

**DISPARITIES IN PERFORMANCE IN MATHEMATICS BETWEEN  
PRIAMRY AND SECONDARY SCHOOLS, A CASE STUDY  
OF SIRIKWA ZONE UASIN GISHU**

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**A RESEARCH REPORT SUBMITTED TO THE INSTITUTE OF OPEN AND  
DISTANCE LEARNING OF KAMPALA INTERNATIONAL UNIVERSITY  
IN PARTIAL FULFILMENT OF THE REQUIREMENT FOR  
THE AWARD OF BACHELOR OF EDUCATION IN  
EARLY CHILDREN AND PRIMARY  
EDUCATION**

**SEPTEMBER, 2008**

## DECLARATION

I **Kemboi Kiplimo Julius**, hereby declare this is entirely my original work and has not been submitted to any other examining university or other institution for any award of degree or certificate.

*Kemboi Kiplimo Julius*

*29/09/08*

## APPROVAL

This research report resulting from researcher's effort in the area of **Academic performance in mathematics** was carried out under my supervisor and with my final approval is ready for submission for the award of Bachelor's degree of education to the academic board Kampala International University.

Signed  ..... Date 29/09/08 .....

Mrs. Taligoola N. Deborah

## **DEDICATION**

This work is dedicated to my wife Mrs. L. Kemboi and beloved children Brian, Billy and Barak

## ACKNOWLEDGEMENT

I wish to express my heartfelt appreciation to all colleague and friends who have supported me morally during the process of carrying out this research.

I particularly thank Mr. and Mrs. Kongwilei, Mr. Birect, Moi University Library and staff Kiborokwa primary school.

Sincere thanks goes to my supervisor Mrs. Deborah Taligoola for the encouragement and wise advice during the study.

Lastly my thanks go to my relatives Mr. Tarus, Mr./Mrs. Lagat, Korir for the encouragement offered.

God bless you abundantly

## TABLE OF CONTENTS

<b>DECLARATION</b> .....	i
<b>APPROVAL</b> .....	ii
<b>DEDICATION</b> .....	iii
<b>ACKNOWLEDGEMENT</b> .....	iv
<b>TABLE OF CONTENTS</b> .....	v
<b>LIST OF TABLES</b> .....	vii
<b>LIST OF FIGURES</b> .....	viii
<b>ABSTRACT</b> .....	ix
<b>CHAPTER ONE</b> .....	1
<b>BACKGROUND TO THE STUDY</b> .....	1
1.0 Introduction.....	1
1.1 Background of the study.....	1
1.2 Statement of the problem.....	2
1.3 Specific objectives.....	2
1.4 Purpose of the study.....	3
1.5 Research questions.....	3
1.6 Scope of the study.....	3
1.7 Significance of the study.....	3
1.8 Limitation of the study.....	4
<b>CHAPTER TWO</b> .....	5
<b>LITERATURE REVIEW</b> .....	5
<b>CHAPTER THREE</b> .....	11
<b>RESEARCH METHODOLOGY</b> .....	11
3.0 Introduction.....	11
3.1 Research design.....	11
3.2 Study area.....	11
3.3 Sample size.....	11
3.4 Sampling technique.....	11
3.5 Instrumentation.....	11
3.6 Validity and reliability of the research instruments.....	12
3.7 Data collection.....	12
3.7.1 Types of data collected.....	12
3.7.2 Procedure of data collection.....	12
3.8 Data analysis.....	12
<b>CHAPTER FOUR</b> .....	13
<b>DATA PRESENTATION, ANALYSIS AND INTERPRETATION</b> .....	13
4.0 Introduction.....	13
4.1 Background characteristics of respondents.....	13

4.1.1	Qualification of teachers.....	13
4.1.2	Area of specialization of teachers .....	14
4.2	Methods used in teaching mathematics in secondary schools.....	14
4.2.1	Peer instruction and performance.....	15
4.2.2	The use of problem solving approach .....	16
4.2.3	The use of active inquiry approach to teach mathematics.....	17
4.3	School based factors and performance in mathematics.....	17
4.3.1	The use of teaching resources .....	18
4.3.2	Availability of teaching/learning resources in secondary schools ...	18
4.3.3	Availability of guidance and counseling services .....	19
4.3.4	Teachers factors .....	20
4.4	Challenges faced by teachers in teaching mathematics.....	21
4.4.1	Students attribution of success and failure in mathematics .....	22

**CHAPTER FIVE..... 24**

**SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS**

.....	24	
5.0	Introduction .....	24
5.1	Summary of findings .....	24
5.2	Conclusion.....	26
5.3	Recommendations .....	26

**REFERENCES ..... 28**

**APPENDICES..... 30**

Appendix A: Questionnaire for teachers .....	30
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## LIST OF TABLES

Table 1: shows the qualification of secondary teachers.....	13
Table 2: Presents the areas of specializations of teachers .....	14
Table 3: Presents the teachers responses as to whether the teaching/learning resources are available in school .....	19
Table 4: shows the teachers responses according to whether their exists guidance and counseling services in schools .....	19
Table 5: Shows the responses of teachers according to their attitude. ....	20
Table 6: Presents the teachers responses about students attributes of success and failure.....	22



## LIST OF FIGURES

Figure 1: Show the distribution of teachers ability to use peer instruction as a method of teaching mathematics. ....	15
Figure 2: Presented the responses of teachers to whether they use the problem solving method approach to teach. ....	16
Figure 3: Shows the responses of teachers about whether they allow children to inquire in mathematics. ....	17
Figure 4: Shows the teachers responses as to whether they use teaching/learning aids.....	18

## ABSTRACT

*The purpose of this study is to investigate the factors that undermine the continuity of good performance in mathematics in the Kenya Certificate of primary education (KCPE) and poor performance and the poor performance in the Kenya Certificate of secondary education (KCSE). It further seeks to establish the differences in evaluation aspects at the primary and secondary levels, teachers and pupils factors in relation to attitude and transition from primary to secondary school.*

*A descriptive survey design was adopted. This accessed a population of students in form 3 and mathematics teachers in three secondary schools. The sample of the study will comprise of 60 students and 6 mathematics teachers in 3 secondary schools. This targeted population shall exclusively represent both primary and secondary school because the same students shall reflect their performance in the Kenya certificate of primary education (KCPE). Data will be collected by use of questionnaires. The data shall be collected by use of descriptive statistics that involves data tabulation through random samples in order to give a generalized analysis.*

*The highlights will be the factors undermining the continuity of good performance in mathematics in the KCPE and the poor performance in the KCSE. The findings will be useful to teachers of mathematics, head teachers, school inspectors, curriculum developers at Kenya institute of Education (KIE) and the Kenya National examination council (KNEC).*

## CHAPTER ONE

### BACKGROUND TO THE STUDY

#### 1.0 Introduction

This chapter gives an overview of the study. It presents the background of good performance in KCPE and poor performance in KCSE. It also provides the theoretical framework, objectives, research questions and the significance. The scope is also highlighted.

#### 1.1 Background of the study

Mathematics teachers have long been aware of the importance the society attaches to their subject in the school. Since mathematics is a very important subject in the school curriculum are as important to the future of the nation as mathematics (Cockroft: 1982: iii); thus poor performance in mathematics excludes individuals from many opportunities of higher learning. The relevance of mathematics by changing society in technology and science with its emphasis creates the view of the subject as an answer centered than the problem centered subject (Holt, 1969). This is evidenced by the fact that mathematics is given a careful scrutiny as in entry requirement to schools, tertiary institutions and colleges. This is also a reason why it is a compulsory subject in form four with D+ grade, regarded as a pass in KCSE (Government of Kenya; 1991). Form one admissions to many secondary schools that carry out interviews observe performances in Mathematics, English and Kiswahili.

The objectives of both primary and secondary school mathematics in Kenya is to produce persons who can numerate, orderly, logical, accurate and precise in thought, the skills acquired should be applied in modern society as in KIE syllabus (KIE, 2002:3). In KIE primary education syllabus (Vol.2, 2002). The

knowledge and skills acquired at one level become a prerequisite for the next level. It is against this background that I am prompted to investigate the changing trends in mathematics performance IN THE KCPE and KCSE exams in the transition.

## **1.2 Statement of the problem**

KCSE analysis results indicate that students have maintained a low mean mark of 9% in mathematics over the years (1999-2002). This reflects 80% of students failing the subject each year. This concern was expressed by Education minister Prof. George Saitoti while releasing 2003 KCSE results (Daily Nation Feb, 2004).

At the end of this study the heart of the problem in mathematics performance is not that it is a hard subject in KCSE and ysymvlg one in KCPE but it is that there should exist a clear relationship in performance and improvement in the subject in KCPE and KCSE. This is because there has been shifting of blames on the lack of link in the subject at every level of education. It has specifically done harm to the students because a student who obtained a good grade of A in KCPE, may not achieve an A in the KCSE. The findings shall try to address the actual lack of continuity in good performance to students' performance in mathematics.

## **1.3 Specific objectives**

- To find out if teachers qualifications influence the performance in mathematics.
- To asses the methods used in the teaching of mathematics in secondary schools.
- To establish the learners attitude towards mathematics.
- To establish if the school based factors influence performance in mathematics.

#### **1.4 Purpose of the study**

The aim of this study was to investigate the factors influencing the differences in performance of primary and secondary schools.

#### **1.5 Research questions**

- Does the qualification of teachers influence performance in mathematics?
- What methods are used in the teaching of mathematics?
- What attitude do learners have which is negatively influencing mathematics performance?
- Do the school based factors affect performance in mathematics?

#### **1.6 Scope of the study**

This study was carried out in Sirikwa educational zone which is located in Uasin Gishu district in the rift valley province of Kenya. It investigated the factors influencing poor performance in mathematics with the focus on quality of teacher methods used in the teaching of the subject, the differing attitude and teacher expectations and attitude of learners towards the subject.

#### **1.7 Significance of the study**

The Kenya institute of education (KIE) that provides produces and approves institutional materials to all primary and secondary schools in Kenya.

The findings shall able benefit the Kenya national examination council (KNEC) who have the mandate of organizing, planning, administrating the Kenya certificate of primary education (KCPE) and the Kenya certificate of secondary education (KCSE) examinations.

## **1.8 Limitation of the study**

- Time allotted for the carrying out their study was a limiting factor as teachers were not readily available to respond.
- Finances became a problem as the researcher was sponsoring himself with his meager salary for this course.
- Attitudes of people were almost negative

## CHAPTER TWO

### LITERATURE REVIEW

#### **Introduction**

This chapter covered review of the relevant literature that was related to the research title. This information was drawn from the libraries under the sub headings;

#### **Teachers academic and professional qualifications**

Kiragu (1988) points out that equal number of trained teachers in both primary and secondary schools does not reduce the variance in student performance and achievement. The presence of qualified, professional teachers, presence of adequate facilities clearly is not a guarantee for better performance. This is well exceptional for primary schools where a trained teacher is required to handle a pupil in class particularly a candidate. Kiragu admits this on the primary schools where teachers undergo training including in-servicing the better the performance of students in the KCPE (Kiragu, 1988).

Hussein Saha and Naoran (1978) found out that trained teachers who are more qualified and experienced produce good, positive achievement to learners. It is with this in mind that the researcher wants to investigate if the same holds for Sirikwa Zone because of the presence of such personnel.

#### **Assessment and evaluation questions and methods**

KIE primary educational syllabus (Vol. II, 2002) requires that mathematics equips the learners with knowledge and skills which assists in developing logic thinking, ability to apply the acknowledge acquired, analyzed situation and make rational decisions. The knowledge and skills acquired at one level become a prerequisite for the next level. As also from the national goals of education in primary education mathematics handbook (2006). When knowledge is tested at any

stage the same result should be reflected to prove that the objectives are achieved.

Falayajo (1988) asserts that continuous assessment to students earn a substantial part of the final grade from their school work; they will become aware that passing or failing in the examination and invariably the tendency or inclination to cheat in the final exams is minimized. Final exams should be seen to be like any other evaluation test.

Emeke (1999) however believes that if continuous assessment is done effectively, it becomes a more successful way in education system. This is a common phenomenon in most primary schools that offer pupils frequent evaluation test just like continuous assessment test which will boost the performance in the final KCPE examination. These tests are not very common in secondary schools.

Olomiebi; 1984, Ade Lakun, 1988; lausq,1988; Osuaha, 1988; Ekuri, 1990; Emeke, 1996;and Adaija, 2003 have revealed that continuous assessment is not being effectively practiced by teachers in schools. The researcher wants to find out the effectiveness of the many assessments in primary schools and in secondary schools.

In Johannes Njagi Njoya (2001) the mass failures and the dreads for the KCSE warrant the better ways of assessment and evaluation for productivity. This is because he observes that mathematics questions in KCSE, test high order thinking as opposed to lower order thinking.

Out of six specific realms of cognitive domain according to Bloom's Taxonomy (1956), four outcomes are knowledge, comprehension, application and analysis



are utilized. He further suggested that longitudinal examination of variation of questioning in mathematics be adopted in order to improve on the performance.

Eshiwani, 1993; Mwangi, 1985; Kiragu, 1986; Mavindu, 1986 insisted that high order questioning/testing cause poor performance in mathematics. It is with these write ups that I intend to explore more because students have been exposed to readiness, preparedness in evaluation matters and in type of questions; and if so is the same applicable for Sirikwa zone.

Cohen (1993) highlighted that instruction of mathematics especially in high school remained teacher centered with greater emphasis being placed on lecturing and text books than on helping students to think critically across the subject areas and applying their knowledge to real world situations.

The national council of teachers of mathematics (1989) also observed that reform based institutional strategies had been overlooked and underutilized in high school mathematics classrooms.

Fennena and Leder (1990) spelt out those strategies as individual exploration per instruction, and small group work, each of which emphasizes the use of multiple approaches to problem solving, active student inquiry and the importance of linking mathematics to student's daily life. These are believed to affect student achievement and attitude towards the subject.

### **School based factors**

Appleton (1993) carried out a study to find out the relationship between performance in the KCPE and those inputs which could influence it. This is because the perception of pupils towards the subject aids not good "... mathematics is a discouraging subject you miss a step and everything is wrong..."

Brophy (1979) provide an interesting review of American research into teacher effectiveness. The review focuses on a number of cluster or patterns of teacher behavior that are consistently related to learning gains (as measured by standardized achievement tests KCPE, KCSE). One of these clusters is concerned with how effectively the teaching is organized and includes such variables as classroom management skills and the amount of time for which children are engaged in definite learning tasks. Another cluster suggests that "students taught with a structured curriculum do better than those taught with individualized or discovery learning approaches and those who receive much instruction directly from the teacher do better than those expected to learn on their own or from one another. The type of discovery learning referred to here is that in which children seek material on their own; discovery oriented teacher led discussion would be included in instruction from the teacher".

Compared to older children those in the early grades seem to require more recitation and drill, less genuine discussion, work that elicits few errors and that is pitched at a low cognitive level with very small and easy steps between one objective and the next.

Everton et al (1978) suggest that as in general practice teacher dominated learning environments are being operated more-effectively than individualized methods.

Leah Ntata in Pamela & Patrick (1999), Jepkoech S. (2002) found out that teacher factors and school conditions also affects the achievements in mathematics and other subjects particularly in form 3; is disturbed continuity in learning mathematical concepts. Pupils themselves contributed to their own failure in mathematics. Their negative attitude, lack of interest, confidence and stereotype all contribute among other factors. But looking closely at what might instill such behaviors in pupils it is found that this can be blamed on the

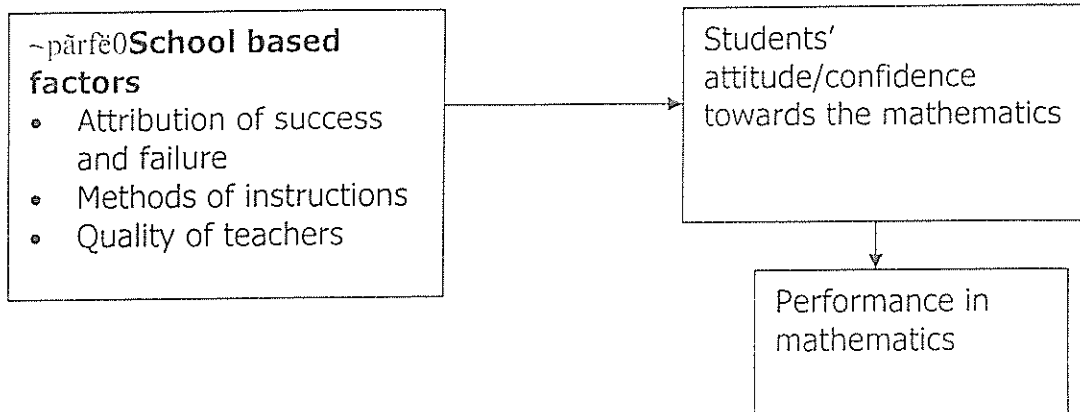
teachers as well as unfavorable learning conditions in the schools. When teachers are said to contribute to pupils poor performance, it is revealed that some teachers are unfavorable and the pupils themselves are not cooperative. On the other hand some teachers are a cause for concern because they are ineffective when we consider the ineffective teachers and unfavorable learning, teaching conditions in schools as contributing to pupil's failure. The low achievement is a responsibility of the school system as a whole and that they are diverse and interconnected resulting in a vicious circle. Disturbed continuity in learning mathematical concepts due to the transition from junior primary make learners ignore junior mathematics and tend to relax in form 3 knowing that they have two years of study before seating for another examination.

### **Theoretical framework**

From the national goals of education to both primary and secondary schools, the learner of mathematics is to be provided with the opportunity to acquire literacy; numeracy, creativity, knowledge and skills (KIE Vol. II, 2002). This knowledge acquired is a prerequisite for the next level. Mathematics is best achieved and learnt in steps and bits than as a whole. Each level of education is to provide a developmental ground as a foundation to the next level through a clear link in mathematical concepts and topics. This smooth system shall act as transition and link in order to achieve consistent and reliable customs/outcomes.

Bloom Hatings and feedback to teachers and students about the progress or lack of it, can give needy changes in the instructional effort to be made. The degree of mastery of certain learning tasks is also discovered and those aspects which are not mastered are identified. Mathematics learning can be better achieved if it is related to daily activities; more than one sense is involved and also integrated with other subjects.

## Conceptual framework Factors for performance in Mathematics



The quality of teachers and school based factors will affect the methods of instruction used by the teachers and these have an influence on the students' attitude to teach the subject which affects their performance in the subject.

### Conclusion

The many varied write-ups and recommendations is a tireless effort to ending the continued poor performance in mathematics. From the teachers qualification, experience, attitudes, effectiveness, learning techniques, guiding and counseling and may be dedication, including good foundation, it is enough to conclude that there exists other hidden factors that need further exploration. Despite the efforts that have been implemented poor performance is still witnessed. The researcher tries to find a solution to this nagging problem that is not centrally addressed as the heart of the problem.

## CHAPTER THREE

### RESEARCH METHODOLOGY

#### **3.0 Introduction**

This section looked at the methodology of the research and this is done under the sub headings, research design, and population, sampling technique, research instruments, validity and reliability of research instruments and data collection procedures.

#### **3.1 Research design**

The design employed in this study included the qualitative design to establish the factors that existed in secondary schools that were influencing poor performance as compared to that of KCPE. The analysis of the data necessitated the use of quantitative techniques.

#### **3.2 Study area**

The study was carried out in Sirikwa educational zone which is found Uasin-Gishu district in Kenya.

#### **3.3 Sample size**

The respondents included 6 teachers and 20 learners. They were both male and female in sex.

#### **3.4 Sampling technique**

A purposive sampling method was utilized in this study

#### **3.5 Instrumentation**

For the purpose of carrying out research on instrument had to be designed to collect data from both teachers and pupils. The questionnaire was used because

## CHAPTER FOUR

### DATA PRESENTATION, ANALYSIS AND INTERPRETATION

#### 4.0 Introduction

The purpose of this study was to investigate the factors responsible for influencing poor performance in mathematics in secondary schools as compared to that in primary schools. The objectives that were used in this study included; to find out if the school based factors were responsible for poor performance in secondary schools; to establish whether the methods used in the teaching of mathematics in secondary schools were affecting performance; to find out if the quality of teachers affected the performance in mathematics in schools; to establish learners attitude towards mathematics.

#### 4.1 Background characteristics of respondents

##### 4.1.1 Qualification of teachers

This study sought to establish whether the teachers had enough qualifications to teach mathematics in secondary schools.

**Table 1: shows the qualification of secondary teachers**

Qualification	Frequency	Percentages
Masters degree	1	5
Bachelors degree	4	20
Diploma	16	80
Certificate	-	0

**Source: Field data**

Findings showed that out of 20 teachers interviewed only 1 of them had a masters degree, 4 of the teachers had a bachelors degree, 16 of the teachers were diploma holders and none had a certificate. These finding revealed the lowly qualification of teachers, since many of then had diplomas. This could be the reason as to why there is poor performance in secondary schools.

#### 4.1.2 Area of specialization of teachers

Coleman in Kiragu (1988) pointed out that the teachers both in primary and secondary schools be adequately trained in order to carry out effective teaching and learning. That is why the researcher wanted to find out if indeed these teachers were really specialized in mathematics.

**Table 2: Presents the areas of specializations of teachers**

Qualifications	Frequency
Mathematics	6
Chemistry	2
Biology	4
Economics	3
Physics	4

According to the table, out of the 20 teachers only 6 of them had specialized in mathematics, 2 of them had specialized in chemistry, 4 of them in Biology, 3 in economics, 4 in physics and 1 in history. Table signaled that there is poor performance in mathematics because are not subject specialists. It shows that quite a number of teachers are teaching mathematics when they are not supposed to.

#### 4.2 Methods used in teaching mathematics in secondary schools

According to the National council of teachers of mathematics (2000). It was advised that there was a need to adopt reform based instructional strategies and practices which included individual exploration; peer emphasizes the use of multiple approaches to problem solving, active students inquiring and liking mathematics to students' daily life.

In this research the following were analyzed in that area, peer instruction, problem solving methods, students inquiring and linking mathematics to students life.

#### 4.2.1 Peer instruction and performance

The researcher wanted to find out if indeed some teachers were encouraging peer instruction.

**Figure 1: Show the distribution of teachers ability to use peer instruction as a method of teaching mathematics.**

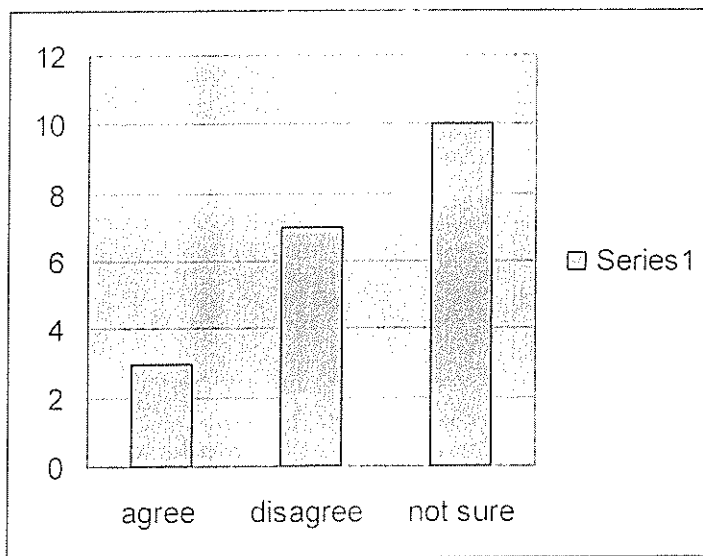


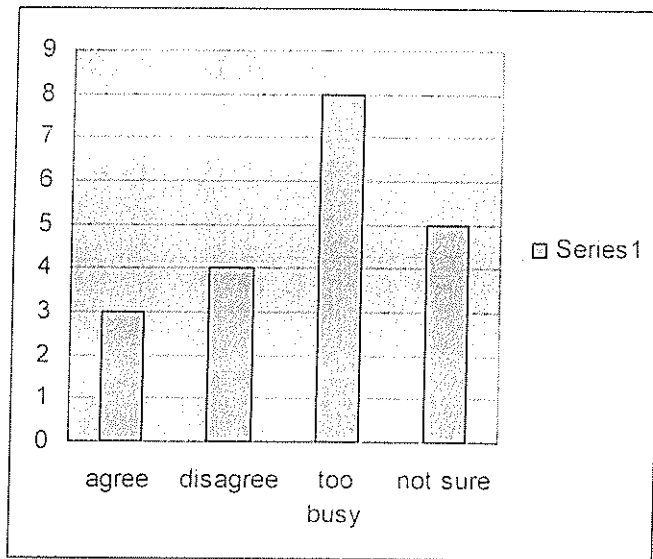
Figure 1 showed that only 3 teachers admitted using the peer instruction in teaching mathematics, 7 of the teachers however disagreed to the question and 10 of the teacher did not know what was entailed in peer instruction. This findings show that 85% of the teachers do not use peer instruction in mathematics. This shows that performance is poor because the learners are dependent on the teachers skills to learn mathematics and are not being given a



#### 4.2.3 The use of active inquiry approach to teach mathematics.

The researcher asked the teachers whether they allowed or encouraged their students to actively inquire about the mathematics concepts.

**Figure 3: Shows the responses of teachers about whether they allow children to inquire in mathematics.**



Out of the 20 teachers 3 of them agreed that they allowed and encouraged children to inquire about mathematics concepts, 4 of them disagreed, but what was alarming was that 8 of the teachers claimed they were too busy and as many as 5 did not know what to do. This showed that 85% of the teachers were not allowing the children to carry out an active inquiry about mathematics concepts. This shows that these teachers are poorly qualified and are therefore not well informed about how to teach mathematics effectively.

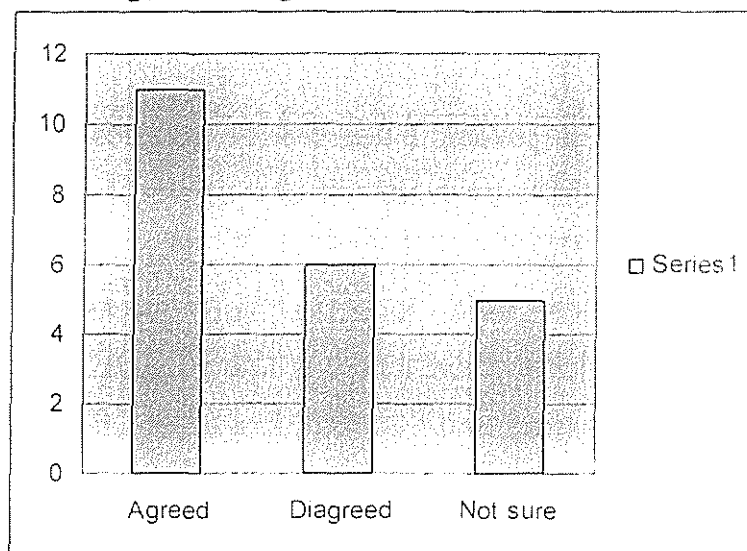
#### 4.3 School based factors and performance in mathematics

By school based factors the researcher meant what entailed the learning environment. The factors in focus therefore including the classroom organization, the availability of teaching learning resources, the presence of guidance and counseling servicing and responsive teachers to encourage the performance in mathematics.

### 4.3.1 The use of teaching resources

According to Oriol in Standard News Article (2007) appropriate teaching facilities enhance learning in all institutions. In this study the researcher had to find out if at all the teachers were using the appropriate teaching aids to support the teaching and learning of mathematics concepts.

**Figure 4: Shows the teachers responses as to whether they use teaching/learning aids**



Findings showed that 11 teachers used teaching learning aids to support mastery of skills and knowledge in mathematics, but 6 of the teachers did not use them and 5 did not know how to use them. This showed that half of the teachers are aware of the importance of using teaching learning aid. However slightly over a half do not use the teaching/learning resources. They are therefore contributing to the low performance in mathematics.

### 4.3.2 Availability of teaching/learning resources in secondary schools

According to World Bank (1999) the cost of teaching/learning resources is high to many African government and yet they are a major contributing factor to performance in general.

From the above table 13 teachers agreed that the guidance and counseling service are offered in school, 13 is quite a big number and therefore one wonders why performance is poor in secondary schools yet the students are often counseled. 5 of the teachers however disagreed and 2 were not sure. The five schools which have neglected this policy and the 2 teachers lack of knowledge about the importance of guidance and counseling.

#### 4.3.4 Teachers factors

Patrick (1999) also highlighted that the teachers negative attitude, lack of interest and stereotype contribute to poor performance in the subject. In this study the teachers were asked to respond to the following statements.

**Table 5: Shows the responses of teachers according to their attitude.**

<b>Teachers encourage boys to work hard at the expense of girls</b>	<b>Frequency</b>	<b>Percentage</b>
Agree	5	25
Disagree	15	75
Not sure	-	-
<b>Total</b>	<b>20</b>	<b>100</b>
<b>Some teachers are not confident enough to teach mathematics</b>	<b>Frequency</b>	<b>Percentage</b>
Agree	14	70
Disagree	2	10
Not sure	4	20
<b>Total</b>	<b>20</b>	<b>100</b>
<b>Teachers management of classroom influences performance in mathematics</b>	<b>Frequency</b>	<b>Percentage</b>
Agree	13	65
Disagree	03	15
Not sure	04	20
<b>Total</b>	<b>20</b>	<b>100</b>
<b>Some teachers lack interest in teaching mathematics</b>	<b>Frequency</b>	<b>Percentage</b>
Agree	14	70
Disagree	3	15
Not sure	3	15
<b>Total</b>	<b>20</b>	<b>100</b>

Source: field data 2008

Table above showed 25% of the teachers agreed that teachers tended to encourage boys to work hard than girls, 75% of the teachers disagreed that boys were supported by the teachers; None of the teachers was not sure.

This revealed that a great number of teachers were responsive to the students needs and were therefore moderately stereotyped.

In the same table 65% of the teachers agreed that classroom management influenced the learners performance. 15% of them disagreed to and 20% of the teachers were not sure. This showed that quite a number of teachers were aware of the need to establish a conducive environment for teaching and learning of mathematics.

About the confidence of teachers 70% of the teachers agreed that some teachers agreed to the statement, 10% of the teachers disagreed and 20% of the teachers were not sure. These findings show that by majority of response that indeed teachers lack confidence and that could be the reason as to why performance is poor in secondary schools but this can be linked to lack of specialization in the subject and that the majority of teachers had lowly qualifications.

About interest of teachers again 70% of the teachers agreed that the teachers lacked interest in teaching the subject. 15% disagreed and 15% were not sure. This analysis brought revealed what could be one of the strong reasons why mathematics is being performed poorly in secondary students are being discouraged to try harder if facilitators lacked interest in the subject.

#### **4.4 Challenges faced by teachers in teaching mathematics**

Appleton (1993) sighted one challenges of teaching and learning of mathematics was the learners perception of the subject, the learners perception of the

subject, Reyes (1984) mentioned confidence of students as one challenge. The following were therefore analyzed students attribution of success and confidence.

#### 4.4.1 Students attribution of success and failure in mathematics

The teachers were asked the respond to the following statements.

**Table 6: Presents the teachers responses about students attributes of success and failure**

	Agree	Disagree	Not sure	Total
Some students perform poorly because they are lazy	70	20	10	100
Some perform poorly because they lack confidence	58	12	30	100
Some perform poorly because girls think it is a boys subject	54	10	36	100
<b>Total</b>	<b>67</b>	<b>14</b>	<b>25</b>	<b>100</b>

**Source: Field data 2008**

Findings show that 67% of the teachers agreed that students were performing poorly because they were lazy, lacked confidence and some girls thought that the subject for boys. Mathematics is therefore being performed poorly because they lack confidence yet a student who is confident is believed to persist and is more likely to expect success in future. Findings also highlighted that poor performance is gender related where girls tended to rate themselves as poor in the subject.

#### **Conclusion**

Performance in mathematics is poor in secondary schools in Sirikwa zone due to the lowly qualifications of teachers. This is compounded by their inability to

adopt. The reform based strategies that require the students to solve problems carry out inquiry and carry out peer teaching. This means that the teachers are not doing enough to make learning mathematics interesting.

It is also now evident that the same teachers are not doing much to create a conducive environment for the teaching of the subject and most outstanding is that of lack of confidence which is attributed to lack of specialization in the subject. The students themselves were not confident enough and help a negative attitude towards the subject, since they believed that it was for boys than girls and were not working hard because of lack of confidence.

## CHAPTER FIVE

### SUMMARY OF FINDINGS, CONCLUSIONS AND RECOMMENDATIONS

#### 5.0 Introduction

The study was undertaken to examine primary and secondary school relationship to student's performance in mathematics. The questions that were asked from the started included;

Does the qualification of teachers influence performance in mathematics?

What methods are used in the teaching of mathematics?

What attitude do learners have which is negatively influencing mathematics performance?

Do the school based factors affect performance in mathematics?

#### 5.1 Summary of findings

Findings showed that mathematics teachers in secondary schools had lowly qualifications which were not enough to help in the instruction of mathematics. They were merely the basis any teacher could have in order to facilitate children in mathematics. Findings also showed that while the teachers had basic qualifications to teach, a few had specialized in the mathematics as a subject. This therefore compounded their challenges in teaching the subject. This could be the reason as to why instruction of mathematics has been regarded as teacher centered with greater emphasis being put on text books other than helping children to think critically across subjects as cited by Lobb, Yackel and McNeal (1992).

Findings also revealed that teachers in Simukwo educational zone could not use the individualized form of instruction. Very few of them carried out peer instruction and small group work as advised by the National council of teachers of mathematics (2000). It also became clear that students were not being given

enough opportunity to solve problems to inquire and to link mathematics to their daily lives as cited in Grover and Henningsen (1996). This could be killing their attitude towards mathematics as cited by Hart (1989) and Leder (1987). This also highlighted the teachers lack of relevant knowledge and skills to implement the reform based instructional strategies.

### **School based factors**

Among the school based factors that were negatively influencing performance in mathematics included lack of relevant teaching learning aids and the teachers inability to use the teaching/learning aids. Some schools in Sirikwa educational zones had not adopted the guidance and counseling services yet they play a significant role in encouraging the students to strive hard in mathematics as advised by Ntata in Patrick (1999). Teacher factors that influenced performance in mathematics included some teachers having high expectations for boys than for girls, a tendency which Ngaroga (1997) regarded as teachers gender insensitivity. It was also identified that some teachers were unable to carry out classroom management effectively that is why the students were performing poorly. The atmosphere was therefore not conducive to learning and therefore lowered the students morale for the subject.

Quite a number of teachers are not confident enough to teach mathematics and yet their lack of confidence will also affect their learners confidence to solve problems in mathematics Reyes (1984) had identified confidence as one of the most significant variables influencing the students approach to new material and a determining factor to their persisting. Performance in mathematic is not good because the students can not persist because of lack of confidence.

### **Students attitude towards the subject**

Analyses showed that the students themselves were a factor in poor performance in mathematics. Some learners lacked confidence and some were



lazy and others had a negative attitude towards the subject. The above finding link with what Peterson (1986) and Dweck (1978) highlighted as the students tendency to attribute their success or failure to four cases namely, ability, effort, task difficulty and luck.

## **5.2 Conclusion**

Mathematics is an important subject which can not be ignored basing on the benefits got by studying it, but on the other hand it is difficult task comprising abstract ideas and concepts. Because of the nature and scope of the subject there is a tendency of learners not to derive interest and pleasure in learning it. However there are reform based strategies that have been formulated and I believe if adopted, could help in effective learning of the subject. It is unfortunate that many schools have ignored implementing these reforms and have decided to go on teaching mathematics is taught the traditional way given the negative attitude of the learners it will continue to be performed poorly. Another mistake that the government is committing is not to support training specialist mathematics teacher to help in the teaching of the subject. Training of teachers will help to reduce negativism in both teachers and students.

## **5.3 Recommendations**

The following had to be recommended;

The government must invest in training of specialist mathematics teachers and ensure that all the teachers handling the subject in both primary and secondary schools have been trained in the teaching of that subject.

There is need to fully equip the school with up to date text books of mathematics which have written according to the reform based strategies of teaching the subject.

Teachers to try as much as possible to change the students attributions to success in mathematics by encouraging them to work hard in the subject. Teacher should also avoid gender stereotypic tendencies which discourage girls to work harder. They must equitably urge both sexes to work hard and help them to build their confidence.

For most mathematics teachers who are teaching and have not been a given a chance to undergo refresher courses, should be given sandwich courses by government. This will help to equip them with the knowledge and skills that they are otherwise lacking.

Government should adopt a policy of monitoring the teaching of mathematics in both primary and secondary schools.

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## APPENDICES

### Appendix A: Questionnaire for teachers

Dear teachers am carrying out a research on performance in mathematics and I therefore requesting you to fill in this questionnaire any contribution will be highly appreciated.

#### Quality

1. What is your highest academic qualification?

Masters  Bachelors  Diploma

Certificate  Others (please specify)

2. What is your area of specialization?

Chemistry

Mathematics

Biology

Economic

physics

3. What is your work experience?

Under 2 years

2-5 years

5-10 years

#### Methods used

4. Which methods do you use in teaching the subject?

Child centered methods

Teacher centered methods

**Teaching strategies**

5. What strategies have you adopted in teaching the subject?

.....  
.....

**Attitudes of teachers**

6. Which of the children perform well in the subject?

Boys       Girls       All

7. Do you encourage both sexes to perform well in the subject?

Agree       Disagree       Not sure

8. What could be the reason for girls poor performance in the subject?

.....  
.....

9. Why are children performing poorly when they go to secondary school?

.....  
.....

10. Have you ever attended any mathematics seminar or workshop?

Agree       Disagree

11. Do you have plans for furthering your studies?

Agree       Disagree

