathematics at grade seven level can be determined by their past performance and their motivation. The motivation can also combine with other factors and this inevitably exacerbates high failure rate in mathematics.

2.2.2 Attribution Theory

Attribution Theory was expounded by Heider in 1958. It is concerned with how individuals interpret events and how this relates to their thinking and behavior. The theory assumes that people try to determine why people do what they do that is attributing causes of behavior. Heider focused his attribution theory on achievement. He identified ability, effort, task difficulty and luck as the most important factors affecting attributions for achievement. Attributions are classified along three causal dimensions which are locus of control, stability and controllability. The locus of control dimensions has two poles which are internal versus external locus of control. The stability dimension captures whether causes change over time or not for instance stability can be classified as a stable internal cause and effort classified as unstable and external cause. Therefore, attribution theory is closely associated with the concept of the factors that can affect learners' motivation to learn and their performance in Mathematics at Grade Seven level.

Weine, (2017), points out that students with higher ratings of self-esteem and with high school achievements tend to attribute success to internal, stable and uncontrollable factors such as ability while they contribute failure to either internal, unstable, controllable factors such as effort or external uncontrollable factors such as task difficulty for example pupils who experience repeated failures in map interpretation in geography are likely to see themselves as being less competent in map interpretation.

Harvey & Weary (2015) used attribution theory to explain the difference in motivation between high and low achievers. They proposed that high achievers will approach rather than avoid tasks related to succeeding because they believe success is due to high ability and effort which they are confident of. Failure is thought to be caused by bad luck or being poor that is failing is not their fault. Thus, failure doesn't affect their self-esteem, but success builds pride and confidence. On the other hand, low achievers avoid success related tasks because they tend to doubt their ability and assume success is related to luck or to other factors beyond their control. The study will also focus on the other factors besides motivation.

2.3 CONCEPTUAL FRAMEWORK

High rates of failure in grade seven mathematics classes are a problem worldwide. There is a range of factors that affect the quality of performance of students (Waters & Marzano, 2016; Considine and Zappala, 2015). These factors include; learners' attitudes towards teachers, socio-economic status of learners (Farooq, Chaudhry and Berhane, 2011), educational background of parents (Kamesh, 2014), types of school (Buckingham, 2000), gender (Woodfield & Earl-Novell, 2006; Ali et al., 2009), peer influence (Schneider & Coleman,

2013), poor teaching methods, lack of instructional materials, lack of functional laboratories, poor students' teacher morale (Nkonge, 2010) and lack of qualified teachers. These factors may be grouped into student factors, family factors, school factors and peer factors (Crosnoe, Johnson & Elder, 2014).

2. 4 EMPIRICAL STUDIES

In reviewing related literature, the researcher studied and examined three journals from the same research topic. The author, year of publication, title of the journal, methodologies, results from the journal papers and recommendations are summarized below.

2.4.1 Journal Paper Number 1

Author: Paula Varaidzai Makondo and Davison Makondo

Year of Publication: 2020

Title of the Journal: Causes of Poor Academic Performance in Mathematics at Ordinary level.

2. 4.1.1 Methodologies Used

The study was qualitative and used case study since it focused on one school in Masvingo District of Zimbabwe. Purposive sampling method was used when selecting Mathematics teachers. On the part of the learner participants, simple random sampling was used in each class in order to select three pupil participants from each class which gave them a total of 15 learner participants.

2. 4.1.2 Data Collection Methods Used

In that study, focus group interviews were used in order to establish the causes of poor academic performance in mathematics. A focus group interview was used and this had open ended questions included, hence participants were afforded the opportunity to respond in the manner they were comfortable with. Face to face interviews were also used to collect data. These are said to have given the researcher, the opportunity to probe for more information where they felt inadequate answers were given with regard to the causes of poor academic performance in mathematics. Questionnaires were also used as data gathering instruments.

2. 4.1.3 Data Analysis Methods

Document analysis was done to augment data collected through other means. Qualitative data was then analyzed using the Tesch's method where data was organized into themes. Quantitative data was analyzed statistically using percentages.

2.4.1.4 Findings from the Journal Paper

The following results were found from the journal paper:

- The findings revealed that 100 percent of the teachers in the mathematics department were university graduate teachers made up of 25 percent female and 75 percent male. It was also observed that all the grade seven mathematics teachers were holders of appropriate academic qualifications but some did not have the teaching qualification such as the Certificate in Education or the Diploma in Education.
- It was found out that the majority of experienced teachers left the country for greener pastures due to economic hardships and low salaries in Zimbabwe. The results of the study showed that professional inexperienced teachers were now employed now and again to fill in the gap and unfortunately they lacked proper skills and experience to properly instruct pupils for better

results achievement. thus economic meltdown in Zimbabwe has a fair share in contributing to poor academic performance of learners in mathematics at that school in Masvingo Province.

-It also emerged from the study that a significant number of pupils had a phobia for mathematics which led to a negative attitude towards mathematics by a considerable number of the learners which contributes to poor academic performance in the subject. Math phobic learners were generally poorly motivated to do the math and hence underperformed. The study revealed that many learners believed that mathematics was a subject for those who were naturally gifted. This kind of thinking was said to be deeply rooted in the society from which these learners came.

-The findings of the study also revealed that lack of teaching experience causes poor academic performance in mathematics at grade seven level. According to the study, most experienced teachers left the country in search of better working conditions in the neighboring countries such as South Africa , United States of America and other European countries. This is said to have left the education system in the hands of inexperienced teachers who were hired to fill in the gaps, a thing that led to poor academic performance amongst the learners.

-Coupled to inexperience, the study revealed that some learners fail mathematics because of poor teaching methods employed by the teachers. It is said that, learners have indicated that some teachers do not explain well while others are too fast when teaching a concept. Learners from that school are said to have preferred the interactive methods during the teaching and learning process. This was said to concur with the findings of Stuart (2000) who states that poor academic performance is traceable to ineffective teaching methods. Some teachers, it was noted did not vary their teaching methods a thing that is said to have made some learners loose interest in the mathematics subject.

-The results of the study also showed that there were a number of challenges teachers faced which are said to have contributed to poor academic performance in mathematics. Some

learners, it was noted had poor memory generally. They failed to recall what they would have learnt. They were not able to make connections on what they will be learning and could not build on prior knowledge. Furthermore, poor mathematics foundation poses as a great challenge to the learners. This was evidenced through the study which revealed that some learners were not taught well in mathematics from Grade One up to Grade Six, this was said to have spilled over to the grade seven level.

-In that study, the findings showed that lack of resources results in poor academic performance in mathematics. The majority of learners at that school were said to be sharing textbooks. It was noted that lack of textbooks rendered learners incapable of doing their homework which worsened the performance in mathematics. The study revealed that there was an acute shortage of textbooks at that primary school and this is said to have a negative effect on the students' performance in mathematics.

2.4.1.5 Recommendations from the Journal Paper

-The researchers recommended that the school should employ highly experienced teachers if it needs to improve its results in mathematics. Furthermore, experienced teachers should induct the inexperienced teachers (novices) on how to employ effective teaching methods for selected topics in the mathematics grade seven syllabus.

-In addition to that it was also recommended that mathematics teachers should use a variety of instructional materials and strategies for pupils to understand better.

- The results of the study showed that mathematics needs a lot of practice, therefore teachers should give adequate homework to the learners so as to keep them practicing the learnt concepts for good mastery.

-From the literature review that was done, the researchers recommended that teachers should fight math phobia among the learners so that they may have a positive attitude towards mathematics.

-The study observed that mathematics syllabus was too loaded, thus the researchers recommended that the Zimbabwe Schools Examination Council should revisit the mathematics syllabus to make it a bit manageable.

- The researchers observed that the teacher- pupil ratio was not good as each class was overcrowded with learners. Thus it was recommended that the school should enroll a manageable number of learners per teacher, so that individualized instruction becomes possible. Thus, the official teacher pupil ratio of 1:25 should be considered.

-It was recommended that society as a whole should be engaged to change their attitude towards mathematics.

-Enough textbooks and other teaching and learning materials should be availed for learners to utilize in their learning endeavors.

2.4.2 Journal Paper Number 2

Authors: Nomsa Mabena, Patricia Namayammu Mokgosi and Selina Serole Ramapela

Year of Publication: 2021

Title of the Journal Paper: Factors contributing to poor learner performance in mathematics:
A case of selected schools in Mpumalanga Province, South Africa

2.4 .2 .1 Methodologies Used

The study adopted a qualitative case study design with the aim of providing an in-depth understanding about poor mathematics performance in the senior primary phase in a particular district (Creswell, 2014, cited in Harrison, et al., 2017). The study was also qualitative in

nature, aimed at assessing what people say to search for evidence, to confirm interpretations and to assess internal consistency in the data. The study adopted an interpretive paradigm for the researchers to enter the understanding of the subject being studied, in order to speak about, understand and interpret the subject and the meaning of the context. The interpretive paradigm allowed the researchers to understand the view points and experiences of mathematics teachers rather than their own view points in the study.

2.4. 2.2 Data Collection Methods Used

Data collection instruments involved semi-structured interviews and classroom observations. Teachers, learners School Management Team (SMT) and School Governing Board (SGB) members were asked to participate in the interviews after they had been given information about the study. Probing was used in order to provide a better understanding and obtain deeper information about challenges that mathematics learners and teachers experience. Interviews were conducted over a period of two weeks. Teachers and school management team (SMT) members were invited for interviews, which were conducted with each teacher and SMT member in their free time. Learners were interviewed after school; School Governing Board (SGB) members were invited to come to school during their free time. All participants were assured of the strictest confidentiality and that the information they provided would not be divulged to anyone. Each interview lasted for 30 to 40 minutes.

In addition, lesson observations were used to observe learners' conduct and participation and observed educators on the teaching strategies that they employed during teaching and learning of mathematics. An observation schedule to identify how learners and teachers interacted and how the classrooms and resources were organized and prioritized in the setting that was employed. The aim was to learn what was important to the participants in the social setting of mathematics learning and teaching, to become known to participants, and to learn what

constituted appropriate questions, how to ask them, which questions might best help to answer the research questions.

2. 4.2.3 Data Analysis Methods Used in the Journal Paper

In the study data was analyzed as prescribed by Creswell (2012) as follows:

- Reading through the transcripts of the interviews (to assess for accuracy),
- Reading through the transcripts several times while highlighting comments or phrases that were representative of the participants' attitudes and thoughts,
- Clustering and categorizing highlighted statements,
- Organizing the summary and emerging themes in the data.

Participants in the study were given pseudonyms according to their schools. The three schools were named, A, B, and C. The six teachers from the three schools were named as TA1 and TA2; TB1 and TB2; TC1 and TC2. Learners from school A were named as LA1, LA2 and LA3; school B: LB1, LB2 and LB3; and school C: LC1, LC2 and LC3. Heads of departments in the SMTs in the three schools were named as SMTA, SMTB and SMTC respectively. The parent component of the SGB in the three schools were named as SGBA, SGBB and SGBC, respectively.

2.4 .2.4 Findings from the Journal Paper

The following results were found from the journal paper:

- It was observed that all participating teachers in the three schools were motivated and passionate about teaching mathematics. Teacher's passion for learning and teaching mathematics has a positive impact on learners' performance.
- The observation results confirmed that teachers had inadequate mathematical pedagogical content knowledge and they lacked the skill to deliver good introductions for the topics in the

subject. Teachers in all schools were using direct teaching methods in their lessons, which were teacher centered methods where learners were listening passively to the teacher and question and answer was used.

-According to the findings, teachers in all schools were not supported enough through continuing professional development to develop initiatives to refine their skills and knowledge in mathematics. The professional development course attended by the teachers was held only once per quarter and was inadequate.

-It was observed that even though teachers in the study displayed positive attitudes towards the subject and their learners, learners still performed poorly.

- In discussing the learners as the cause of their poor performance in mathematics, it was observed that learner related factors such as lack of motivation to learn mathematics, ill-discipline, and language barriers were identified. Furthermore, it was noted that when learners are taught in a language that is not their mother tongue, learning becomes even more difficult for them.

2.4.2. 5 Recommendations from the Journal Paper

-To enable positive changes to global communities, it was recommended that infusing ethics and moral education within the mathematics curriculum in schools should be done in both developed and developing countries.

-Continuous development of teachers on constructivist teaching methods and principles, school managers and parents on mathematics teaching and support should be consistently intensified and prioritized by global communities.

-Collaboration of mathematics researchers should be encouraged and funded globally by governments to bring improvements to the teaching and learning of mathematics.

- Further research on teacher continuous development programs based on effective models relevant for mathematics teaching was needed.

2.4.3 Journal Paper Number 3

Authors: Samlesh Chand, Kaylash Chaudhary, Avinesh Prasad and Vishal Chand

Year of Publication: 2022

Title of the Journal Paper: Perceived Causes of Students' Poor Performance in Mathematics: A Case Study at Ba and Tavua Primary Schools .

2.4.3.1 Methodology used in the Journal Paper

The study was a descriptive study in which a cross sectional survey research design was adopted. The data for the research were collected by the use of questionnaires, interviews, and student focus group discussion. The target population was 201 respondents which comprised 171 students, 16 mathematics teachers, 7 department heads and 7 school heads from seven randomly selected primary schools in the District of Tavua and Ba. Random sampling technique was used to select the seven primary schools from a population of 14 primary schools within the districts of Ba and Tavua. The sample, therefore represented 50% of the population of Ba and Tavua. The mathematics teachers, heads of departments, and the school heads were a part of the sample , who answered the questionnaires and also took part in the individual interviews as per the schedule. The stratified random sampling technique was then used for the selection of students from years 12 and 13 by obtaining a list containing recent overall academic results of each student in order to group them with varied abilities. This was done to make sure that the views of all the students with different abilities are equally represented.

Furthermore, the purposive sampling method was used to select the students for the focus group discussion. Students within the Ba community were identified by the principal researcher, who were very inquisitive about the study's objective and were outspoken to give personal and true opinions for the study. All the respondents were assured of confidentiality and their identity anonymity to protect the privacy of each respondent and to get the required information, which were the true opinions of each respondent. The appointments with the school heads were made and the consent of each respondent was also taken prior to the field research.

2.4.3.2 Data Collection Methods Used in the Journal

There were four sets of questionnaires designed for each group of respondents. The questionnaires had content that suit the opinion of the different groups of respondents. The questionnaires utilized the Likert scale to collect quantitative data for the research along with a section for suggestions and recommendations to curb the issue of poor achievement in mathematics. Three sets of interview questions were then designed. The students were not considered to be interviewed but were rather selected for the focus group discussion that was held at one of the libraries in the Ba town. The interviews and the focus group discussion only collected the qualitative data for the research. Pilot testing of these tools was also done in the two primary schools in the district of Ba and Lautoka which were not part of the sample. This was done to establish the clarity, meaning, and comprehensibility of each item in the tools. After the pilot study, the research tools along with the responses were discussed among the co-researchers for further review and amendment for its reliability and validity. A Cronbach alpha test using Statistical Package for the Social Sciences (SPSS) was carried out. The alpha value of 0.86 indicated that the questionnaires were valid and reliable for the study.

2.4.3.3 Data Analysis Methods Used in the Journal Paper

Document analysis was done to augment data collected through other means. Qualitative data was then analyzed using the Tesch's method where data was organized into themes. Quantitative data was analyzed statistically using percentages.

2.4.3.4 Findings from the Journal Paper

The following results were found from the study:

- It was discovered that the majority of the students perceived mathematics as a difficult subject. Students' responses for each item showed that more than 50 % of the students had a fear of mathematics as a subject and preferred learning other subjects, with the majority not wishing to continue with mathematics at the university level.
- Teachers had a positive attitude toward mathematics and always motivated their learners to learn mathematics.
- From the results it was evident that few of the teachers used the teacher centered methods when teaching mathematics. Most teachers were using learner centered methods of teaching.
- The results showed that the majority of teachers had mathematics degree qualifications with a few being holders of diploma in education. Most degreed teachers did not have post graduate qualifications.
- It was found that the mathematics curriculum at the primary school level was ineffective and irrelevant and therefore needed to be reviewed.

2.4.3.5 Recommendations from the Journal Paper

The following recommendations were based on the study.

- The mathematics curriculum at both years 12 and 13 needed to be reviewed and amended in order to allow outcome-based teaching and learning to take place. The relevance and application of mathematics in real life should also be reflected in the curriculum.

-Examinations should not be the only method of assessing students' performance in mathematics but rather internal assessments, field work and projects should be part of mathematics curriculum to understand mathematics better and at the same time develop interest among students with diverse needs.

-There is need for teachers to incorporate modern teaching tools, gadgets, and technology in teaching mathematics.

-Content- focused teacher training to be implemented for primary school teachers in Fiji to teach specialized subjects in schools in order to build a good foundation among students and maintain positive attitude and perception of students towards mathematics across all levels.

2.5 QUALIFICATIONS AND EXPERIENCE OF GRADE SEVEN TEACHERS

Teacher quality is the most significant school-based determinant of student accomplishment (Harris & Sass, 2008). Pre-service teacher education programs are available to individuals who have successfully passed their O' Level in five disciplines, including English language and mathematics, and teacher education colleges train competent primary school teachers (SACMEQ, 2018). According to Usman (2012), a qualified teacher is one who has a teaching certificate and/or a state license, has completed at least four years of college, and is highly qualified in his field of expertise. According to a Nigerian study, students' persistently low performance in mathematics was caused by a shortage of skilled teachers (Musau & Abele, 2015).

Students' pass rate is therefore influenced by the professional qualifications of the teachers. The nation's primary and secondary schools are severely short-staffed with certified teachers, forcing the government to hire almost 20,000 unqualified workers to cover the need (Kakore 2015). Sifiso Ndlovu, the chief executive of the Zimbabwe Teacher's Association, also hinted

that the quantity of unqualified instructors contributes to low pass rates and subpar teaching (The Herald, 11 March 2015). This explanation could be one of the reasons why certain rural schools have low math pass rates. Requiring all instructors to have solid content understanding in the subject they teach is a crucial step in raising student accomplishment (Rotherham & Mead, 2003).

Graduate degrees, licensing, and experience are the three instructor attributes that have an impact on students' results (Jacobs, 2012). She goes on to say that advanced degrees were indicators that teachers knew a lot about how pupils learn and develop, as well as how to help them learn. Although the academic backgrounds of current teachers vary widely, primary school teachers must have at least an Ordinary level certificate in addition to a teachers' diploma or certificate earned following three or four years of teacher education at a teachers' college (Mukeredzi, 2013).

Every proposal for school reform or transformation in industrialized nations emphasizes the importance of teacher professional development in achieving better student outcomes and educational quality. Zuzovsky (2009) also bemoans the fact that reforms demand that teacher education be made more professional by lengthening it, upgrading it to graduate programs, and regulating it through standards-aligned licensure, certification, and promotion processes. Middle school reading and math proficiency are positively correlated with teachers' experiences (Boyd, 2006). This demonstrates unequivocally that the experience of teachers and student pass rates are related.

Teachers' mathematical argumentation, classroom discourse, preparation, approaches to solving problems, and capacities to work with students of different abilities may all improve as a result of in-service training (Mupa, 2015).

However, Harris and Sass (2009) contend that it is challenging to assess the relationship between teacher experience and student achievement because this variable is heavily

influenced by the state of the market or the desire to work throughout the childrearing time. Reforms in teacher education have made it desirable to focus on teacher credentials that are thought to be connected to student learning in many nations (Zuzovsky, 2009). The credentials of teachers have a significant impact on the performance of middle school pupils (Baudi, Griffin & Tadler, 2015). As a result, the credentials of teachers' influence pupils' passing rates. According to Byrnes (2009), math-certified middle school instructors are linked to greater learning gains for their students than non-certified teachers.

Poor student achievements and worse educational quality have frequently been associated with the usage of teachers with less professional training (Mukeredzi, 2013). As a result, poor arithmetic pass rates may arise in schools where primary school teachers lack teaching degrees. For instance, a teacher with a degree in developmental studies may teach in a primary school. Rural schools in Zimbabwe and South Africa both fall behind the rest of the nation in terms of educational advancement (Wedekind, 2005). This may indicate that pass rates differ between rural and urban locations. Teachers who are either professionally unprepared or underqualified are accepted in rural locations with inadequate physical infrastructure that restricts the availability of public transportation (Mukeredzi, 2013).

Therefore, the kind of teachers employed in rural areas may be one factor contributing to poor pass rates. Primary schools in the United States lack proper certification and sufficient content preparation, particularly in underprivileged and undeserving populations (Floden & Maniketti, 2005). According to a study, having a highly skilled teacher for four or five consecutive years could significantly reduce the achievement difference amongst students (Olsen, 2003). Concerns about teacher quality and student accomplishment in American schools were specifically addressed by the No Child Left Behind (NCLB) Act of 2001, which established mandatory performance and accountability standards (Rikhotso, 2015).

This demonstrates that there is a relationship between pupils' performance in mathematics and the credentials of teachers. To help them meet the demands of the ever-changing school curriculum, science, math, and technology teachers should get in-service training where gaps are found (Murunga, Kilaha & Wanyanyi, 2013).

However, some studies show that teachers' in-service professional development has little impact on their capacity to raise student achievement improvements (Feng & Sass, 2010). Teachers' qualifications are valued, but their capacity to instruct students must also be taken into account. The inclination of certain teacher education programs to place a strong emphasis on subject content in the main academic disciplines of teaching technique gives rise to issues (Siyakwazi in Chinamasa, 2008). This suggests that even if some teachers possess the necessary training, they may not be using the right techniques and abilities to instruct children in mathematics. Additionally, according to Gatawa in Rudhumbu (2015), specialized math teachers should be introduced at all levels, or at least in Grade Seven.

This suggests that a low math pass rate is not lessened by possessing the necessary credentials. Students' achievement was greatly enhanced by teachers who were trained in subject-specific fields like science and mathematics (Rikhotso, 2015). According to Chinamasa (2008), secondary school teachers accuse elementary school teachers of not helping students build a solid foundation in mathematics.

Chinamasa goes on to assert that primary school teachers do not fully comprehend the material they are teaching their students in order to pass the grade seven exams. This suggests that, despite their excellent qualifications, teachers may not grasp the mathematical ideas, which could account for the low pass rates on grade seven exams. The purpose of this study is to determine whether the credentials of the teachers affect the math pass rate of the students. Students gain from teachers' pedagogical and teaching expertise, which is frequently attained through certification (Hammond, 2010).

Math proficiency was higher among those who majored in mathematics as an undergraduate or graduate student (Rowan, 2005). But according to Staiger (2008), a study of instructors in New York City revealed no statistically significant differences in efficacy between qualified (across various program types) and uncertified teachers. Students taught by professionally unqualified teachers performed worse than those taught by certified teachers, according to a study conducted in Togo (Kruijer, 2010). The education of teachers must be changed before the education of students can be changed (Sarason, 2000).

He also bemoans the need to equip teachers for the realities of classrooms, schools, school systems, and society. Since the subject matter has a crucial component that enhances both teaching effectiveness and student progress, all educators should be well-versed in it (Goldhaber & Brewer, 2000). Therefore, the credentials of the teachers play a role in the pupils' passing percentage. When a teacher has less than a year of experience or is not fully certified by the state, students perform worse in mathematics (Betts, Zau & Rice, 2003).

2.6 TEACHING METHODS USED IN TEACHING MATHEMATICS

Teaching and learning strategies have an impact on students' mathematical performance (Michael, 2015). The majority of teaching strategies are teacher-centred, and teachers typically stick to what is written in textbooks rather than what engages students and helps them understand the material. Through the use of questions and probes, answers and reactions, praise and criticism, and clear explanations and vivid descriptions, a teacher can effectively organize and manage the teaching and learning environment. This is known as a teaching method (Schulman, 2009).

Therefore, it is crucial to make sure that the teaching strategies used in math classes are inspiring in order to encourage students to actively engage with the material. Actually, it is

necessary to make fun of mathematics. Learner-centred approaches, which demand that teachers actively engage students in the teaching and learning process, are necessary for efficient and successful instruction (Mtitu, 2014). This suggests that in order for pupils to understand what they are being taught, teachers must employ learner-centred and engaging teaching strategies. Given the high likelihood that students will comprehend and grasp the mathematical concepts, it is therefore the responsibility of educators to implement teaching strategies that allow for full student participation.

Most people have a dominant learning style, while there are many other learning styles. According to Mupa (2015), these approaches are also frequently referred to as visual and auditory. Kinesthetic learners learn best when they are physically involved in the learning process (touching, doing, feeling), visual learners prefer to see information, and auditory learners prefer to hear it. Classroom instruction must incorporate the five senses (Michael, 2015). This suggests that in order to help the kids understand the concepts more readily, teachers' methods for teaching mathematics must include touching—that is, using tangible materials like counters—seeing—that is, making the materials visible, like charts or chalkboards—and hearing—that is, making the teacher's voice audible.

To support this, Maganga (2013) argues that teachers should be able to teach in a way that allows students to practically do what they are taught, hearing it well by using real-world situations to help students understand mathematics and reducing the number of students in crammed classrooms. In other words, teachers' approaches need to be practical. According to Musau and Abele (2015), students' poor academic performance in mathematics is a result of their lack of exposure to practical experience. It can be difficult for teachers to explain mathematical ideas to kids, but they must use rewarding teaching strategies.

When given the freedom to create their own methods, children's mathematical abilities improve (Suurtamm & Vezina, 2010). According to this theory, teachers must act as facilitators in the

classroom, adjusting their tactics as needed with occasional direction. Suurtamm and Vezina also bemoan the fact that games, stories, and music captivate and motivate kids to participate. Teachers must look for ways to make mathematics lessons engaging because some pupils find the subject to be challenging. Students find games and songs engaging, and they also help them develop critical thinking and problem-solving abilities.

As a result, students believe they are playing while simultaneously working through mathematical difficulties. A more student-centred approach, in which the teacher establishes the framework for the students' work and then supports them in making their own decisions under supervision, is an alternative to leading and demonstrating from the front of the class (Byrnes, 2009). The resources and facilities available in the school have a significant impact on the approaches instructors use to teach science and math in primary schools (UNESCO, 2004). This may indicate that teacher-centred teaching approaches are the norm in rural areas with limited resources, which could contribute to poor math pass rates.

The sheer volume of kids makes it impossible for teachers to focus on a select group of talented pupils. Parents criticized teachers for their uncreative teaching strategies, which they firmly feel contribute to students' low math performance (UNESCO, 2004). Through participant observations, the researcher will determine whether learner-centred approaches are more successful than teacher-centred approaches in this study. In addition to possessing mathematical knowledge, teachers must also be proficient in comprehending the fundamental ideas, concepts, and related abilities (UNESCO, 2004). This suggests that educators should be aware of strategies to help students achieve.

Teaching strategies, instructor conduct, students' dread of the subject, and their foundation in the subject at lower levels all have a significant impact on their performance (Tshabalala & Ncube, 2013). To make sure that the teacher's instruction and the learner's learning needs are closely related, learner-centred teaching techniques are to be employed (Scot, 2010). This

suggests that in order for students' performance to improve, teachers use strategies that encourage active participation in the classroom. When instructing, teachers must also use a variety of techniques.

mathematics to prevent pupils from becoming disinterested and adopting a bad attitude toward the topic. Palmer (2005) supports this by arguing that using a range of teaching techniques, particularly constructivist ones, equips students with the ability to think independently and solve problems.

2.7 ATTITUDES OF STUDENTS TOWARDS MATHEMATICS

Numerous investigations have been conducted to determine the connection between students' performance and their attitudes toward mathematics. One of the most crucial aspects of education is attitude, which can psychologically impede successful learning (Matto & De la Torre, 2010). One of the key factors that determines whether pupils succeed or fail in school is their attitude. According to Kuranche et al. (2013), students' attitudes are shaped by the learning experiences they have, which supports the aforementioned claim. This suggests that students' attitudes may have an impact on how well they succeed in arithmetic. Students do better if they have a positive attitude toward mathematics; conversely, if they have a negative attitude, they may perform poorly.

According to Zan and Martino (2017), attitudes toward mathematics can be either good or negative. Students in primary school may develop unfavourable attitudes about mathematics because they believe it to be a challenging subject. Furthermore, Nicolardou and Philippou (2003) state that frequent failures or issues in the classroom or at home may contribute to students' negative attitudes about mathematics. Negatively inclined kids find it difficult to

focus and may even skip class (Mupa, 2015). Students that consistently perform poorly in mathematics skip school and, in rural regions, drop out altogether.

If they consistently pass the subject and receive encouraging feedback from their teachers, students can also grow to have good views toward mathematics. There appears to be a good correlation between students' academic achievement in the topic and certain recent studies (Kahle, 2007). Researchers found that pupils who have a favourable attitude toward mathematics are more likely to succeed in the subject (Ma & Xu, 2004). Students' negative views toward mathematics are also influenced by teachers' negative attitudes and ideas about the subject (Cater & Norwood, 2007). Numerous variables, including the pressure to perform well, excessively difficult assignments, dull courses, and less than favourable attitudes from professors, can account for why students' attitudes about mathematics got increasingly negative as their grades increased (Zan & Martino, 2017).

This suggests that if math classes do not pique students' interest and if teachers do not inspire them, they may grow to have negative views. Additionally, children's poor views toward mathematics are influenced by their parents' negative sentiments. Children inherit their parents' fear of mathematics (Furner & Duffy, 2002). Learners' confidence in mathematics may be positively or negatively impacted by the attitudes of their teachers, peers, and families toward the subject (Stuart, 2010).

Some students develop a negative attitude as a result of the language of mathematics. According to Landsberg (2005), it is crucial to keep in mind that mathematics is about numbers, figures, and a few words; it also emphasizes patterns and relationships, and it has a mathematical language that students need to master. It seems that many kids in the intermediate and low ability groups have trouble understanding the mathematical language (Ashby, 2009). Even if all the information they needed was put in front of them, some kids may find it very

difficult to read and comprehend a question at the same time. Since English is the language of instruction and learning, the majority of students in Zimbabwe's rural areas find it difficult to communicate in this language, which puts them at a disadvantage.

When taught in a language they are familiar with, children learn more effectively.

Additionally, the way teachers conduct and deliver their classes may cause students to develop negative attitudes and perceptions (Mckay, 2012). Teachers can lack the time necessary to cover the curriculum or employ alternative teaching strategies. According to certain research, students who have a bad attitude toward mathematics inherit it from their teachers. Goose (2008) supports this idea by suggesting that the process starts when the teacher exhibits a mathematical attitude, which includes a refusal to deal with mathematical ideas and to engage in mathematical reassessment in accordance with socially acceptable values.

Students' distaste for mathematics is a problem for educators, parents, and government officials in South Africa's Limpopo Province (Rithotso, 2015). Therefore, children may develop unfavourable attitudes about mathematics and end up skipping school or not attending at all if they encounter intolerable difficulties or failures during their learning process. Mupa also regrets that some students believe that since they are experts in the arts, the subject is irrelevant to them. Therefore, parents and teachers must convey to their children the value of mathematics in their life.

Students that have positive attitudes grow more self-assured and confident in their capacity to succeed in mathematics (Rikhotso, 2015). Students therefore become more involved and like mathematics more once they have faith in their capacity to excel. Attitudes toward mathematics are influenced by the teaching strategy, the family, the school's structure, and the students' attitude toward learning (Farooq & Shah, 2008). Therefore, pupils

may develop unfavourable attitudes in a school where teachers are not doing a good job of presenting mathematics lessons.

Many students may get disenchanted with mathematics due to the way it is portrayed in the classroom and how they interpret it, even when teachers think they are teaching it in a genuine and context-dependent manner (Furinghetti & Pekhonen, 2002).

The purpose of this study is to determine whether attitudes play a significant role in the low math pass rate. Furthermore, the literature on academic studies in general and mathematics studies in particular frequently discusses gender inequalities. It is commonly believed that guys consistently perform better in mathematics, both in terms of attitudes and conceptual understanding in favour of this.

According to Enest (2004), mathematics is sometimes viewed as a highly significant and predominantly male topic. Poor performance in mathematics in Nigeria was caused by a number of factors, including students' unfavourable attitudes toward the subject, their fear of it, a lack of competent teachers, and inadequate instructional resources (Tata, 2013).

2.8 TEACHING AND LEARNING MATERIALS AVAILABLE IN SCHOOLS

The resources or teaching and learning materials that are available determine the methods that primary school math teachers employ. Children are not participating in the lessons if the materials are insufficient since the approaches are teacher-centred. According to Maganga (2013), the significance of learning materials lies in their ability to boost student accomplishment.

In remote places, when there are no school supplies and 45 children in a class share a single textbook, this is not the case. Additionally, learning resources can give lesson planning and instruction delivery a crucial sense of organization (Mtitu, 2014). This implies that students'

performance in mathematics will not improve if teachers utilize teaching aids like work sheets and counters in their classes because they will take longer to understand the content (Rithotso, 2015). Any kind of specific mathematical equipment (organized or unstructured), picture, ICT, game tool, paper, or common material that can be used to give a mathematical teaching or learning assistance is considered a teaching resource (Drews, 2007).

Additionally, students may benefit from using a range of instructional aids as their chances of understanding are higher than they would be without them. The network of relationships between words, symbols, images, and tangible experiences may be important for comprehending mathematical concepts (Haylock & Cockburn, 2003). As a result, mathematical materials also help to enhance instruction and students' attitudes toward the subject.

In order to provide students with practical experience that aids in the construction of meaningful interpretations for the mathematical concepts they are teaching, teachers should make regular use of manipulative tools (Drews, 2007). He also bemoans the fact that improved attitudes toward mathematics and advances in student mathematical achievement are positively correlated with the long-term use of concrete materials. Therefore, it is crucial that educators have access to enough materials. Teachers can adapt assignments to best suit each student's learning style by using learning resources such work sheets, directions for group activities, games, and homework assignments (Suurtamm & Vezina, 2014).

This suggests that having access to educational resources can improve students' understanding of the material. Classrooms, theatres, libraries, workshops, labs, and the layout of the learning environment all have a significant impact on how well students succeed in mathematics classes. In rural places, where amenities like theatres and libraries are scarce, this isn't always the case.

Teachers strongly advise that the government create or enforce policies on the minimum physical facilities and teaching resources in all schools at every level, as they are aware that having these resources and facilities is essential for a qualified teacher to engage students in an engaging, stimulating, and enriching mathematics lesson (UNESCO, 2004). Therefore, it is very difficult to improve student performance through teaching when there are insufficient textbooks, other resources, and materials. As they instruct, good teachers consider both what they are teaching and what they are using (Berthoud, 2010).

The utilization of suitable teaching techniques and learning strategies, along with the appropriate arrangement of the accessible learning resources, are what improve students' understanding of the material. Nowadays, parents play a major role in funding education, which leads to significant differences in students' involvement and mathematical achievement. The availability of resources and facilities has a significant impact on students' performance (UNESCO, 2004).

Compared to kids from low-income homes, those who have access to educational resources are at an advantage since they are more aware of the current trends, while students in remote areas do not have this luxury. Numerous ideas in Mathematics are connected to our surroundings; therefore, educators in rural regions must be creative in their utilization of the environment to get educational resources.

However, forcing rural kids to deal with rural issues hinders their ability to become more abstract from settings and contexts they are already accustomed to (Long & Dunne, 2014). It is very helpful to employ instructional resources to make a teacher's presentation simple, efficient, and visually appealing (Suurtamm & Vezina, 2010). Instructors need to have a "mathematics kit" on hand.

Essential tools for classroom instruction should be included in a math kit (Sahu, 2013). Both the teacher and the student benefit from learning resources. According to Drews (2007), teachers should frequently employ manipulative tools to provide students with practical experience that aids in the construction of meaningful interpretations for the mathematical concepts they are learning.

Children will therefore perform poorly in mathematics when learning resources are unavailable since they will not fully comprehend the topics being taught. Additionally, according to Bekker et al. (2003), a lack of resources (such as textbooks and adequate infrastructure) makes it more difficult to achieve a number of educational objectives. This is likely to result in failure and frustration, as well as a reduction in commitment and a negative attitude among students. The availability of textbooks facilitates students' learning and instruction (Mupa, 2015).

As a result, students can readily view examples from books and independently discuss their experiences when they have textbooks. Students find it challenging to complete homework, solve issues independently, and study at home when they are given subpar textbooks. Except for a chalkboard, chalk, and duster, most rural schools have very few instructional aids available in the classroom during class (UNESCO, 2004). Effective planning is extremely challenging for teachers who are limited on instructional resources.

2.9 SUMMARY

According to the literature study, mathematics necessitates both sufficient teaching and learning resources and teachers with training and experience (Mupa, 2015). It was observed that low pass rates in mathematics can result from students' unfavourable opinions of the subject and the techniques used to teach it. Research methods and the creation, analysis, and presentation of data will be covered in the upcoming chapter.

CHAPTER THREE

RESEARCH METHODOLOGY

3.1 INTRODUCTION

The population, sample, and research design are described by the researcher. Data generation tools, data generation processes, data visualization, and data analysis were taken into account. The chapter concluded with a summary and an explanation of ethical considerations.

3.2 RESEARCH DESIGN

A descriptive survey sample design was employed in this investigation. According to Babbie (2009), a research design is a plan or strategy for carrying out a study in order to investigate particular testable research questions of interest. Another definition of a research design is a clear strategy for addressing an issue (Omari, 2011). The factors that contribute to a poor math pass rate were examined using the descriptive survey approach, which combines observations and interviews. According to Burns and Groove (2005), a descriptive survey aims to paint a picture of a situation as it actually occurs. The study found that descriptive research was the most effective approach for correctly and factually summarizing the sample's facts and features.

3.3 POPULATION AND SAMPLE

A population, according to Chiromo (2009), is made up of all the people, things, events, or units that will be taken into account for the study. The population is the total number of people that a study will look into (Springer, 2010). Every school in the Seke District is included in the study's population. A sample, according to Kombo and Tromp (2006), is a group of people chosen from a population. According to Ranjit (2011), a sample is a subset of the population of interest. Two educational institutions make up the study's population. Ten pupils—five boys and five girls—were selected from each school. Interviews were conducted with two administrators and two instructors from each school.

3.3.1 SAMPLING PROCEDURES

The process of choosing units from a population of interest is known as sampling (Kombo & Tromp, 2006). Purposive sampling was utilized by the researcher to select people who were distinctive. Purposive sampling's primary goal was to gather detailed information from people who are qualified to provide it (Cohen, Marion & Morrison, 2009). Purposive sampling is intentional and enables the researcher to choose participants that possess particular attributes that are being studied (Punch, 2005). The sample of participants is shown in the following tables.

Table 3.1: School A Respondents

Category	Males	Females	Total
Teachers	6	6	12

Table 3.2: School B Respondents

Category	Males	Females	Total
Teachers	6	6	12

Table 3.3 : School C Respondents

Category	Males	Females	Total
Teachers	6	6	12

Since only the respondents were required for the study, purposive sampling was used. Purposive sampling might, however, meet the needs of the study, but the researcher might unintentionally overlook significant characteristics or make biased sample selections (Gray, 2009).

3.4 DATA GENERATING INSTRUMENTS

Lesson observations, semi-structured interviews, and document analysis were used to gather data. Because complete independence on a single instrument may distort or lead to brashness on a particular piece of information, multiple instruments were employed in the study (Kothari, 2000). In order to give pertinent information on the causes that contribute to grade 7 pupils' low performance in mathematics, secondary data was gathered by examining documents such as individual record books, school performances, and ZIMSEC results.

3.4.1 OBSERVATION GUIDE

According to Kawulich (2005), an observation is a methodical approach to observing and documenting observable behaviours or events in a natural environment. Similarly, Chiromo

(2009) sees observation as a way to learn about people's thoughts and behaviours by observing how they express themselves in different contexts and activities. Lesson observations were utilized in this study to collect data on teaching and learning activities in a classroom, despite the fact that they were expensive, time-consuming, and did not provide anonymity. Observations were employed because they allowed the researcher to gather detailed descriptive information and to completely comprehend what actually happened in math classes. In order to keep the researcher focused on gathering data, non-participant observation was employed. During math classes, students were monitored in their classrooms. The researcher was able to document what was actually happening by hand or with the use of recording or measuring equipment thanks to the observation guide (Blessing & Chakrabarti, 2002). The activities of instruction and learning were monitored by the researcher. Additionally, noticed were the teaching strategies, instructional resources, and attitudes of the students. One of the main benefits of making observations is that you can see what individuals do or say instead of just what they say (Wakefield, 2008).

3.4.2 INTERVIEW GUIDE

The semi-structured interview guide was used by the researcher. The researcher may have a framework of topics and questions to cover in semi-structured interviews, which are non-standardized interviews that allow for some freedom in question formats and how participants approach problems (Gray, 2009). The use of open-ended questions, which allow the researcher to thoroughly examine several facets of a problem, is one of the semi-structured interview's primary advantages as a research tool (Woods, 2006). Additionally, some questions in semi-structured interviews are standardized, which improves data dependability and lessens interviewer bias (Mitchell & Joley, 2007). Respondents were able to express their emotions through face-to-face interviews (Shumbayawonda, 2006). The flexibility of semi-structured

interviews allowed for the exploration of more significant information that emerged throughout the interviews. Additionally, semi-structured interviews allow individuals to express themselves (Cohen, Marion & Morrison, 2007). As a result, they also made it possible to clarify opinions and conduct additional research. Through cordial face-to-face conversations, the researcher obtained first-hand knowledge. Facial expressions and gestures were allowed during the interviews. Because interviews produced data from participants quickly, the researcher employed them. Additionally, the researcher built rapport with the participants. To prevent participant boredom, the researcher conducted a 30-minute interview with each subject. In order to obtain valuable information about the factors that contribute to a poor mathematics pass rate, the researcher conducted interviews with teachers and headmasters. To fit each participant's distinct stories and experiences, the researcher was free to alter the sequence and tempo of the interview and to pose new questions (Flick, 2006). The primary functions of the question themes used in the interview style were to introduce the subject and direct the discussion. According to Cohen et al. (2011), the non-scripted follow-up questions served as invitations to expand, clarify, explain, give detail, or qualify a response.

3.4.3 DOCUMENT ANALYSIS GUIDE

The utilization of external sources and documents to bolster an academic work's viewpoint or argument is known as documentary research (Omari, 2011). One type of qualitative research is document analysis, where the researcher interprets documents to provide context and voice for an evaluation issue (Bowen, 2009). The mathematics curriculum, teacher files, continuous assessment files, 30 internal and external exams, textbooks, and available learning resources were all examined in this study. As with focus group or interview transcript analysis, document analysis involves categorizing content into themes (O'Leary, 2014). Because documents are practical and manageable resources, document analysis was a method of data generation that

was both efficient and successful. It is frequently significantly less expensive and time-consuming to get and analyse papers than to carry out your own study or trials (Bowen, 2009). Additionally, papers can be read and examined again without changing due to the researcher's impact or study method because they are solid, "non-reactive" data sources (Bowen, 2009). The researcher examined the documents in great detail. To maintain the credibility of your research, it is crucial to carefully assess and look into the subjectivity of documents and your comprehension of their data (O'Leary, 2014).

3.5 DATA GENERATING PROCEDURES

The researcher visited the sampled schools after receiving letters of authority from the Ministry of Education and the University. Interviews, observations, and document analysis were used to gather data from respondents. The researcher conducted observations during school hours in order to watch how kids behaved during math classes and to learn about the strategies used by grade 7 teachers. Following lesson observations, interviews and document analysis were conducted.

3.6 DATA PRESENTATION

Since the study employed a descriptive survey sample design, data were produced and displayed in tables, group graphs, and line graphs. Bar graphs made it easier for the researcher to compare data. Tables were also employed because the data was easy to interpret and they are easy to refer to. The proportion of grade 7 outcomes over time was effectively displayed using a line graph, in which the variable is shown on the vertical axis (y-axis) and time is shown on the horizontal axis (x-axis).

3.7 DATA ANALYSIS

The act of editing, categorizing, classifying, and tabulating gathered data is known as data analysis (Kothari, 2004). Thematic data analysis was employed by the researcher. One of the most popular methods of analysis in qualitative research is the thematic approach. Finding, analysing, and documenting patterns or themes in data is the focus of the thematic approach (Rithotso, 2015). Instead than being a single technique, thematic analysis is best understood as an umbrella phrase for a number of distinct techniques (Greg, 2012). The researcher was able to broaden the scope of the study beyond individual experiences and thematic analysis worked effectively with vast data sets. Data were categorized into topics with the use of the interview and observation guide's structure.

3.8 DATA MANAGEMENT PLAN

The researcher recorded and stored data using a variety of tools. The information produced was recorded in notebooks and safely kept in files. Additionally, the researcher recorded data using her laptop and phone. As backup storage, media devices like Universal Storage Bus (USB) were employed. By creating passwords for her laptop and cell phone and keeping files in secured storage rooms, the researcher further ensured that the material generated was handled with confidentiality.

3.9 ETHICAL CONSIDERATIONS

The researcher was mindful of research ethics and its values in order to gather data, obtain the study's population, and disseminate the findings. Omari (2011) argues that this contributes to maintaining a positive perception of research enterprise in the work. In order to submit the activity to the Ministry of Education, the researcher requested a letter of authorization from the university.

3.9.1 Knowledgeable Consent : Before choosing to participate in the study, the subjects must be made aware of it (Chiromo, 2009). This indicates that a significant ethical concern was informed consent. The respondents were asked to sign a consent form after being briefed on the significance and goal of the study as well as the advantages of taking part. Parents' and school staff's consent should be sought for schoolchildren and all minors (Chiromo, 2009).

3.9.2 Individual privacy : According to Levine (2005), privacy is the autonomy an individual has over the timing, scope, and general conditions under which personal data is disclosed to or kept secret from third parties. In order to protect their privacy, the respondents were given the researcher's word that they would not divulge their identities to anybody else.

3.9.3 Maintaining confidentiality : The acquired information was kept private and used exclusively for its intended objectives. There was no discussion of the individuals' or schools' names or identities. The participants or responders received assurances that their answers would be kept completely confidential (Chiromo, 2009). By securing all collected data such that only the researcher could access it, the researcher was able to guarantee participant confidentiality.

3.9.4 Defence Against Injury : The volunteers were reassured by the researcher that they would not experience any mental stress, physical discomfort, or humiliation as a result of taking part in the study. The subjects were shielded from potential injury of any kind, including physical, social, emotional, and spiritual harm (Chiromo, 2009).

3.10 SUMMARY

The researcher looked at the research technique, which included topics like demographic and sample, research design, and the tools utilized to collect data. The use of an interview and observation guide in conjunction with a document analysis guide was justified. The next chapter will consider data presentation, analysis and discussion.

CHAPTER FOUR

DATA PRESENTATION , INTERPRETATION AND ANALYSIS

4.1 INTRODUCTION

The data is presented and examined by the researcher. Teachers, administrators, and seventh-grade students from two chosen schools in the Seke District provided the data. The generating tools included document analysis, observation and interview guides, and more. In order to identify the elements that contribute to a poor grade seven mathematics pass rate, a total of twenty students, four teachers, and two school officials participated in the study.

4.2 DATA PRESENTATION

Before administering the questionnaire, the researcher asked the teachers and learners on the likely causes of high failure rate among ‘O’ level Combined Science learners. All respondents the learners and teachers (100%) agreed that they experience various forms of indiscipline in the school. The researcher then went ahead to explain to the respondents the main objectives of the study. It is critical to know the demography of the respondents (both teachers and learners), as this has a bearing on the causes of high failure rate in Combined Sciences among ‘O’ level learners. The demographic characteristics considered relevant to the objectives of this study include sex, age, experience, leadership, and highest level of education. 5 questionnaires were issued out to 5 teachers who had been sampled specifically for this study and these were successfully completed and directly collected by the researcher. Additionally, twenty learners were divided into two FGDs and the researcher was responsible for recording responses and moderation of the discussions and the following data was tabulated.

The school from whence the research ensued is a day school located in the rural areas and from the observation and the responses that were given by the respondents, the teacher pupil ratio fluctuates between 1:40 up to 1:50. This shows that the school enrolment is quite

overwhelming and this enrolment exerts a lot of pressure on the school's infrastructure and the learning material available. As such, the instruction process is somewhat choked by squalid learning materials and inadequate infrastructure, henceforth the pass rate remains poor and on the negative end.

4.2.1 Respondents by Gender

Table 4.1 – Gender of teachers

SCHOOL	FEMALE	MALE	TOTALS
A	6	6	12
B	6	6	12
C	6	6	12
TOTALS	18	18	36

The table above is a true representation of the demography of teacher respondents in line with their gender 18 of the teachers are female and 18 representing men. The researcher observed that, the school is staffed with both male and female teachers for Science subjects henceforth the learners have room to consult either gender, wherever need be. However, from the in sundry of teacher respondents, the observations made, also informed the researcher that not all teachers within the school are teachers for Science subjects.

4.2.2 Respondents by Age

Table 4.2 below, articulates the age of the teachers who responded to the questionnaire. 2 of the respondents are within the range of 20 – 29 years of years, 19 within the age range of 30 –

39 years, the other 10 in the range of 40 – 49 years and to cap it all 1 above age of 60. The remaining 5 within the range of 50 – 60. Wherefore, it can be deduced that the responses are not biased towards a particular minority group but is balanced as the groups have respondents that took part in this research. The teachers were not classified into specific age groups but were grouped into two categories, namely group A and group B.

Table 4.2 Age of Teachers By Gender

Age	Female	Male	Total
20 – 29 years	1	0	2
30 – 39 years	6	13	19
40 – 49 years	7	3	10
50 and 60	4	1	5
Above 60	0	1	1
Total	18	18	36

4 .2.3 Appropriateness of Teacher- Pupil Ratio

From the observation made by the researcher, the questionnaire responses and FGDs contributions, one thing that is outstandingly common is that the teacher-pupil ratio is solely inappropriate. All Science subjects including Mathematics, Biology and Combined Science to mention a few, are all activity or pragmatic based hence a lot of learners of late have been pulled towards such subjects for the practical exposure. Needless to mention that this was further exacerbated by the government introduction of the STEAM or STEM bursaries which put Science related subjects on the vanguard of all other preferences for funding. However, despite all the positives, there seems to be a challenge when it comes to teacher pupil ratios especially in public or government schools. The Primary School under study is by no means exceptional as evidenced from the research findings. Esiobu (2005) observed that the number of learners enrolled in most public schools exerts a lot of pressure on the little resources available within a given school and this in turn jeopardizes how the teachers and learners interact. In essence, the proportion of teacher-learners in a given class, is bizarre. Adding on, the teachers themselves also highlighted that they are incapacitated and demotivated, hence they put little effort in the supervision of the entire class during a lesson. This goes without making mention of poor remuneration and too much workload.

4.3 QUALIFICATIONS AND EXPERIENCE OF TEACHERS

Table 4.3 Teachers highest professional qualification

Highest level of qualification	FEMALE	MALE	TOTAL
CERTIFICATE IN EDUC	0	1	1
Diploma in Education	8	13	21

Bachelor's Degree in education	8	3	11
Postgraduate Degree in Education	2	1	3
Total	18	18	36

From table 4.3 it can be deduced that 21 of the mathematics teachers at the school under study are certified with a Diploma in Primary Education, while 11 are holders of a Bachelor's Degree in Education and the remaining 3 are endowed with a Post Graduate Degree in Education. In terms of qualifications, the teachers are adequately trained to facilitate the learning process for Primary School learners. From the observations that the researcher made, during his research at the school, the learners are reluctant to submit their books on time so much that some have even resolved to absent themselves from school or class lessons with no apparent reason. As a follow up, such behaviours from the learners can be a contributing factor towards high failure rate in mathematics as the learners are in the habit of absconding lessons and class work.

Respondents by Teaching Experience

Table 4.4 Teaching experience

Level	Male	Female	Totals
0– 2 years	0	1	1
3 – 5 years	4	8	12
6 – 10 years	2	4	6
11 – 15 years	5	3	8
16-20 years	6	2	8
Above 20 years	1	0	1
Total	18	18	36

Table 4.3 is a presentation of the teaching experience of teacher respondents. One adage state that, ‘experience is the best teacher’. Guided by table 4.3, it can be argued that, most teachers who took part in this research, have acquired at least 5 or more years of teaching experience. It would be unfair to justify that these teachers are nonentities in the field of mathematicss, so much that their instruction to learners result in dismal performances.

Every one of the twenty students (100%) emphasized that their teachers have expertise instructing seventh-grade math. Interviews with all four teachers (100%) revealed that they were all experienced and qualified. This was corroborated by the 3 school administrators (100%) who stated that their teachers were experienced and qualified to teach seventh-grade mathematics. Analysis of the teachers' documents also revealed that they were all seasoned and competent.

Two out of four instructors (50%)had been teaching for eight to twelve years, and the other two out of four teachers (50%) had been teaching for fifteen to eighteen years, according to the data produced in Table 4. 4. In their interviews, the professors also mentioned that they were

experienced and qualified. Teachers in grade seven were experienced and qualified to teach mathematics, according to data gathered from school administrators. Based on the information gathered, the researcher found that low math pass rates may be caused by a variety of factors, not just the training and experience of teachers. When a teacher has less than a year of experience, students do worse in mathematics (Betts, Zau & Rice, 2003).

Even though the teachers at the chosen schools had the necessary training and expertise, the pupils continue to struggle in mathematics. Learners receive more teaching from well qualified teachers, which has a favourable impact on their performance (Tichapondwa, 2011).

4.4 TEACHING METHODS USED IN THE TEACHING OF MATHEMATICS

It was discovered from the produced data that teachers employ a variety of instructional strategies. Every one of the twenty students (100%) from the chosen schools mentioned that their seventh-grade math teachers employ teacher-centred approaches. One pupil stated during mathematics classes, our lecturers spend a lot of time talking and showing us how to do problems on the chalkboard. We are not given any time to solve problems individually or in pairs. Two of the four teachers (50%) who participated in the interview stated that they employed teacher-centred teaching approaches, whereas the other two (50%) stated that they employed student-centred methods.

All four teachers (100%) agreed that the issue arises when students are not engaged in class because they struggle to understand mathematical ideas, and the teachers are forced to use teacher-centred strategies. The time allotted for mathematics is insufficient, and these children are too passive to solve problems on their own, so I have to demonstrate and explain everything, one teacher said. Additionally, another educator stated:

We must use teacher-centred strategies since students simply detest mathematics and will not be engaged if given pair work. Data produced by the school's officials corroborated the pupils' statements. Both school administrators (100%) stated that teachers are overburdened because they have to instruct a large number of students, and it can be challenging to assist each individual kid. For this reason, teachers must employ teacher-centred strategies. Additionally, information gathered from classroom observations shows that all four of the teachers (100%) at the two schools employ teacher-centred approaches.

Upon analysing the work plans, the researcher discovered that although teachers plan for student-centred activities, they do not implement them in their classes for the reasons mentioned above. 38 Learner-centred approaches that allow students to actively engage in the teaching and learning process are essential for efficient and successful instruction (Mtitu, 2014). The mathematics curriculum promotes a variety of teaching strategies, including question-and-answer sessions, group projects, and discovery.

Teachers in the chosen schools are not doing this since they have chosen to use teacher-centred approaches. Thus, low math pass rates at the seventh grade level may be caused in part by teacher-centred approaches. Although the Mathematics Syllabus encourages students to participate in class, this is not the reality.

4.5 ATTITUDES OF STUDENTS TOWARDS MATHEMATICS

According to the study's findings, just four pupils (20%) expressed any interest in mathematics, while sixteen out of twenty students (80%) acknowledged having a negative attitude toward the subject. One student from school A stated: I detest math, and because no one in my family has ever passed it, I don't see the point in bothering. "Mathematics is very confusing, there is so much matter that one needs to grasp, and I find mathematics lessons boring," responded a

tearful student from school B, student from school C said had challenges in memorising formulas.

I consistently struggle with mathematics, and I'm not the only one. Only two pupils in our class are proficient in mathematics. When interviewed, all four teachers (100%) corroborated this information as well. According to one of the teachers, the pupils simply don't like math, and they will skip class if you try to make them. According to another teacher from school B, who agreed with the aforementioned statement, some kids detest mathematics so much that they typically arrive at school after math classes, while others will only feel better after math classes.

. The administrators of both schools (100%) agreed with the teachers' statements. During observations in the classroom, the researcher also observed that some pupils were drowsy during math classes, while others were completely distracted by the teacher. The majority of the pupils were not engaged during the lessons, and a few were also tardy for math classes. The researcher also noticed that some students did not complete assigned arithmetic assignments, while others declined to take part in group discussions.

Four or five pupils will be absent each day, according to the attendance register analysis. Upon examining the students' exercise books, the researcher found that some pupils had no mathematics exercise books at all, while others did not write daily exercises. In support of this, Mupa (2015) claims that kids who consistently perform poorly in mathematics would skip class, have a bad attitude, and lack enthusiasm for learning. One of the key factors that determines whether students succeed or fail is their attitude (Kuranche et al., 2013). According to the study's findings, one of the main causes of low math pass rates is students' unfavourable views toward the subject.

4.6 TEACHING AND LEARNING MATERIALS AVAILABLE

Except for the textbooks that UNICEF supplied around eight years ago, all twenty pupils (100%) stated that their schools lacked any educational resources. The students solely mentioned the textbooks as a source of knowledge. Only one teacher (25%) has established a resource file where research materials for mathematics and other topics are stored, while three out of four teachers (75%) acknowledged that the textbooks were the only teaching and learning materials available at their schools. The file was also viewed by the researcher during the study of 40 documents. Instructors lack the time necessary to produce their own resources (Long & Dunne, 2014).

One of the teachers further on lamented that: I rarely use the Step in Mathematics book 7 that is accessible in my classes because it is not the best book for the children. Instead, I utilize Ventures in Mathematics Grade 7, of which there is only one copy each grade. All four of the teachers (100%) who participated in the interviews stated that they lack sufficient resources and occasionally teach from their heads. Fifty percent of the teachers said they had once urged their students to purchase their own copies, but no one had reacted.

School B teachers admitted to occasionally using student copies. According to both school administrators (100%) there are insufficient resources available to support teaching and learning in the schools. Additionally, according to the school officials, their only teaching resources were UNICEF textbooks. The way these textbooks were being stored was another issue that the school administration was griping about. According to the information gathered from educators and school officials, their schools lacked several resources.

One teacher reported that: When given an assignment, students refuse to bring the necessary materials, and most seventh-graders dislike learning aids like counters because they believe they are too young to use them.

Every one of the four teachers (100%) expressed dissatisfaction about their schools' lack of adequate teaching and learning resources, which leads them to use teacher-centred approaches. Additionally, the schools were in poor shape, lacking essential facilities like book cabinets and numerous other teaching and learning resources. When interviewed, all four teachers (100%) said that a lack of infrastructure exemplifies some of the related difficulties.

One teacher commented that;75% of the textbooks that UNICEF provided were in bad shape, indicating that most of them had been torn apart without the first few pages, according to data obtained from document analysis.

During lesson monitoring, the researcher found that 75% of the textbooks were torn and in very bad shape. Five students shared a textbook at school A, while four students shared a textbook at school B, and six students shared a textbook at school C, according to the researcher's observations in classrooms. Every teacher's completed inventory (100%) highlighted a lack of resources. Attendance data from both schools indicated a substantial student body.

According to data derived from document analysis, 75% of the textbooks that UNICEF provided were in poor condition, meaning that the majority of them had been torn apart without the initial few pages. The researcher discovered that 75% of the textbooks were ripped and in extremely poor condition during lesson monitoring. The researcher observed classrooms and found that five students shared a textbook at school A, whereas four students shared a textbook at school B. Lack of resources was mentioned in every teacher's inventory (100%) that was completed. Both institutions' attendance records showed a sizable student body.

Worksheets, abacuses, and counters are a few examples of the teaching and learning resources used in mathematics classes. In support of the aforementioned claim, Drews (2007) suggests that teachers should frequently employ manipulative tools to provide students with practical

experience that aids in the construction of meaningful meanings for the mathematical concepts they are learning. Students' success in mathematics is influenced by the sufficiency and quality of the physical and material resources.

The sampled schools are having difficulty providing the learning resources that are required. These resources, which include textbooks, appropriate classrooms, libraries, computers, and labs, make teaching instructors and students feel negatively about the subject and, as a result, dislike it. The performance of primary school pupils in mathematics will be greatly enhanced by the provision of adequate instructional media or resources and comfortable classrooms (Usman, 2012). The researcher came to the conclusion that one of the main causes of the poor math pass rate is the lack of available learning resources.

4.7 SUMMARY

In conclusion, after presentation, interpretation and analysis of the data, the researcher found that the main causes of the poor math pass rate are teacher-centred approaches, student attitudes, and a lack of teaching and learning resources. The study's summary, conclusion, and suggestions will be the main topics of the upcoming chapter.

CHAPTER FIVE

SUMMARY, CONCLUSIONS AND RECOMMENDATIONS

5.1 INTRODUCTION

In order to increase high maths pass rates, the researcher summarized the research findings, presented the conclusions, and offered suggestions that the Ministry of Education, non-governmental organizations, educators, and other stakeholders may implement.

5.2 SUMMARY

The poor math pass rate in grade seven over the last decade has prompted the researcher to conduct this study in order to identify the contributing variables. This study is important because mathematics is essential for problem solving and for influencing how people handle the different aspects of social, private, and civil life (Antony & Walshaw, 2009). Since mathematics improves pupils' capacity for reasoning, it is imperative that the subject be thoroughly understood from all aspects, particularly at the primary school level.

The cost of transportation from the head office to the sampled schools was the study's main drawback, and in order for the study to be successful, the researcher had to borrow money from others. Finally, the definitions of the three main concepts employed in the study—performance, resources, and primary education—were thoroughly defined. The purpose of the literature review was to help the researcher learn about other sources' research on the elements that contribute to a poor math pass rate.

The following sub-research questions were used as themes in the literature review: the credentials and experiences of seventh-grade instructors; the teaching strategies used in math classes; the attitudes of students toward math; and the teaching and learning resources

available. The study found that sufficient teaching and learning resources are crucial, and that mathematics is a topic that calls for highly skilled and experienced teachers who can use student-centred approaches. Yara (2009) supports the aforementioned idea by positing that teachers' qualifications, experience, and dedication are what determine students' success in public exams and overall academic performance.

According to Michael (2015), teaching and learning strategies have an impact on students' mathematical performance. Students need sufficient teaching and learning resources in order to understand mathematical ideas. According to Berthoud (2010), teaching becomes extremely challenging when there are insufficient textbooks, other tools, and materials available to enhance student performance. Success in mathematics in the classroom is correlated with one's attitude toward the subject (Mcleod, 2002). Therefore, it is the responsibility of educators to make mathematics lessons engaging in order to improve students' attitudes about the subject.

Data were gathered in a natural environment using a qualitative study design. For the purpose of creating data, a purposive sample of 36 participants grade 7 teachers, was selected. The tools utilized to generate the data were the observation and interview guides and document analysis. The researcher was able to gather information from the observation guide that was not possible to evaluate through interviews. The researcher was able to clearly identify the themes from the data by using a thematic technique to analyse the generated data.

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5.3 CONCLUSIONS

5.3.1 Because teachers are trained and experienced to help kids perform better on grade seven exams, their training and experience did not contribute to the low math pass rate.

5.3.2 When teaching mathematics, teachers prioritize teacher-centred methods over learner-centred ones, which leads to subpar results.

5.3.3 Students perform poorly in mathematics as a result of their unfavourable attitude toward the subject.

5.3.4 One of the main causes of pupils' poor performance in mathematics is the lack of proper teaching and learning resources in schools.

5.4 RECOMMENDATIONS

The researcher made the following recommendations:

5.4.1 Teaching and learning resources should be purchased by parents via school development committees.

5.4.2 When teaching mathematics, teachers ought to employ student-centred approaches.

5.4.3 It should be possible for districts, circuits, and clusters to host staff development events at all levels so that instructors can exchange ideas and discover new techniques for teaching mathematics to seventh graders.

5.4.4 More frequent in-service training and refresher courses in mathematics instruction should be mandated by the Ministry of Primary and Secondary Education.

5.4.5 School administrators should make sure that their institutions foster a positive attitude toward mathematics in their students.

5.4.6 Teachers should be supervised and given guidance by school authorities on how to carry out their duties efficiently.

REFERENCES

Babbie E. (2007). *The practice of social research*, 11th Edition. Thompson Wadsworth: United Kingdom.

Bowen, G. A. (2009). Document analysis as a qualitative research method. *Qualitative Research Journal*, 9(2).27-40.

Chinamasa, E. (2008), The effects of using a standardized marking scheme in teaching mathematics. *Zimbabwe Journal of Educational Research*. 20 (2), 199-227.

Cohen, L, Manion, L. & Morrison, K. (2005). *Research Methods in Education* (5th Edition). Routledge Falmer: USA.

Drews, D. & Hansen, A. (2007). *Using Resources to Support Mathematical Thinking, Primary and Early Years*. Learning Matters Ltd: London.

Ernest, P. (2004). Images of mathematics, values and gender. In S. Johnston-Wilder & B. Allen (Eds.), *Mathematics education: exploring the culture of learning*. Routledge.

Flick, U. (2007). *An Introduction to Qualitative Research*.

Furinghetti, F. & E. Pehkonen. 2002. Rethinking characterizations of beliefs. In: G.

Leder, E. Pehkonen, & G. Toerner (eds.), *Beliefs: A Hidden Variable in Mathematics Education?* Kluwer Academic Publishers, pp. 39-58.

Goldhaber, D. D. & Brewer, D.J. (2000). Does teacher certification matter? High school teacher certification status and student achievement. *Educational Evaluation and Policy Analysis*, 22 (2): 129-146.

Gray, D. E. (2009). Doing research in the real world. Sage Publications: Harare. 48

Hammond, L. (2010). Teacher quality and student achievement: A review of state policy evidence. Educational Policy Analysis Archives, 8 (1).

Harris, D.N. & Sass, T. R (2008). Teacher Training, Teacher Quality and Student Achievement.” CALDER Working Paper 3.

Washington, D.C.: The Urban Institute. Kimani GN, Kara AM, Njagi LW (2013).

Tea. Haylock, D. & Cockburn, A. (2003). Understanding mathematics in the lower primary years. A guide for teachers of children 3-8. London: Paul Chapman.

Iren, L (2015). Why students fail Mathematics? <https://www.vanguardngr.com>.

Joubert, M. (2009). Proceedings of the British Society for Research into Learning Mathematics vol.26.no.1.

Kahle, J. B. (2007). "Classroom, home and peer environment influences on student outcomes in science and mathematics: An analysis of systematic reform data,"International Journal of Science Education, vol. 29, no.15

Kitta, S. (2004). Enhancing Mathematics Teachers’ Pedagogical Content Knowledge and Skills in Tanzanina. Print Partners- Ipskamp: Enschede.

Kothari, C. K. (2004). Research Methodology; Methods and Techniques (2nd Edition). New Age International Publishers: India. Lindberg,

S. M (2010). “New trends in gender and mathematics performance: a metaanalysis,"Psychological Bulletin, vol. 136, no.6 London: Sage.

Maganga, C. K. (2013). Evolution of Philosophical Discourses on Education: A Clarification. Tanzania Open School and Publishing House: Dar es Salaam. 49

Manoah, S. A, Indoshi, F. C. & Othuon, L. O. A. (2011). Influence of attitude on performance of students in Mathematics curriculum. In 2011 International Educational Research Journals, Vol. 2(3) pp. 965-981. McKay, V. (2012). Developmental Studies, Module 4. Pretoria: ABET institute University of South Africa.

Mtitu, E. A. (2014). Learner-centred teaching in Tanzania: Geography teachers' perceptions and experiences. Victoria University of Wellington.

Musau, L. M. & Abere, M. J. (2015). Teacher qualification and students' academic performance in Science Mathematics and technology in Kenya, International Journal Educ. Admin. vol. 7(3).

Nicolaidou, M. & Philippou, G. (2003). Attitudes towards mathematics, self-efficacy and achievement in problem solving," in European Research in Mathematics Education III, M. A. Mariotti, Ed., pp. 1–11, University of Pisa, Pisa, Italy, 2003. O'Leary, Z. (2014). The essential guide to doing your research project (2nd ed.) Thousand Oaks, C.A: Sage Publ.

Omari, I. M. (2011). Concept and Methods in Educational Research "A Practical Guide Based on Experience". Dar es Salaam: Oxford University Press.

Rowan, B, Correnti, R. & Miller, R. (2002). What large scale survey research tells us about teacher effects on student achievement: Insights from the prospects study of elementary schools. Teachers College Record, 104(8), 1525-1567.

Siyakwazi, B. & Siyakwazi, P.D. (1999), Strategies in Teaching and Learning. Sapes: Harare. 50

Suurttamm C. & Nancy Vezina. N. (2010)."International Journal for Mathematics Teaching and Learning," Transforming Pedagogical Practice in Mathematics, vol. 127 no.10.

Tshabalala, T. & Ncuba, A. C. (2013). Causes of Poor Performance of Ordinary Level Pupils in Mathematics in Rural Secondary Schools in Nkayi District: Learner's Attributions. Nova Explore Publications: Zimbabwe. UNESCO, (2004). Studies in Mathematics education: The Mathematical Education on Primary School Teachers. United Nations Educational, Scientific and Cultural Organization: Paris ETP, (1995). Ministry of Education and Culture: Education and Training Policy.

Wakefield, A. (2008). Private policing: a view from the mall. Sage publishers: New York.

Yara, P. O. (2009). Relationship between teacher's attitude and student's academic achievement in mathematics in some selected. Zimbabwe Teachers Association: Harare.

Yilmaz, C., Altun, S. A. & Ollkun, S. (2010). Factors affecting students' attitude towards math: ABC theory and its reflection on practice. Procedia Social Science and Behavioural Sciences, 2, 4502-4506.

Zan, F. & Martin, P. (2008), "Attitude toward mathematics: overcoming the positive or negative dichotomy, "New City: Age Publ.

Zuzovsky, R. (2003). Teachers 'qualifications and their impact on Student Achievement. Age International: New Jersey.

APPENDICES

Appendix A

APPENDIX B

My name is RWAMBIWA TENDAYI, I am currently studying for a Bachelor of Science in Mathematics with Bindura University of Science Education, Department of Mathematics and Science Education. As part of my degree program I am currently carrying out a research among grade seven teachers who are teaching mathematics in Seke Rural areas. This information will only be used for purposes of this study. Your participation in the study is voluntary and the information you give will be treated as confidential.

QUESTIONNAIRE IDENTIFICATION

Name of Enumerator.....Questionnaire Number.....

Name of Respondent.....

A. DEMOGRAPHIC DETAILS

A.1 Gender: Male ☐ Female ☐ (tick where appropriate)

A.1. TYPE OF SCHOOL

DAY SCHOOL BOARDING PRIVATE SCHOOL OTHER (SPECIFY)
SCHOOL

A.3. LOCATION OF THE SCHOOL

RURAL GROWTH POINT MINE OTHER (SPECIFY)

A.4. AGE OF THE TEACHER YEARS

A.5 MARITAL STATUS OF THE TEACHER

SINGLE

MARRIED

WIDOWED

DEVORCED

A.6. WHAT IS THE HIGHEST EDUCATIONAL LEVEL THE TEACHER HAS COMPLETED?

SECONDARY

DIP

IN FIRST

POST GRAD

OTHER

LEVEL

EDUCATION

DEGREE

(SPECIFY)

A.7. PLEASE INDICATE YOUR AREA OF SPECILISATION

MATHEMATICS

PHYSICS

BIOLOGY

CHEMISTRY

OTHER

(SPECIFY)

A.8 PLEASE INDICATE YOUR TEACHING EXPERIENCE

0-2 YEARS 3-5 YEARS 6-10 YEARS 1.1 YEARS >15 YEARS

A.9. PLEASE INDICATE THE AVERAGE TEACHER – PUPIL RATIO IN YOUR SCHOOL.

1:20 1:20-30 1:31-40 1:41-50 >1:50

➤ Factors contributing to high failure rate in Mathematics at grade seven level.

B.1. what environmental factors cause high failure rate in Mathematics among grade seven learners in your school?

B.2. What do you see as the most contributing factors towards high failure rate in mathematics at grade seven level?

B.2.1 Please comment on the following aspects:-

a) access to textbooks.....

b) access to computers.....

c) access to the library.....

d) access to well-furnished classrooms.....

e) other specify.....

B.3. What are the psycho-social factors that contribute to high failure rate in grade seven mathematics learners at your school?.....

B.4 What are the economic factors that are contributing to high failure rate in Mathematics among grade seven learners?.....

B.5. What strategies can be employed to improve pass rate in grade seven Mathematics

APPENDIX C

DOCUMENT ANALYSIS GUIDE

My name is RWAMBIWA TENDAYI a student at Bindura University of Science Education in the department of mathematics and science. I am carrying out a research on the Factors that cause a low pass rate in mathematics at grade seven level in Seke Rural District. The information obtained will be strictly used for academic purposes and will be treated with confidentiality. Therefore, I kindly ask you to respond to the following questions genuinely.

Date

School

Class

Time

Schemes of work, mathematics syllabus, continuous assessment files, internal and external examinations results are going to be used.

1. Qualification and experience of teachers

.....

2. Teaching and learning resources

.....

3. Teaching methods

4. School mathematics policy

5. Attitude of students

.....

APPENDIX D