BINDURA UNIVERSITY OF SCIENCE EDUCATION

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WHAT ARE THE POSSIBLE REMEDIES TO THE PROBLEM OF LOW UPTAKE IN MATHEMATICS FROM THE PERSPECTIVE OF THE TEACHER AND THE PERSPECTIVE OF THE LEARNER, A CASE STUDY AT HERMANN GMEINER HIGH SCHOOL?

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DECLARATION

I declare that this project hereby submitted by me has not been previously submitted at this or any other University and this is my own work.

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Signature Date: ..

This project has been submitted for examination with my approval as the University Supervisor

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Signature  Date: 30/09/2024

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APPROVAL FORM

The undersigned certify that they have supervised, read and recommend to the Bindura University of Science Education for acceptance a research project entitled: WHAT ARE THE POSSIBLE REMEDIES TO THE PROBLEM OF LOW UPTAKE IN MATHEMATICS FROM THE PERSPECTIVE OF THE TEACHER AND THE PERSPECTIVE OF THE LEARNER, A CASE STUDY AT HERMANN GMEINER HIGH SCHOOL? Submitted by: NYANGASA JONATHAN M in partial fulfilment of the requirements of the Bachelor of Science Education (Hons) Degree Mathematics.

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DEDICATION

This research is dedicated to all my family and friends who gave me unwavering throughout the course this research project.

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The researcher would like to express gratitude to all his family, friends and colleagues whose continuous support, encouragement and assistance lead to the success of this project. I also would like to express my heartfelt appreciation to my supervisor Dr Z Ndemo for his great assistance throughout the research process.

May God bless you.

ABSTRACT

This study was about the factors leading to low uptake in mathematics subject a secondary level. The study was led by research objectives which were to suggest possible individual remedies that is the to the teacher and the learner in the low uptake in mathematics and to suggest possible mitigation strategies to address the situation of low uptake in mathematics at secondary level. Relevant literatures were reviewed on theories and findings that emerged from different authors. The study involved six mathematics teachers and fifty students. These were obtained through simple random sampling. Data collection was done by using questionnaires, interviews, focus group discussions, observations and documentary review. The findings indicated teaching and learning of mathematics was facing challenges such as poor teaching methods, poor use of technology in the teaching and learning of mathematics, inadequate teacher development and lack of career awareness to learners so that they will be motivated. Therefore the researcher recommends teachers to develop themselves by attending seminars and teacher development workshops, teachers should also use appropriate teaching methods to certain topics. Moreover, students should put self-efforts and practice in learning mathematics. Lastly, the researcher recommends future research on individual factors that affects students learning of mathematics.

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CHAPTER ONE

INTRODUCTION AND BACKGROUND OF THE STUDY

1.1 Introduction

This chapter focused on background of the study, statement of the problem, purpose of the study, objectives of the study, research questions,limitations of the study, delimitations of the study and definition of terms.

1.2 Background of the Study

Mathematics is the study of numbers, quantities and shapes. According to Kitta (2004), mathematics is an important area of study which equip learners with knowledge and skills that can be used in various fields. It can be used to illustrate, predict and explain patterns to clarify meaning of issues in life. Mathematics helps one to visualize the invisible, hence giving solutions to problems that may be otherwise impossible.

Lambdin (2009), says that demands of mathematics on learners increases with progression through school, more so it is applied at their adult lives at home as well as at the workplace. Students must have a strong foundation in mathematics in order to be able to function in a mathematical way. A foundation which is strong includes more than the written application of procedural knowledge. Ministry of Primary and Secondary Education report in 2016 indicates that, all learners should be in a stance to simulate, create sense of, and apply mathematics as well as create connections among concepts and view sequences throughout in subject. The report indicate that learners should be able to expose their thinking, the flexibility of reasoning that will enable them to attempt new mathematics areas and be interested to progress in learning mathematics.

Findings by Iheanachor (2007), shows that, there exist a notable positive relationship among students achievement in mathematics and facilitators background. Facilitators who hold good qualifications in the subject of mathematics find their learners performing better in mathematics. Tata (2013) came out with findings that, learners' negative attitude towards mathematics, mathematics fear, insufficient qualified teachers and shortage of teaching tools were some of the factors leading to a low pass rate in mathematics. Developing attitude which is positive, motivating and guiding learners towards mathematics and providing sufficient teaching materials would make learners perform better in mathematics. In Zimbabwe education curricula, mathematics is an important subject that every learner is learning at both primary and secondary education. Despite being the compulsory and core subject, learner s performance in Mathematics in Zimbabwe had been low for a number of years in Ordinary Education Examinations. Table 1.1 below shows the ZIMSEC Mathematics pass rate country wide from 2015 to 2022

TABLE 1.1

Year	Pass rate%
2015	21.62
2016	18.96
2017	17.27
2018	17.78
2019	19.23
2020	18.71
2021	18.71
2022	18.03

The table above shows a poor performance in Mathematics for the country of Zimbabwe which is not favorable on the point of view of the nation in terms of mathematics literacy rate

1.3 Statement of the Problem

The problem is low uptake in the Mathematics by the learners at Hermann Gmeiner High School which is evidenced by a poor pass rate on this subject from the year 2015 – 2022 as indicated by the pass rates 29,4%; 26,4%; 30,6%; 38%; 29,5% ; 36,9%, 35,8% and 33,9% respectively. This is a problem since the poor pass rate of these subject meant to undermine the School in terms of its ranking compared to other schools. Since Mathematics contribute to the major sectors of the country which includes the health sector, engineering, technology sector just to mention a few, it means poor performance may lead to retarded progress in these sectors and this will not be good for a country. Several factors can be considered on both sides of the teacher and the leaner to improve learner uptake in mathematics and these may include teachers adopting appropriate teaching methodologies as well as learners being engaged in adequate guide and counselling so that they develop a positive attitude when learning mathematics. This study is aiming at addressing low uptake in Mathematics by looking closely on causes of poor pass rate in this subject and how the pass rate may be raised.

1.4 The Purpose of the Study

The main purpose of this study is to suggest possible ways of overcoming the problem of low uptake in mathematics at Hermann Gmeiner high school from both the teacher and the learner perspective.

1.5 Objectives of the Study

The main aim of the study will be to identify the possible remedies to the problem of low uptake in mathematics from the perspective of the teacher and perspective of the learner. The specific objectives of this study are;

(i) To suggest possible individual remedies that is to the teacher and the learner in the low uptake of mathematics.

(ii) To suggest possible mitigation strategies to address the situation of low uptake of mathematics at secondary level.

1.6 Research Questions

The following research questions provide guide for this research.

(i) What leads to low uptake in mathematics at secondary level?

(ii) What are the challenges faced by teachers in teaching leading to low uptake in mathematics at secondary level?

(iii) What methods and strategies should mathematics teachers adopt to avoid low uptake in mathematics?

(iv) What are the challenges faced by learners leading to low uptake in mathematics at secondary level?

1.7 Significance of the Study

The findings of this study is very significant in a number of ways. This study is significant to other researchers as a reference on researches pertaining learners uptake in mathematics. It is the sincere wishes of the researcher that going through this study will make mathematics facilitators to aid their learners perform well in mathematics. This study will help teachers at Herman Gmeiner High School because it will put forward the solutions to the causes of prevailing low pass rate. The study and recommendations will also assist teachers of mathematics in secondary schools to effectively teach using best methods and approach which will result in improved uptake in mathematics. The study will enable teachers to restructure their teaching strategies in such a way that the learners will pass. The country as a whole is going to be helped by this study as an increase in pass rate in Mathematics subject may mean the country will be gaining workforce with required skills and knowledge for economic growth and development.

1.8 Limitations of the Study

The researcher faced some challenges during this study. The major challenge faced by the researcher in conducting research was the pressure to publish in an environment characterized by high teaching loads and inadequate resources as well as time. The researcher is supposed to travel to some schools and do the same research also so that the results can be compared. The other challenge was managing and evaluating huge amounts of information. Managing and analyzing large datasets can be a time consuming and complex process. The researcher was also not able to involve every member of the population but the sample of the study was randomly selected.

1.9 Delimitation of the Study

The study is going to be done at Hermann Gmeiner High School. The study is targeting a population of 800 people which involves 12 teachers and 788 learners from which a sample is going to be selected and data is going to be collected. The study will be looking at the remedies in low uptake of mathematics. Quota sampling is going to be used on the selection of the respondents as it can be helpful for getting a broad picture of attitudes, behaviors, or circumstances, such as understanding the range of concerns facing respondents about the issue of low uptake in mathematics and from these responses questionnaires and interviews will be used to as data collection methods. A sample of six teachers and 50 learners will be used in the study for which questionnaires will be administered to the learners and the teachers will be interviewed.

1.10 Definition of Terms

1.10.1 Teacher perspective.

Teacher perspective refers to the attitude or point of view of teachers about teaching and learning. Teachers perspectives were sought about the following aspects of their work: their morale, workload and job satisfaction; experiences of professional learning; and their school culture and ways of working.

1.10.2 Uptake

Uptake was defined as a student's utterance that immediately follows the teacher's feedback and that constitutes a reaction in some way to the teacher's intention to draw attention to some aspect of the student's initial utterances (Lyster & Ranta, 1997, p. 49). It can be defined as the act of taking up mathematical comments, questions and constructions as objects of discourse.

1.10.3 Teaching Method

This comprises the principles and techniques used for instruction. Commonly used teaching methods may include class participation, demonstration, recitation, memorization, or combinations of these, teacher centered and student centered methods. (Tata, 2013)

1.10.4 Qualified Teacher

This is the teacher who has the minimum academic qualifications necessary to teach at a specific level in a given country.

1.10.5 Learners attitudes

Attitude is defined as a disposition or tendency to respond positively or negatively towards a certain thing such as an idea, object, person or situation. Learners attitudes includes a range of consistent learning behaviors which demonstrate the aspiration to achieve their best. These include engagement, effort, collaboration, active involvement, independence and enthusiasm.

Chapter 2: Literature review

2.1 Introduction

This chapter dwell much into the variables influencing teaching and learning of mathematics as a subject as well as empirical studies on factors that influence the low uptake of mathematics.

2.2 Conceptual Framework

Conceptual framework may be defined as the system of concepts, beliefs, and theories that support the study. Conceptual framework is a presentation of a synthesis which will map out the actions. Omari, (2011) identified dependent variables as behavioral factors and resource factors. Behavioral factors in attitude of learners and attitude of teachers whilst resources factors include learning and teaching resources as well as teachers. He also identified independent variable as low uptake in mathematics.

2.3. Theoretical framework

2.3.1 Teacher-pupil relationship

According to McLeod (1992) factors such as attitudes and beliefs play an important role in mathematics achievement. Stuart (2000) argues that teacher attitudes toward mathematics may either positively or negatively influence learners confidence in mathematics. Newman and Schwager (1993) found that at all grades a sense of personal relatedness with the teacher is important in determining a learner s frequency in seeking help from the teacher. They further state that this aspect of the classroom climate has been shown to be related to good academic outcome. In the same vein Dungan and Thurlow (1989) state that the extent to which learners likes their teacher, influence their liking of the subject.

Moreover students could become good in mathematics as teachers give them more questions to make them have a better knowledge and understanding on mathematics concepts. Maganga (2013) state that ideas must have existed in our mind even before our birth. Such knowledge is termed a priori, that means knowledge which is their prior to and independent of any experience (Maganga, 2013). Educators have an impact on the deficient performance in mathematics because if the teacher does not have a good subject knowledge and pedagogical content knowledge s/he might deliver incorrect content or even skip content, which could also lead to

poor performance (Asikhia, 2010). Another factor is the language of teaching and learning. Educators tend to use learners home language during teaching and learning so that learners often fail to understand the language used in the official examination papers and consequently fail to answer correctly (Asikhia, 2010). Barber et al. (2010, cited in Forrest et al. 2019) argue that in South Africa the quality of teachers, influences learners in learning mathematics. According to Chen, et al. (2017) strong evidence exists showing that teacher diligence, dedication, and adherence to basic educational policies and processes can lead to good teaching and learning. Chen, et al. (2017) further assert that issues around the maximization of contact time with learners in class, and the presence of both learners and teachers at school and in class, have a positive impact on performance. In South Africa, the instructional time in the senior phase for mathematics is four to five hours (270 minutes) a week. However, a study by Makhubele and Luneta (2014) found that schools in their study allocated 110 minutes per week to senior phase mathematics. This means about an hour of mathematics teaching is lost per week. This is a significant amount of time lost per term and per year, which results in a chronic and systemic reduction of teaching and learning in class that affects performance in the subject (Makhubele & Luneta, 2014). In addition, international studies by Attwood (2014 cited in Sa ad, et al., 2014) attribute poor performance in mathematics to parental attitude and interrupted teaching. Karue and Amukowa (2013) found that home environmental factors and family backgrounds as well as little participation of parents in the education of their children were the main causes of poor performance in mathematics in Kenya. In South Africa (Cascio, 2013), family-related factors also play a critical role in learners performance. Parents who are too occupied to care about their children s performance contribute to children losing their academic focus. Poverty-stricken families were found to negatively affect their children s academic performance. Some parents were found to be abusive, which caused lear ners school performance to decline dramatically. Learners who come from abusive families tend to perform badly at school (Cascio, 2013). From what research has already established as factors contributing to poor learner performance, there is strong evidence to suggest that these factors vary from context to context. The recommendations offered to each context also differ (Sinyosi, 2015). As this study was conducted in a unique context, the factors might have a different effect on learner performance in mathematics. There are few studies on poor learner performance in mathematics in Kwagga

district of Mpumalanga Province, hence little is known about the contributing factors affecting performance in mathematics for the senior phase in this district. It was therefore imperative to investigate factors contributing to poor learner performance in mathematics at Kwagga West Circuit to make recommendations that will enhance performance.

Research on attitudes towards career choice and towards mathematics teachers is extensive. Eccles and Jacobs (1986) found that self-perceptions of mathematics ability influence mathematics achievement. Norman (1988) concluded from a wide review of literature that there is a positive correlation between career choice and mathematics achievement. Subsequently Trusty (2002) reported that learner attitudes impact on later career choices in mathematics. Ware and Lee (1998) found that mathematics attitudes during high school had a positive effect on choosing science careers. Accordingly, Armstrong and Price (in Pedersen et al., 1986) found that the career aspirations of high school learners influence their participation in mathematics, which in turn influenced their mathematics achievement. Trusty and Ng (2000) studied learners self-perceptions of mathematics ability and found that positive self-perception mathematics ability has relatively strong effects on later career choices.

2.3.2 Learner attitude towards Mathematics

Student attitude towards mathematics was defined by Kibrislioglu (2016), as liking or disliking the subject, a tendency to engage in or avoid mathematical activities. Several studies have demonstrated that attitudes towards mathematics are directly and significantly associated with students performance. For instance, Mensah and Kurancie (2013) conducted a study in Ghana and found a significant positive correlation between students attitude and performance. Similarly, Nicolaidou and Philippou (2003) found that attitude and achievement in mathematics are significantly related. The Trends in International Mathematics and Science Survey (TIMSS) results of 2007 reported in Gonzales, et al. (2008) also indicate that 8th grade students with a more positive attitude had higher average achievement in mathematics as compared to those with less positive attitudes. In another earlier study conducted by Schofield (1982), a significant

relationship between attitude and achievement was also established depicting stronger relationships in boys than in girls. In a more recent study, Ngussa and Mbuti (2017) conducted a study in Arusha, Tanzania, involving secondary school students. They established a moderate relationship between student s attitude and performance when teachers use humor as a teaching strategy. They concluded that the enhancement of students positive attitude can boost students performance in mathematics. However, Joseph (2013) in his study of community secondary school students in Kagera, Tanzania found that the majority of students (55%) had a general negative attitude towards mathematics, with a positive and significant correlation between attitude and performance.

The literature shows that students, attitude is affected by numerous factors. They include such factors as the school, peer students, home environment and society (Yang, 2013). Researchers, Yılmaz, Altun, and Olkun (2010) identify factors that include connecting mathematics with real life, using instructional materials, teachers' personality, teachers' content area knowledge, bad instructional practices, lack of commitment by students and teachers, classroom management. Other factors include teachers emotional support (Blazar & Kraft, 2017), teachers affective support (Sakiz, Pape, & Hoy, 2012), class activities, subject content and amount of work, scarcity of teachers and inadequate resources (Joseph, 2013; Enu et al., 2015), peer and parental influence (He, 2007). Furthermore, in line with Simmers (2011) the factors also include, creating insecurities in students mathematics ability and teacher failure to provide explanations for the mathematical concepts being taught.

2.3.3 Effectiveness of schools

Effective school characteristics are what help to create a fertile school culture that facilitates learners achievement. Several researchers (Henson & Eller, 1999; Berliner, 1990, and Rutter, 1983) have identified such characteristics. Their findings indicate that learners excel when the following factors are present (Henson & Eller, 1999; Berliner, 1990, and Rutter, 1983): · Strong leadership is provided by a principal who works with the staff to communicate the mission of the school; provide reliable support for staff; and meet with teachers and other members of the staff

frequently to discuss classroom practices. · High learner achievement is the foremost priority of the school, and the school is organized around this goal as shown by teachers who demonstrate high expectations for learners achievement and make learners aware of and understand these expectations. · Parents are aware of, understand, and support the basic objective of the school and believe they have an important role to play in their children education. Teachers work together to provide an orderly and safe school environment. · Schools use evaluation to measure learners progress and promote learning.

According to Limb & Fullarton (2001), there was an importance of classroom, teachers and school factors on students performances in mathematics. Some of the school factors are gender, family cultural resources, language background and attitudes towards mathematics, which have significant negative effect on students performance. Limb & Fullarton (2001), in the study made at US and Australia on TIMSS (Trends in International Mathematics and Science Study) they

found that students with more family cultural resources such as books at home and those from two parent rather than single parent families tend to have higher achievement levels in mathematics. Students from English speaking families have good performances in 17 mathematics than non-English speaking families. In classes where teachers set more homework they have associated with higher levels of performance. They supported that grouping practices employed by teachers shape the classroom learning environments and improve students performance.

2.4 Research Gap

Despite noticeable unsatisfactory performance in mathematics, a review of the related literature above indicated a significant gap in the area of study, factors leading to low uptake in mathematics. These areas required in-depth investigation to show the factors leading to low uptake in mathematics as a subject. The researcher considered the influence of school management system to the whole process of teaching/learning and students uptake in mathematics, which existed, insignificant in the reviewed literatures. Moreover the sample

suggested in this study would differ from other studies as the researcher involved mathematics teachers, students, head of schools and academic masters.

2.5 Chapter Summary

This chapter has presented the conceptual framework, theoretical framework and empirical studies that informed about the study. In conceptual framework the researcher has given out assumptions on factors that have an influence on student s performance in mathematics. These assumptions have been enlightened with theoretical and empirical literatures reviewed. It was noticed that students performance is the function of teaching and learning methods, teachers - students relationship, school learning environments and school management system

CHAPTER 3
RESEARCH METHODOLOGY.

3.1 Introduction.

This chapter focuses on the research design, the population, population sampling, research instruments and information gathering techniques. The researcher justifies the use of each data gathering instrument and exposes its advantages and disadvantages.

3.2 Research Design

Borg & Gall (2017), states that a research design is a process of creating an empirical test to support or refine knowledge claim. To design is to plan. A research design is a detail plan that assists researches to map out the direction and the exploration route of the research in order to come out with solutions of a problem affecting a particular population.

This research used a descriptive survey design. This is a method of collecting information by interviews or administering questionnaire to sample of individuals, it can be used in collecting people s data about attitude, opinion, habits or any education issues (Orodho, 2009). Survey research is a self-report study which requires collection of quantified information from a sample (Mugenda, 2003).

This design was appropriate for this study because by identifying schools based factors it enabled the school to understand the factors that will lead to low uptake in mathematics.

3.3 Population

Population is a group of individuals, objects or items from which samples are taken (Kombo and Tromp 2006). It is also a collection of objects or subjects that are of interest to the individuals carrying out the research. Six mathematics teachers were considered because they are the ones who teach pupils in the classroom as well as assessing their pupils work. The head of department was involved because she supervises all teachers in the mathematics department. Pupils were also involved as they are the main focus of the study because they were helping the researcher to draw information as to show on how the teaching methodologies used by the teachers are affecting their uptake in mathematics and what can be done to solve the problem.

3.4 Sample and Sampling Procedure

3.4.1 Sample

Cohen et al (2011), says a sample is a smaller group or subset of the given population. Leedy (2015), supports this by defining a sample as unbiased representative cross section of entire data. It is also a method of selecting a portion of population that was used to study the characteristics of a population. It is also the selection of participants for the research used. A sample of six teachers and 50 learners was used.

3.4.2 Sampling procedure

Cohen et al (2011), said there are two main sampling methods which are random sampling and purposive sampling. The research will use random sampling in selecting the pupils to avoid biased information. Cohen et al (2011), defines random sampling as a sampling method in which all members of a group (population or universe) have an equal and independent chance of being selected and the probability of a member being selected is unaffected by the selection of the other members of the population that is each selection is entirely independent of the next. Random sampling gives advantage to the population under study in the sense that it allows every

member of the population to have an equal chance of being chosen to be in the sample and it offers a sample of the whole population. When using random sampling feedback is found from the person who is utilizing a service, for instance in this research results were obtained from the learners which were targeted to improve their performance. Polgar and Thomas (2003) cited some of the advantages of random sampling method as follows. They said it is possible to estimate the sampling error because of the population size and sample which are known. The sample error is the discrepancy between a sample statistics and the population parameter. The researcher carried out the research with 30 form three pupils (17 boys and 13 girls). Pupils were selected from others by picking cards from a box with yes and no. Those who picked yes were used to carry out the research. Although there are distinct advantages of using random sampling in research, it has inherent drawbacks. Random sampling is mostly associated with biased results. Like in this research the researcher later on noticed that most of the participants were slow learners but it assumes that the sample represents the qualities of the whole group. Random sampling is laborious and time consuming. It needs a lot of time to prepare the sample and the instruments to be used in the research.

3.5 Research Instruments.

Leedy (2001), says an instrument is a device that an investigator or researcher uses to collect data. It simply means tools that were used in gathering information that is valid for this research. Questionnaires and interviews were used in this research. Questionnaire is an instrument that gathers data over a large sample. Questionnaires for 50 Mathematics learners and six interview guides for teachers and HOD Mathematics Department were designed. The results will be presented on graphs, tables, and further analyzed

3.6 Questionnaires

Cohen (2011) defined a questionnaire is as a widely used instrument for collecting survey information, providing structured, often numerical data, being able to be administered without the presence of the researcher and often being comparatively straightforward to analyze. Questionnaires are questions given to subject of the research for getting pertinent information. Structured/closed ended questionnaires are the first type of a questionnaire and open ended

questionnaires is the other type. The researcher chose to use open ended questionnaires. Information was obtained from teachers responds to questions.

3.7 Open ended questionnaires

The researcher used questionnaires which were given to the teacher to come out with better results on how assessment low uptake in mathematics can be improved. According to Creswell (2012) qualitative interview occurs when researchers ask one or more participants general open ended question and record their answers. Interviews are good if interviewing participants who are not hesitant to speak, who are articulate and who can share ideas comfortably. Respondents are not guided and any information appropriate should be written. It is more important for estimating or probing attitude, feeling, opinion and perception of respondents. Open ended questionnaires were given to teachers. Open ended questionnaires enables respondents to answer as they wish. Kress (2003), suggests that questionnaires are easy to plan and administer and can be answered at any place and this is true basing on researcher experiences. They helped to get secret and reliable information at the same time since it is secret and confidential. Most of the respondents responded positively and they expressed their thoughts towards assessment. The researcher gave questionnaires in a short time rather than interviews which consumes much time. Since different teachers were answering the same questions, the researcher obtained general overview of the problem. They can be distributed to many people in a faster and inexpensive manner. On the hand, Silva and Bolt (2010), points out that respondent who is not free or willing to disclose information may ignore certain questions or giving half answers. The YES/NO oriented questions encouraged guess work thereby compromising the result of the study. Respondents need to cooperate when completing a questionnaire. Questionnaires were time consuming and need a lot of patience when structuring if valid and reliable information need to be obtained hence the researcher spent a lot of time preparing those questionnaires. Questionnaires allowed little flexibility to the respondents with respect to response format. In essence the often lose the flavor of the response that is respondents often wanted to qualify their answers but they were guided by the given spaces.

3.8 Interviews.

This involves collecting data or information through directly in a face to face situation. Fraenkel (2012) articulate that interviewing is a way of trying to understand what people think through their speech as well as capturing of direct quotations from participating. Information is obtained through the use of prearranged questions asked. Interview questions were given to the HOD in Mathematics and other four teachers in the Department. Wimmer and Dominic (2006), said interviews may throw completely different issue that the interviewer had previously never considered. The researcher also noted some important views from the interviewee. First-hand information was collected by the researcher. In terms of misunderstanding or misinterpretation of the question, the researcher was available to explain or rephrase it until the respondents understood what the question requires resulting in the obtaining of accuracy and valid information. However interviews are associated with biased responses. The researcher may be attempted to direct the respondents to respond in what he has in his mind. The HOD failed to give all genuine responses because she might not want to unveil all the truth in a direct confrontation with the interviewer because he wants to hide secretes in the Mathematics Department.

3.8 Data collection procedure.

The study focuses on the possible remedies to the problem of low uptake in mathematics form the teacher and learner perspectives. The researcher gave questionnaires to fifty leaners in form three level. The questionnaires were conducted so that the researcher could obtain information on learners perception on the remedies to improve pupils performance. A sample of fifty pupils was chosen random. The researcher also interviewed the head of department and six teachers. The interviews were meant to obtain information based on the remedies of improving low uptake in mathematics. All the data that was collected was presented, interpreted and analyzed in the following chapter. Conclusion can be made from the processed data and recommendations can also be made.

3.9 Summary.

This chapter looked at research design chosen. The researcher outlined the data collection methods, defines each and every type of instrument used as well as giving advantages and disadvantages of each tool to the research.

CHAPTER 4

DATA PRESENTATION, INTERPRETATION, ANALYSIS AND DISCUSION OF FINDFINGS

4.1 Introduction.

In this chapter the researcher focuses on presenting, analyzing and making relevant interpretation of findings. Both qualitative methods of data analysis were used. The data focuses on answering questions raised in chapter one. The data will be presented in the form of tables, bar graphs, pie charts and percentages. The data to be analyzed include that which was collected through questionnaires and interviews.

4.2 Bio-data

The table 4.1 below shows the bio-data of the participants which are pupils and teachers.

Pupils	**Gender**	Boys	22 (44%)
		Girls	28 (56%)
Teachers	**Teaching experience**	0-2	0 (0%)
		3-5	2 (33%)
		6+	4 (67%)
	Teacher qualifications	Certificate	0 (0%)
		Diploma	2 (33%)
		Degree	4 (67%)

The finding in table 4.1 above shows that 44% of the sample was composed of boys and 56% was of girls. Results also showed that 67% of teachers had an experience of six years plus. 33% had experience of between 3-5 years. 33% of the teachers had diplomas and 67% had degree.

4.3 Teachers understanding on factors that leads to low uptake in mathematics

The research question tries to explain what teachers understand from the term assessment. This is clearly illustrated in table 4.2 below.

Table 4.2 below shows teachers understanding on factors that leads to low uptake in mathematics

Descriptor	Negative respondents	Positive respondents	Total respondents
Understanding assessment.	1 (17%)	5 (83%)	6 (100%)

From the information above five teachers understand some of the factors that leads to low uptake in mathematics while only one did not. In addition to this finding an interview to the head of department explained that some pupils also think that the teacher is responsible for making an effort for them to better understand the concepts in mathematics as a subject them whilst not playing their role to research and work. It also indicated that some teachers are not doing their job significantly that is they are not giving works and are not marking exercises and tests.

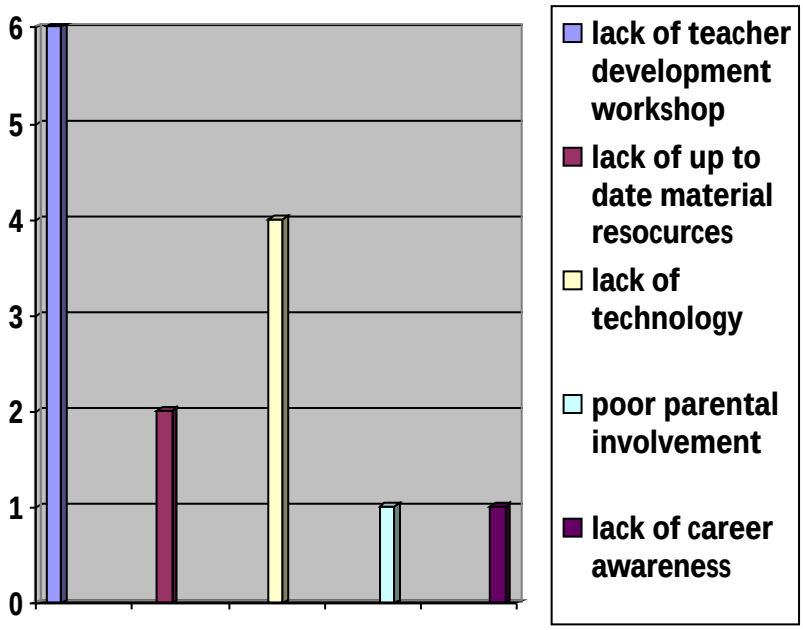
4.4 What are the challenges faced by teachers in teaching leading to low uptake in mathematics?

The research question aims to examine the problems faced by teachers that leads to low uptake in mathematics. The table 4.3 below shows the results which were obtained from the teachers responses.

Response	frequency
Lack of teacher development workshops	6
Lack of up-to-date material resources	2

Lack of technology	4
Poor parental involvement	1
Lack of career awareness	1

Fig 1 below shows the responses of the teachers on challenges they are facing in teaching leading to low uptake in mathematics.



The graph above shows the results of the questionnaires that were given to the teachers. Six teachers agreed that lack of teacher development is a challenge leading to learners low uptake in mathematics, four said it is because of lack of up to date resource materials. Five teachers agreed that low uptake is due to lack of use of technology in the teaching and learning of mathematics.

Only two teachers agreed that lack of parental involvement and lack of career awareness is leading to low uptake in mathematics.

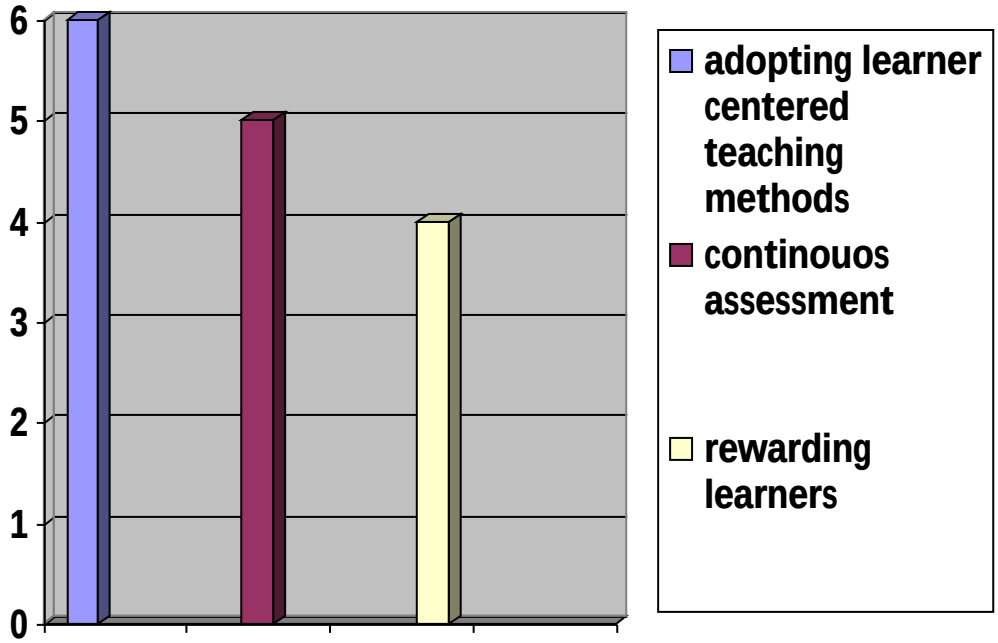
4.5 What methods and strategies should mathematics teachers adopt to avoid low uptake in mathematics?

The research question targets to give the methods and strategies which can be adopted by teachers so that they encourage a high uptake in mathematics. The information below tries to answer the question above by giving methods and strategies that were suggested by the teachers which were interviewed.

Table 4.4 below shows strategies and methods that were suggested by the teachers.

Strategies and methods	**frequency**
Adopting learner centered teaching methods	**6**
Continuous assessment	**5**
Rewarding learners	**4**

Fig 2 below shows strategies and methods that were suggested by the teachers.



From the findings above six teachers said teaching must be learner centered to increase uptake in mathematics. Five teachers also agrees that continuous assessment is a another good way to increase learners uptake in mathematics. Four teachers agreed that learners should be rewarded so that they can develop a better attitude with the subject this will assist to improve leaners intake in mathematics.

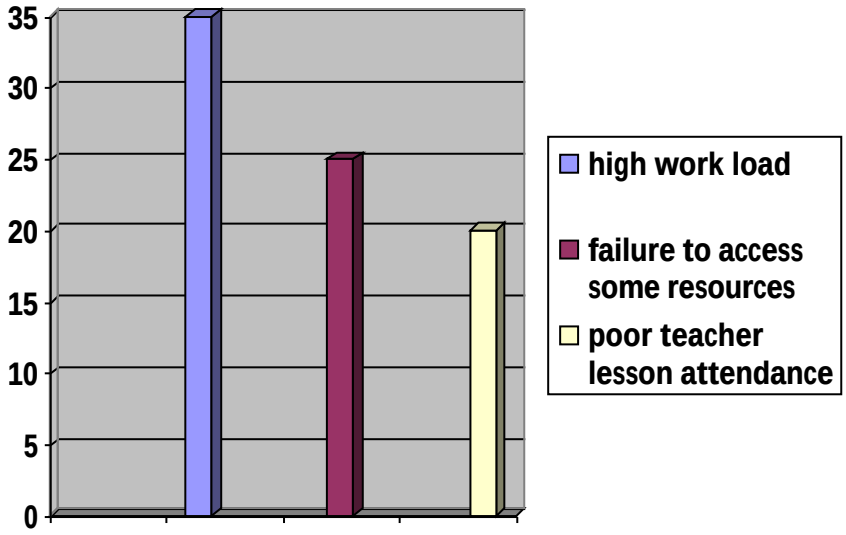
4.6 What are the challenges faced by learners leading to lower uptake in mathematics?

This attempt to take a look on the side of the learner on the challenges being encountered with consequence of poor uptake in mathematics by the learners. The table 4.5 below shows the results obtained by the researcher from the learner respondents on this issue.

TABLE 4.5

Challenge	Frequency
High workload	35
Failure to access some resources	25
Poor teacher lesson attendance	20

Fig 3 below shows the challenges faced by learners leading to lower uptake in mathematics



4.7 ANALYSIS OF DATA PRESENTATION.

4.7.1 Challenges faced by teachers in teaching leading to low uptake in mathematics?

The results shows that the most challenge being faced by teachers which is resulting in low uptake in mathematics is lack of teacher development workshops. This challenge was mentioned by all the respondents engaged. It follows that teacher development workshops will continuously

equip the mathematics teachers with the current requirements in subject. This will also include upgrading teachers in new concepts which were brought by the new curriculum. Moreover four out of six teacher respondents indicated that lack of technology is also another challenge suppressing the learner uptake in mathematics. This follows that technical facilities such as the WIFI are necessary for the teachers as it aids on their research especially the new concepts which cannot be found in old textbooks. In addition to that lack of up to date materials and poor parental involvement were also mentioned as challenges by the teachers since it may have an impact on the content given to the learners by teachers as well as the learner attitude on the subject.

4.7.2 Methods and strategies should mathematics teachers adopt to avoid low uptake in mathematics?

The findings reviewed that to avoid a low uptake in mathematics by learners, teachers must deviate from teacher centered methods but adopt learner centered methods of instruction. This follows that for the learners to have a better understanding and enjoyment of the subject, they must be actively involved. Learner participation during the instruction process will enable the learners to appreciate that they can do it since it simplify the concepts. In addition continuous assessment of the pupils was also suggested as the solution to low uptake of mathematics by the learners. Continuous assessment allows the teacher to identify the learner challenges of the learners before the summative assessment. This will enable the teacher to address the learner complications and make sure that the learners are nearly perfect before the final examinations. In addition to that the respondents also suggested that the learners should be rewarded so as to avoid a low uptake in mathematics. Maslow cited in stimpson (2014), says that recognition of

good performance through rewarding is very effective in motivating people. In this case if good performers in mathematics are rewarded they will be motivated and even bad performers will also be encouraged to improve their performance in the subject and the probability of dropping the subject will also be minimized.

4.7.3 challenges faced by learners leading to lower uptake in mathematics?

The findings of the research pointed out that high work load is the main challenge on the learners which is resulting in low uptake in mathematics. It follows that the learners are taking twelve subject in which five CALAs must be done in every subject. This is overloading the learner to the extent that they are in short of sufficient time to perfect all their subjects. Since mathematics is subject which requires a lot of practice and time it means that this high workload has a greater bearing on low uptake in mathematics by the learners. Twenty-five out of fifty learner respondents also mentioned that limited access to some learning resources has also a bearing in the low uptake of mathematics by the learners. Limited access to facilities such as WIFI will restrict learners to do their researches in mathematics. This follows that new concepts has been introduced in the subject area. Lastly twenty out fifty learners indicated that teachers are not attending their mathematics lessons. Due to the effect of incapacitation some teachers are resorting to remote teaching where they don t go and attend their lesson but only send work for the learners. This has a greater impact since a lot of concepts may be too difficult for the learners to grasp without the facilitator.

4.8 Conclusion

Data presentation, analysis and interpretation were the main focus of this chapter. The data was presented in tables and bar graph and was used to find solutions to the problem under investigation. From the data presentation and analysis made, it clearly shows that teachers and learners are facing some challenges which are resulting in a low uptake of mathematics and suggestions are also put forward to avoid the issue. The next chapter will give a summary of the whole research.

CHAPTER 5: SUMMARY, CONCLUSION AND RECOMMENDATIONS

5.1 INTRODUCTION

The study began with the choice of topic. The background to the study, significance of the study, assumptions of the study, assumption of the study, delimitation and limitations of the study were outlined. Research objectives and research questions were stated, and the research hypothesis was given.

Literature review was done in which different word problems were deliberated on. Different types of errors which include reading, comprehension, linguistic, transformation and process error were discussed. Views of various authorities were taken note of and commented on. The reasons for doing error analysis were also stated. The research methodology was explained. In this, instruments used for data collection were stated with advantages and disadvantages of each being outlined. Data collection plan and data analysis was put forward. The researcher then went ahead to collect data.

5.2 SUMMARY OF THE STUDY

In order to find the challenges which are leading to low uptake in mathematics by the learners, the researcher decided to gather information from both the teachers and the learners so as to come up with a comprehensive result on the problem at hand. Including both teachers and learners in the study enabled the researcher to get views from both sides of the affected groups.

This made the results reliable since they are not one sided. In addition, the use of the questionnaire to the learners made it possible for the leaners to bring out their views thereby made the research a success. Making use of the interviews to the teachers under the study made it possible for the researcher to get first-hand information from the educators. Teachers indicated that they lack teacher development workshops which should equip them with tactics which are relevant for the high uptake in mathematics by the learners. In addition some teachers also indicated that there is a lack of use of current technology and this is also another reason for low uptake in mathematics by the learners.

5.3 CONCLUSION

One can conclude that there are many challenges which lead to a low uptake in mathematics by the learners. These challenges include lack of teacher development workshops for mathematics teachers, lack of up to date resources, and lack of technology, poor parental participation and low carrier awareness on the learners.

To sum up, to minimize the rate of low uptake in mathematics by the learners made, teachers need to be developed through workshops, there is need of use technology at school for example internet should be accessible to everyone and parents should be involved in support to the leaners.

5.4 RECOMMENDATIONS

Based on the results of the study the following recommendations were made:

5.4.1 Mathematics Teachers

The researcher recommends mathematics teachers to develop that is by attending staff development workshops or attain better qualifications. This helps the teachers to organize their teaching content based on the school syllabus and national syllabus, sequencing topics according to their level of abstraction and maintenance of lesson to lesson continuity. Topic sequencing should be done according to the level of abstraction of the topics. Teachers should also align teaching methods with the learning needs and capabilities of students. Teachers may attempt to find a balance of teaching strategies rather than teaching student hence few understand the subject and at last this may lead to low uptake. They may be able to realize the importance of recognizing learning styles, identify students differences, and adjust the teaching methods accordingly. By doing that, teachers would be able to deliver content clearly, making every student understand mathematics, motivate students leading better performance in mathematics subject.

Lastly, it is also suggested for the teachers to learn to formulate their way of teaching especially if their school do not have available facilities to support their teaching activity. They may learn to develop their profession and innovativeness in teaching in order to maximize the use of available resources of the school to improve students uptake in mathematics subject.

5.4.2 Students

The study highly suggest that students take in hand their perception and feedback towards their uptake in mathematics. It is recommended that for leaners uptake in mathematics to be improved their workload should be reduced especially on the issue of CALAs as learners were saying much of their time is consumed doing CALAs. It is also recommended that students should attend career awareness workshops so that they understand the importance of mathematics in their careers. This may help to change learners attitude towards the subject leading to an improve in learners uptake in mathematics.

Iheanachor, O. U. (2007). *The Influence of Teachers Background, Professional Development and Teaching Practices on Students Achievement in Mathematics in Lesotho:* University of South Africa.

Kibrislogu, M. (2007). *Research Methods Education and Social Sciences.* London: Edward Arnold.

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

Limb, S. & Fullarton, S. (2001). *Classroom and School Factors Affecting Mathematics Achievement: A comparative study of the US and Australia using TIMSS*. Australian Council for Educational Research (ACEReSearch).

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

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

Silva, K & Bolt A. (2010). *Making Mathematics Count: The Report of Inquiry into Post-Mathematics Education in the United Kingdom.* London: Department of Education.Ali, R., Altcher, A. & Khan, A. (2010). *Effect of Using Problem Solving Method in Teaching Mathematics on the Achievement of Mathematics Students:* Bannu, (NWFP): Pakistan. Cohen, L., Manion, L. & Morison, K. (2005). *Research Methods in Education (5th Edition).* Routledge Falmer: USA Creswell, J. W. (2003). *Research Design: Qualitative, quantitative and mixed method approaches* (2nded.). California: Sage. Dewey, J. (1929). *Experience and Nature.* LaSalle Open Court. Hill, H. C., Rowan, B., & Ball, D. L. (2005). *Effects of Teachers Mathematical Knowledge for Teaching on Student Achievement*. American Educational Research Journal. 54

Smith, M. K. (2002). *The Process of Education*: The encyclopedia of informal education.