CAUSES OF LOW PERFORMANCE IN MATHEMATICS

A

THESIS

BY

PRADEEP RIJAL

IN THE PARTIAL FULFILMENT OF REQUIREMENTS FOR THE MASTER

DEGREE IN MATHEMATICS EDUCATION

Recommendation for Acceptance

This is to certify that MrPradeepRijal has completed his M. Ed. thesis entitled

"**Causes of Low Performance in Mathematics**"under my supervision during the

period prescribed the rules and regulations ofTribhuvan University, Kirtipur,

Kathmandu, Nepal. I recommended and forward histhesis to the Department of

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Letter of Approval

This thesis entitled "**Causes of Low Performance in Mathematics**" submitted by

MrPradeepRijal in partial fulfilment ofthe requirements for the Master's Degree in

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Letter of Certificate

This is to certify that MrPradeepRijal a student of academic year 2070/71 B.S withcampus Roll Number 471, Thesis Number 1282, Exam Roll Number 280471(2073) andTU registration number 9-2-676-69-2009 has completed this thesis for the period prescribedby the rules and regulations of Tribhuvan University, Nepal. This thesis entitled**'Causes of Low Performance in Mathematics'**has been prepared based on the results of his investigation. I hereby recommend andforward that his thesis be submitted for the evaluation as the partial requirements toaward the degree of Master of Education.

………………………….

Prof. Dr. Bed Raj Acharya

(Head)

Date: 23 February 2020

Declaration

This dissertation contains no material which has been accepted for the award ofanother degree in any institutions. To the best of my knowledge and belief, this thesis contains no material previously published by any authors except dueacknowledgement has been made.

………………………

PradeepRijal

Date: 6 October, 2020

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Dedication

This work is heartily dedicated to my respected parents Lok Prasad Upadhyaya and Rama Devi Upadhyaya who supported me in each and every steps of my life for what I am now.

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Abstract

This is a survey research related to find the "causes of low performance in mathematics." The objectives of this study were to find the causes of low performance in mathematics at secondary level and to recommend the solution to mitigate the low performance of secondary students in mathematics learning. For, Ninety students from three secondary school were selected by using stratified random sampling. The teachers of selected schools were also chosen. The study focused to find causes of low performance and so the facts which influence the performance were explored. Semi-structured interview schedule for teachers and structured questionnaire for students were used as tools of data collection. FGD and classroom observation were also applied to find the causes of low performance. The quantitative data were analyzed by using descriptive statistics such as frequency, percentage and mean and the qualitative information were analyzed by thematic process. The major findings of the study were pre-knowledge of students, practice and participation, teacher's training and implication, method, motivation and materials, teaching learning environment of the school directly affect on student's mathematics performance. Thus it is concluded that low performance is the function of weak academic foundation of students, poor assessment and promotion practices. Finally the study suggests teachers should identify pre-mathematical knowledge of students before teaching every unit and also should focus on better teaching learning activities from lower level of school not only in class eight or SEE, teacher training should be given in demand base, the ministry of education should provide training on use of ICT and materials to the mathematics teacher and also should encourage to use of ICT and teaching material in class room. and parents should attention about their children.

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List of Abbreviations

A	:	Agree
BPEP	:	Basic and Primary Education Project
CERID	:	Research Center for Educational Innovation and Development
D	:	Disagree
FGD	:	Focus Group Discussion
ICT	:	Information Communication Technology
PEP	:	Primary Education Project
SA	:	Strongly Agree
SD	:	Strongly Disagree
SEDP	:	Secondary Education Development Plan
SEE	:	Secondary Education Examination
SLC	:	School Leaving Certificate
SPSS	:	Statistical Package for the Social Sciences
SSRP	:	School Sector Reform Plan
TPD	:	Teachers Professional Development
UD	:	Undecided

Chapter I

Introduction

Background of the Study

Mathematics, which is one of the oldest fields of study in the history of mankind, has long been one of the most central components of human thought. It has been believed for centuries that mathematics sharpens the human mind, develops their logical thinking; enhances their reasoning ability and spatial power. It influences an individual's personal development and contributes to the wealth of the country. This is mainly because it is at the heart of many successful careers and successful lives. Mathematical skills for daily life are developed in school mathematics curriculum. Cockcroft (1982) states that there can be no doubt that every child should study mathematics at school. He also highlights that most people regard the study of mathematics, together with that of English as being essential. For this reason mathematics is one of the core subjects in all schools worldwide as explained by the amount of time devoted to it in schools. In many countries, it is compulsory in primary and secondary levels of education.

In the context of Nepal, mathematics is a compulsory subject at both basic and secondary levels. Mathematics is also used as a basic entry requirement into any of the prestigious courses such as medicine, architecture and engineering among other degree programs. The constitution of Nepal(2072BS) guarantees the equal right and access in education for every citizen. It has made special provision for the deprived, ethnic, indigenous groups of people including children who are living in different circumstances. It has also guaranteed right to free and compulsory education in basic level and free education in secondary level.

Providing quality education to all citizens the government of Nepal has initiated various policies and programs and intervention in education. The government of Nepal has lunched various programs such as; Seti project, PEP, BPEP, Radio education teacher training, science education project, SEDP, SSRP, TPD. Although by conducting that types of program, the performance of students is not satisfactory mainly in mathematics. Performance of students in mathematics in SLC exam of 2072B.S shows the comparatively poor performance in mathematics rather than other subject.Which shows in following table.

Subject	A+ Grade	E Grade
English	12552	71124
Nepali	63	23046
Social	217	46928
Mathematics	23334	146935

Source: Status of SLC result, OCE, Sanothimi, Bhaktapur

From the above table it is concluded that performance of student's in mathematics is very poor. So the researcher intended to do research in this topic as "Causes of Low Performance in Mathematics". The research was conducted to find causes of low performance in mathematics and to recommend solution to mitigate low performance.

Statement of the Problem

The importance of mathematics in daily life is recognized worldwide and as a result of this, the subject has been given a special place in the school curriculum. However, student's poor performance in mathematics is globally known, Nepal is not being different. Morris and Arore (1992) contend that the problem of students' poor performance in mathematics is not confined to any one country but universal. In

response to this global problem, researchers in various countries investigated its root causes.

The government of Nepal lunched various programs (like: Seti project, PEP, BPEP, Radio education teacher training, science education project, PEDP, SEDP, SSRP, TPD) to give quality education and increase better performance in mathematics. And introduced letter grading system in SLC examination from 2072B.S. But till now students performance in mathematics is not satisfactory. Many students failed in district level examination and SLC.According to SLC result of 2072 high rate of students got E grade in mathematics. Many researcheshave been done to find out cases of failure in mathematics in SLC. But they are only limited in interview and survey research based on SLC level students. Researcher didn't care about low performer students. Unfortunately, no systematic research addressing the problem has been carried out in Nepal in general and Bardiya district in particular. It is view of this gap that the researcher designed and conducted this study, which focused on the factors that influenced secondary school student's performance in mathematics in Bardiya district. This study seeks to answer the following research questions:

)   What are the cases of low performance in mathematics?

)   What are the solutions to mitigate the low performance of students in mathematics?

Objective of the Study

The objectives of this study were:

)   To find the causes of low performance in mathematics of secondary students.

)   To recommend the solution to mitigate the low performance of secondary students in mathematics learning.

Significance of the study

The aim of this study, which focuses on the factors that influence student's performance in mathematics, is to contribute towards the enhancement of teaching and learning of mathematics. The findings of the study are therefore significant to:

) The findings of the study would assist the educational policy makers to reconsider the policy for improving the teaching learning process.

) The research is related to find causes of low performance of students in mathematics and to mitigate it. This research helps mathematics teacher to improve the teaching learning process by knowing causes of low performance of students and solution to mitigate it.

) This study would be useful to give some basic guidelines to the new researcher to carry out and complete their research work in the field of teaching learning activities in mathematics.

) This study helps the parents and teachers to manage better learning environment at home and school.

Delimitation of the Study

The study was concerned about the performance of students in mathematics of secondary students. The study was conducted in only three government school of Bardiya district. The limitation of the study is pointed as follows:

) The study waslimited in Bardiya district.

) The study was taken only in government school.

) The study sample was ninety low performer students from class 9 and 10 and six mathematics teachers of three secondary school of Bardiya district in the academic year 2075.

⟩ In this study Semi-structured interview schedule for teachers, structured questionnaire for students, FGD and classroom observation were used as tools of data collection.

⟩ This study was concerned with onlyteachers factor, students factor, home environment and school environment.

⟩ The analysis of the data followed quantitative as well as qualitative.

Definition of Related Terms

Terminology is the study of terms and their use. Terms are words,compound words or multi - word expressions that in specific contexts are given specific meanings. These may deviate from the meanings the same words have in other context and in everyday language. Some terminologies used in this research have been defined as below:

Low performance. The students who get below 50 marks in final exam in mathematics and show weak performance in the class.

Student's weak performance. The student who doesn't do class work and homework, shows passive behaviour in class room, doesn't involve in peer discussion in class, doesn't attend school regularly.

Causes of low performance. Causes of low performance refers to causes which are related to teacher(teacher training, teaching method, work load, classroom motivation), student(class regularity, homework, performance in classroom, students attitude/fear towards mathematics) and school environment(class size, infrastructure, teaching material and ICT).

Chapter II

Review of Related Literature

This chapter includes the literature related to this research. The literature are classified in to two groups; empirical and theoretical literature. First of all Imperial literature is discussed which includes information related to research topic from international and national journal, unpublished thesis, article, magazines and internet. Then disused on theoretical literature which includes theory related to research topic. At last the conceptual frame work is discussed.

Empirical Literature

This empirical review helps to reach researcher's research objective. In this review three terms are focused: causes of low performance in mathematics in international level, causes of low performance in mathematics in national level and teacher's qualification in government school.

First of all, Feyisara(2012), conducted a research on "causes of poor performance in mathematics in Nigeria." Objective of the research was to investigate the causes of poor academic performance and to establish the strategies that can be adopted to improve performance in mathematics. He used descriptive research design in form of an ex-post facto approach. He selected sample randomly from among students. Used questionnaire titled ''Student's questionnaire on the causes of poor performance in mathematics'' to collect the data and used descriptive statistics in form of simple percentages to analyze the data. He founded that factors attributed to poor performance include poor infrastructure, emotional problems, weakness in mathematics background, phobia for mathematics. He recommended remedial counselling involving cognitive restructuring and achievement motivation .

Nur(2010), conducted a research on "Factors that influence secondary school student's performance in mathematics" in banadir region, Somalia. With objective to find out whether teacher characteristics, teaching methods, use of teaching resources and student attitudes towards mathematics affect student's performance in mathematics. The study employed a survey research design and used stratified sampling technique to select 12 secondary schools for the study. Heused three research instruments namely, mathematics teacher's questionnaire, form four students questionnaire and classroom observation schedule. He used Statistical Package for Social Sciences (SPSS) to get descriptive statistics such as, percentages, frequencies and tabulations. The study found that 37.5% of the teachers felt that teaching methods played a major role in student's performance in mathematics and expository approaches of teaching mathematics were the only methods used in mathematics classes in Banadir region, leading to student's poor performance. The study concludes that there was need to address for mathematics education such as teacher training curriculum reviewed in Banadir region. For this reason the study recommended the following: ministry of education and umbrella groups should harmonize the policy of teaching mathematics by organizing in-service trainings for mathematics teachers with regard to teaching methods and use of teaching resources.

Fonseca &Conboy(2006) had conducted a research on"Secondary students's perceptions of factors effective failure in mathematics achievement." They had found that most important factor and one of the most difficult influence directly, is the quality of teaching. They have found other factors such as, previous students preparation, reasonable school organization classroom decoration, teacher effectiveness, quality of mathematics teaching, guardian/ parental involvement. The

main factors that affect poor mathematics result were lack of appreciation, fear of math, teacher's bad attitude, poor education system etc.

Above research conducted in Nigeria, Somaliya and Eurasia respectively. They have found school infrastructure, Teacher, Student related causes for poor performance in mathematics. More over in the context of Nepal, also the research has been conducted to find causes of low performance in mathematics. Some research mentioned below;

Dangol(2012), Conducted the research on "Causes of failure in mathematics". He conducted research on Nuwakot district. His objective was to find causes of failure in mathematics. He conducted research on 1 school included mathematics teacher, head teacher and 6 students who failed in SLC 2067 B.S. for sample. His research design was qualitative. He found that possible causes of failure as: lack of mathematics library, academically teacher was qualified but teacher used traditional teaching method, mathematics teacher was unable to address for varied cognitive level of students in teaching, school has continuous communication gap with guardians.

Simiralry, K.C.(2013) did research on "Problems Faced by Students in Compulsory Mathematics at Secondary level" with the objectives to identify the problems faced by the students in compulsory mathematics that is related to the home environment of students, and of the classroom management. The nature of study was quantitative as well as qualitative. The researcher found the student has been facing may problems of compulsory mathematics at secondary level. Different types of factors are affecting to arise those problems related to home environment, class management teaching learning activities. He concluded that these problems can be

mainly attributed by highly idealistic curriculum, lack of proper teaching materials defectives classroom situation and poverty of parents and so on.

Moreover, Ghimire(1997), studied on "A Study on Factors Affecting Teaching/Learning Mathematics at Secondary Level" with the objective to study the factors affecting in learning of schools in terms of school environment, family background, motivational factors, physical facilities, interest of learners, instructional materials. The tool for study were administered to the sample of ninety students and t-test was applied to conclude the result that; home environment affects the subjects on rural areas and girls were affected more than boys. The students of Kathmandu were more motivated to study mathematics than that of Arghakhachi and Chitawan.

From above research poor performance of students in mathematics is worldwide problem. Researcher has found school base factor, student base factor, teacher and parent's base factor and infrastructure base factor affecting in performance of students. The research has been done in selected school and all selected students but the researcher doesn't care about lower performer students and doesn't study in depth and focused group discussion.

Shilpa (2005), in her study of a comparative study of govt. and public school about teaching of mathematics in X class concluded that mathematics teachers in Govt. schools were more experienced than those of public school. Govt. schools have larger size of X class compared to the public school. Public schools were more regular in comparison to govt. school. In Govt. schools the screening is more vigorous for appointment of teachers as compared to public school. Majority of the teachers both in Govt. and Public schools were satisfied with pattern of question paper.

Chauhan(2002), in her study of teaching of Mathematics in Govt. and Private Schools. A comparative study concluded that in Govt. schools teachers were

professionally qualified in comparison to public schools. Time allotted for teaching of mathematics is more as comparison to that of the Govt. school. Public school teachers get helping material in time whereas in Govt. school majority of teacher do not get helping material in time. Public school students are more regular than in the classes are compared to Govt. school. All the govt. and public school teachers feel that the question paper for class X is always very tough and lengthy.

The research of Shilpa and Chauhan Respectively, Shows that teacher in government school are more qualified then private school. Then researcher have question, Why many students fail in mathematics? It is the place for research.

CERID(1988), carried out achievement study on evaluation system in the primary school of Nepal had found that fifty percent parents mentioned that they do guide their children during examination. About thirty one percent mention that they arrange for special tuition. The rest mention that their children prepare for examination by studying together with peers. Only ten percents of parents reported that their children dropped out of the school without completing grade due to low family income and the need to be engaged in household activities.

In conclusion, many researcheshave been done to find out cases of failure in mathematics in SLC. But they are only limited in interview and survey and research based on SLC level students. Researcher didn't care about low performer students. Unfortunately, no systematic research addressing the problem has been carried out in Nepal in general and Bardiya District in particular. It is view of this gap that the researcher designed and conducted this study, which focused on the factors that influenced secondary school student'sperformance in mathematics in Bardiya district.

Theoretical Literature

Some of the theoretical literature about student's low performance has presented below.

Theory of Educational Productivity

Walberg (1981) proposed a Theory of educational productivity which has its theoretical foundation. Walberg's theory requires optimization of nine factors to increase student achievement of cognitive and affective out comes. There nine productive factors are (i) ability achievement (ii) age. (iii) Motivation Self concept (iv) Quality of instruction (v) Quality of instruction experience (vi) home environment (vii) classroom environment (viii) peer group environment. (Ix) The mass media. These factors were classified into three general group Wilkins et. Al. (2002) (1)Personal variables , such as prior achievement ,age, motivation or self-concept (2) instructional variable such as amount or quality of instructional and (3) Environmental variables related to the home, teacher,classroom, peers and media exposure.

Theory of Fear

John Holt(1964) in his book, how dose children fail postulate that children fail because of fear in school? The boredom, confusion, fear, limitless hopes and expectation of adults all contribute to failure. Fear is one of the tactical strategy that school and teacher use for long time to control, discipline and motivation teachers. Fear destroys intelligence and affects a child's whole way of looking at, thinking about and dealing with life. A fearful mind cannot learn. Fear and flour are very closely links. Schooling is about friars throughout their schooling children are thought to be afraid of failure. Holt concludes that they have the ability to learn. He further argues that the experience of failure is humbling.

Theory of School Effectiveness

Edmonds (1979) provided an alternative interpretation of the interaction between students' performance and family background. Now popularly known as the school effectiveness research asserts that variability in the distribution of achievement of school age children drives from variability in the nature of school to which children go. It is argue that key to improved achievement among school age children depend on the abilities and factors that are directly linked to effectiveness. That is measured in terms of subject teacher subject matter and effective school is defined to the proportion of low income children demonstrating good performance is identical to the proportion of middle class children who do so. Edmonds (1997) concluded that the most powerful force in school achievement is that school itself.

Conceptual Framework

By reviewing empirical and theoretical literature the researcher had made conceptual framework to reach objective of the study. The conceptual framework hereunder presented variables that influence teaching and learning in mathematics subject. Sitko (2013), defined conceptual framework as the system of concepts, assumptions, expectations, beliefs, and theories that support and inform about the study.

Generally achievements of mathematics are influenced by school environment, home environment, teacher's behaviour and student's behaviour.The causes of poor performance in mathematics are summarized and presented in figure 1.1.

Figure1.1: *Conceptual framework for causes of poor performance*

The above framework was used to construct tools for research, collection the data and data analysis procedure. Framework clearly guided to the researcher to reach objective.

Questionnaires were the main tools of this study. To clearly the concept researcher prepared 4 questions for the statement school environment is a factor for poor performance. Similarly 7 questions for the students factor, 3 questions for teacher's factor and 4 questionnaires for family background. The researcher also prepared classroom observation form,teacher's interview guideline and FGD guide line with help of above guideline. Later the score obtained from the students, classroom observation, teacher's interview and FGD were analyzed and explained each result.

Chapter III

Research Methods and Procedures

This chapter includes the design and methods which was used in the study. Particularly, it contains research design, study sample, data collection procedure, tools for research and data analysis procedure.

Research Design

In this study the researcher applied a survey research design where the researcher employed cross-sectional survey. Cross-sectional survey is done where a researcher uses different categories of people (Enon, 1998). Therefore the researcher surveyed secondary schools in Bardiya district whereby mathematics teachers, students, and parents were involved so as to systematically describe a situation of poor performance in mathematics subject.

However the study applied both quantitative and qualitative research approaches. Quantitative approach helped to quantify the problem by way of generating numerical data or data from the field and transform them into useable statistics. Qualitative approach helped to study attitudes, opinions, behaviours, and other defined variables of the population.

Study Sample

Stratified random sampling techniquewas used to select 3 community school of Bardiyadistrict. The target sample was consists of 6 mathematics teachers and 90low performer students of the selected schools. In focus group discussion(FGD) 10 students was selected randomly who shows poor performance in mathematics. The total sample size of this study was 96.

Data Collection Procedure

For the data collection, the researcher visited to the principal of each sample school and introduce himself and then to the mathematics teachers. Then researcher collected all primary data with the help of class observation form, interview guidelines, FGD and diary from mathematics teacher's, student and parents. Real mathematics classroom was observed, focus group discussion was conducted to fulfill intended objective of this study.

Tools for Research

Development of tools is very important in order to collect the required data. The type of tools used in any research depends on the declared objectives of the study. In this study semi-structured interview schedule for teachers, structured questionnaire for students, FGD and classroom observation form were used as tools of data collection.

Structured Questionnaire

The questionnaires consisted of 18 questions for four factors to find causes of poor performance of students in mathematics. They are; peer's discussion, class size, school attendance, class work, prior achievement, time variable, teaching method, classroom management and parents level of education.Questionnaires were translated in to Nepali language since most of the target population of the study could not understand English easily. Majority of the schools in Bardiya district use Nepali language as their medium of instruction. On the other hand, Nepali is the national language of the country.

Observation Form

The researcher went to target area as well as to observe the respondent activities. Even the process of recognize and selected the people, object included the

collectedthe information. The researcher used a diary, observation note and observe classroom activities note. All the behaviour of the student and teacher was observed in teaching and learning activities.

Semi-StructuredInterview

Interview is the two way communication between the researcher and respondent. Interview was conducted among selected mathematics teacher to collect the information about research objective and interpret in brief of the respondent attitude experience, view and opinion.

Focus Group Discussion

A focus group discussion is a form of qualitative research. In which the researcher asked to the students about their opinions, perceptions, beliefs and attitude towards the causes of poor performance. FGD was conducted in the group of selected 10 students to study in depth.

Data Analysis Procedure

According to Kothari (2004), data analysis is a process of editing, coding, classification and tabulation of collected data. The process involves operations which are performed with the purpose of summarizing and organizing the collected data from the field. Since the study involved both qualitative and quantitative data, the data analysis process was done by the two ways.First the researcher applied Statistical Packages for Social Sciences (SPSS) for quantitative data. This is the software which is used to analyze information that is quantitative in nature. In this study, data collected using questionnaire was analyzed using SPPS software. The process involved coding of data, sorting and conclusion was drawn.

Secondly, the qualitative data obtained using interview, observation, focus group discussion and documentary reviews was analyzed by considering major

themes to extract relevant information. This helped the researcher to make description

of thedata collected from the field basing on research objectives and derived

conclusion on what to take regarding its usefulness

Chapter IV

Analysis and Interpretation of Data

This chapter deals with the analysis and interpretation of the collected data, which have been found through questionnaire, interview, observations, and documentary review and focus group discussions from the case school. Questionnaires were distributed to mathematics teachers, students of schools. They filled and returned them to the researcher. Mathematics teachers were interviewed and they heartily participated in the interview session with the researcher. Ten students were involved in a focus group discussion. The researcher also made some observation and documentary reviews in the schools he visited during data collection process.

The findings are presented using tables, bar graph and narrations with regard to the research questions, interview, focus group discussions, observations and documentary reviews. Thenafter the findings are discussed by looking at what the literature has exposed.

Result in Mathematics of Class 8 and SEE 2074 of Case School

The research was conducted in three secondary school of Bardiya district. Main objective of research was to findout the causes of low performance in mathematics in secondary level. So the researcher selected Jagadamba secondary school, Janajyoti secondary school and Janaki secondary school where the result of mathematics was comparatively low.

Figure 4.1 *Result of class 8 in mathematics of case school*

Above figure shows that, in Janajyoti secondary school 88% student have got less than 50 marks in mathematics and only 12% student have got greater than 50 marks in mathematics, in Jagadambasecondary school and Janaki secondary school 82% students have got less than 50 marks in mathematics and 18% students have got more than 50 marks in mathematics. It shows that large number of students has got less than 50 marks. So there is poor condition in mathematics achievement at observed school.

Figure 4.2 *Result of SEE in mathematics of case school*

Above figure shows that in Janajyoti secondary school 37% students have got greater than C grade and 63% students have got less than C grade, in Jagadamba secondary school 13% student have got greater than C grade and 87% student have got less than C grade in mathematics, In Janaki secondary school only 4% student have got grater than C grade and 96% students have got less than C grade in mathematics. It shows that there is poor condition in mathematics achievement in district level exam and SEE. So the researcher selected these 3 schools.

Student Related Factors as a Caused of Poor Performance in Mathematics

Mathematics education has become a challenging issue for all the teachers, students, parents and even for the experts. The newly developed teaching techniques and learning style makes more challenging. Student's fear/attitude towards mathematics, prior achievement, homework/class work, performance in class room has been taken as a student's factors and each of them has been analyzed.

Student's attitude towards mathematics

For this research,selected students were asked for their attitudes towards mathematics. Table 4.1 summarizes their responses.

Table 4.1: *Student's Attitudes towards Mathematics*

View	Strongly Agree %	Agree %	Undecided %	Disagree %	Strongly disagree %	Mean Value
I like doing mathematics more than any other subject	2.2	12.2	4.4	75.6	5.6	3.7

I have fear in mathematics	11.1	75.6	2.2	11.1	0	2.13
Mathematics lessons are boring	8.9	78.9	3.3	8.9	0	2.12
Mathematics is useful in life	20	74.4	3.3	2.2	0	1.87
Mathematics is essential for daily life	21.1	74.4	4.4	0	0	1.83
Combined Mean value						2.33

Table 4.1 shows that more than 94% of the sampled students have known that mathematics are essential and useful in life. But more than 85% of the sampled students have fear in mathematics. Only 14.4% students prefer doing mathematics more than any other subject. Furthermore, 87.8% students feelmathematics lessons are boring. The researcher also analyzed mean score of students' attitudes in mathematics in SPSS. Mean score ofstudent's attitudes in mathematicswas 2.33 which indicated that students' attitude in mathematicswasnegative. Thusthe researcher concluded that students fear in mathematics is the factor for poor performance.

Prior Achievement/Knowledge

The basic knowledge or prior knowledge of former grade is the key factors to affect the present grade. Prior knowledge base is also important potential determinant of performance.

The above figure 4.1 shows the achievement of students of class 8 and prior achievement of class 9 in mathematics. This shows that More than 85% students have low achievement in mathematics in each sampled school. Also analyzing the figure 4.1 and 4.2 the researcher found that student who achieve low marks in mathematics in grade 8 , he also achieve low marks in SEE.

In this research only low performer students was selected.In order to find out some possible reasons for the poor performance in mathematics the information from FGD and interview was used. The sample responses of students and teachers are presented below:

Mathematics is very difficult subject. I have failed in class 6, class 7 in mathematics exam. I have passed in class 8 with only pass marks in mathematics....I have problem in basic rules and methods of simplify in algebra and arithmetic from basic level although I thought I will be good in secondary level but I have still problem in learning mathematics.

(Student's view)

I started to teach simplification of algebraic fractions in class 10 but many students didn't have knowledge of factorization of the expression of the form a^2-b^2, ax^2+bx+c even a^2-b^2, $ax^2 +bx+c$ types of factorization starts from class 7....More students doesn't have a prior/basic knowledge of mathematics. So very difficult to teach them. .... Most of the students have poor performance in mathematics..... Some students come from another lower secondary school to get secondary school's education. They have no pre knowledge about mathematical skills and concept. In this condition how is the better result achieved?

(Teacher's view)

Thus, from above figure 4.1 and teacher's and student's view the researcher concluded that students have problem in prior knowledge of mathematics and interrelation between past knowledge and present achievement. So students had problem in mathematics learning due to poor prior knowledge.

Class Regularity

To see the effect of regularity in school on student's achievement in mathematics, sample students were categorized into five groups according their respective school attendance as never(below 20%), seldom(20-40%), sometimes(40-60%), often(60-80%), Always(above 80%). The following result was found.

Figure 4.3 *Regularity of students*

From above figure 81% students often go to school and only 10% students always goes to school. Furthermore 4% students sometime go to school and also 4% students seldom go to school. The researcher also analyzed mean score of regularity in SPSS. Mean score of regularity of students was 3.9 which indicates that regularity of students was positive.

Low attendance in school and educational attainment created on favorable school environment to students. The low attendance of students made psychological affect to child and they actually couldn't learn freely and performance and

achievement remained low. The common views of students from FGD and sample

teacher were as follows:

I cannot attend regular in school, my economic status is poor and our family is small

so generally I go out to do work. Therefore I miss my class....I go to school regular

and generally I can do mathematics problems.

(Student view)

The students who secure high achievement in mathematics are regular in school and

most failure students are seen low attendance in school.

(Teacher view)

From the above views, the researcher concluded that regularity is essential part

for students to learn. The student who is regular in school, generally he can solve

mathematics problems and the students who is not regular in school, he has a problem

to solve mathematical problem.

Homework

To see the effect of homework on student's achievement in mathematics,

sample students were categorized into five groups according their respective school

attendance asnever(below 20%), seldom(20-40%), sometimes(40-60%), often(60-

80%), Always(above 80%). The following result was found.

Figure 4.4 *Homework*

From above figure 62% students often do homework and only 4% students always do homework. On the other hand 24% students sometime do homework. Furthermore 8% students seldom do homework. Also the researcher analyzed mean score of homework in SPSS. Mean score of homework was 3.6 which indicate that homework of students in mathematics was favorable.

The researcher also conducted FGD and teacher interview to find out effect of homework to mathematics achievement. The sample responces are given below.

I do homework, only escape from punishment of mathematics teacher....I am not regular in class and weak in mathematics.

(Students view)

Talent students always do homework and regular in school. But some student copy talent student's homework.... More than 100 students in my class so I can not check the homework of all students regularly.

(Teacher's view)

From the above views, the researcher concluded that regular and talent student always do homework.Homework is essential part for students to learn. Generally the student who do regularly, he can solve mathematics problems and has good achievement in mathematics.

Teacher Related Factors as a Caused of Poor Performance in Mathematics

In mathematics research, one area of focus has been on teachers' beliefs and attitudestowards mathematics. Ernest (1989) observes that the practice of teaching mathematicsdepends on a number of key elements, such as the teachers' mental contents and schemes,particularly the system of beliefs concerning mathematics and its teaching and learning;the social context of the teaching situation, particularly the

constraints and opportunitiesit provides and the teachers' level of thought processes and reflection.

In this topic Implication of teacher training, teacher's behaviour, teaching method, classroom motivation arefactors and each of them has been analyzed.

Implication of Teacher Training

Lack of professional training, according to Bessong and Obo (2005), makes it difficult for teachers to comprehend their student's psychology and potentials which should guide them in choosing effective methods and teaching aids.

In this study, mathematics teacher were asked how much they provide their experience regarding implication of teacher training in classroom. The sample responses are given below.

Class size is large, so there is difficult to use method of teacher training.I apply few method of teacher training in class room, but not all because of time bound, large class size and poor physical condition of class room....Teacher training is not demand base, it is just for finishing training event.

(Teacher's view)

From above view the researcher concluded, there was lack of relevance of many of the training components to the real needs of teachers and demand of actual classroom situations they might face. Teacher did not use all method of teacher training. Research shows that teacher often attended teacher training and returned to their school with no obligation or expectations that they would use or even share the information. Transfer strategy in which future course of action to transfer acquired skills had not been taken as part of training course. The sample teachers told that new transfer strategy should be implemented to transfer the acquired skills in the real classroom teaching.

Teachers Behaviour

Teachers behaviour plays vital role for effective teaching learning in classroom. To findout teachers behaviour in classroom the students were asked how would you describe your teacher's work habit in school ? The following result was found.

Figure.4.5: *Students view on teacher's behaviour*

From above figure, 42% teachers works normally and 28% teachers are hardworking. On the otherhand 18% teacher are very hard working and 10% teachers does not care about teaching. Moreover only 2% teachers are lazy. Also the researcher analyzed mean score of teacher's behaviourin SPSS. Mean score of teachers behaviour was 2.6 which indicate that behaviour of teachers in mathematics was not favorable. So the researcher concluded that teacher's behaviour was factor of poor performance in mathematics.

Motivation in classroom

Motivation is the key factor to encourage students in mathematics study. Class room motivation creates the learning environment in classroom. The researcher asked question to the studentsto findout how does techer encourage students in classroom ? The responces are presented below.

Figure 4.6: *Student's responces of teachers encourangement in classroom*

From above diagram, 33% student answered that "praise me when I do good" 30% student answerd that "Nothing. Does not care about me" 18% student answered that "explains what I can do with my education", 10% student answered that "help me with extra tution". However 9% student answered that "makes sure I understand each lession".The researcher also analyzed mean score of motivation in classroomin SPSS. Mean score of motivation in classroom was 1.6 which indicates that motivation in classroom in mathematics was not favorable. So the researcher concludedthat motivation in classroom is factor of poor performance in mathematics.

Classroom Environment Factors as a Caused of Poor Performance in Mathematics

Class size, Availability of infrastructure, teaching material and use of ICT has been taken as a classroom environment factors and each of them has been analyzed.

Class size

Class size and seating management plays vital role in effective teaching learning process. To find out effect of class size in learning mathematics, the researcher conducted FGD, interview and class observation.

Figure 4.7: *Number of student in class 10*

From above diagram, more than 80 students in eachclassroom.In average 91 studentsstudied in one class room. According to education rule 2059, maximumnumber of students in each class is 50 interai region. This showed that student's number in each class is high.

The researcher also observed classroom to find out how does high number of students effect in mathematics teaching learning activities. The researcher found that the class room was crowded, teacher was doing exercise in white board but students attention was not on board, students of last bench was unable to see board. The classroom was congested.

To find student's and teacher's response about class size, the researcher conducted FGD and interview. The sample view of teacher and students are presented below:

While writing students feel uneasy and for the teacher also it's being difficult to care individually .....In our class students number is large; we sit in last bench that's why

we cannot listen teacher....We cannot see easily in white board because student

number is large and we sit in last bench.

(Student's view)

The above view indicated that the class size and mathematics achievement are independent each other. Class size had also been identified as determinants of academic performance.Studies have indicated that schools with smaller class sizes perform better academically thanschools with larger class size. Kraft (1994) in his study of the ideal class size and its effectson effective teaching and learning in Ghana concluded that class sizes above 40 havenegative effects on students' achievement. Asiedu-Akrofi (1978) indicated that sincechildren have differences in motivation, interests and abilities and that they also differ in health, personal and social adjustment and creativity generally good teaching is best done in classes with smaller numbers that allow for individual attention. Thus it can be concluded that class size play vital role in mathematics achievement.

Availability of Infrastructure

Physical & instructional facilities are also the important factor, which directly link with teaching learning environment of school. Infrastructure includes arrangement of desk, benches, chairs, whiteboard, facilities such as fan, cupboard, ventilation, safe water etc. Physical & instructional facilities play a significant role in the better performance of school. So without managing good physical and instructional facility in school we can't improve the student's progress.

The researcher observed classroom to see availability of infrastructure and its affect in teaching learning mathematics. In the classroom desk and benches were kept in three rows. The classroom was clean and well swept. Whiteboard was clean and in front of students. There was 3 fan and safe drinking water in classroom. But in class

room seating management was congested. Finally, in the observed school, physical

environment was satisfactory.

Teaching Material and Use of ICT

One Chinese quotes is " one picture represents thousand words". So teaching

material and ICT is most important part for effective teaching learning process. The

subject teacher can easily explain about the teaching lesson by using effective

teaching materials and ICT and also student can learn easily.

To find out use and effect of teaching material and ICT in mathematics

teaching learning process, the researcher had prepared questionnaire for students and

teacher and observed classroom. The following result was found.

Figure 4.8: *Student's view about using ICT and teaching material in classroom*

From above figure, 80% student answered that teacher seldom usesICT and

teaching material. On the other hand only 7% student answered that teacher

sometimes uses ICT ant teaching material. Moreover 3% studentanswered that teacher

never use ICT and teaching material. Above data shows that high number of teacher

seldom uses ICT and teaching material in Classroom. The researcher also analyzed

mean score of motivation in classroomin SPSS. Mean score of uses of ICT and

reaching material was 2.04 which indicate that use of ICT and reaching material was not favorable.

The researcher also conducted FGD and teacher interview to find out effect of uses of ICT and reaching materialin mathematics achievement. The sample responces are given below.

I use teaching material only in geometry. I am unknown about ICT, so I don't use ICT in the classroom....I know about teaching material but if I use teaching material every day in class, the course couldn't be finished.

(Teacher's view)

Above teacher's view shows that, teacher does not use easily teaching material in classroom. Because of time bound of class and course, less teaching material and lack of laboratory room. In government school teachers are unknown about ICT, they could not manipulate ICT material such as projector, laptop etc.

In my school, there is not sufficient mathematics teaching material, also we have not any permanent economic source to buy and use teaching materials.

(Teacher's view)

Teaching and Learning Materials such as textbooks, teacher's guides, wall pictures, maps, atlases and other learning aids are critical ingredients in the teaching and learning process. The TLMs aid teaching and learning because pupils are able to see and often feel what the teacher teaches. They also provide opportunities for pupils to use what they have learned (Etsey, 2005; Lockheed &Verspoor, 1991). Since there were less teaching-learning materials in the low achieving school, the situation made it difficult for the pupils to understand the lessons, learn more and retain what they learn, this led to lower performance. This position confirms the research findings of Avotri*et al*. (1999) and Etsey (2005) that the shortage of teaching-learning materials

deprived pupils of exercises, attention and feedback from teachers to enhance their gained knowledge and improve their academic performance.

Mathematics class is boring, teacher uses always lecture method....If teacher uses teaching material in difficult topic, then we could learn easily....I learn mathematics lesion well, when teacher used teaching material.

(Student's view)

Above student's view showed that, Students can learn easily when teacher used ICT and teaching material. So teaching material andICTare a tool that can demystify the learning of mathematics when integrated in the subject though not commonly used in government schools due to varying reasons. Equipments such as the interactive white board, digital projector, touch-screen among others are proving to ease the teaching of the subject. It enhances activity and is thus a student centered way of learning.

Finally, the researcher concluded that uses of teaching material and ICT in classroom plays vital role for achieving better performance in mathematics. Unfortunately lack of: teaching material, school's economic condition, time bound of course, knowledge about ICT and teaching material the teacher could not use ICT and teaching material in observed school.

Home Environment

Parent's education status and parental incomehad been taken as a home environment factors and each of them had been analyzed.

Parents Education Status

From an early age children engage in learning and parents are their first teachers.Parental involvement describes the participation of parents in the education

of childrenusually with the intention of enhancing their social and academic

achievement (Fishel&Raimirez, 2005).

Research shows that parent's level of education is significantly related to their

pupil'seducational achievement. According to Anamuah-Mensah*et al*. (2007)

educated parents tend to value their children's education more, buying books and

other supporting materials, helping them with homework and advising them on career

options. In studying factors affecting low academic performance, the educational

levels of parents become crucial in an understanding of the phenomenon.

Table 4.2: *Parents education status*

	Educated%	Literate%	Illiterate%	Cumulative %
Father's education status	26	52	22	100
Mother's education status	7	61	32	100

Above table 4.2 shows that 52% father and 61 % mother are educated. Only

26% fatherand 7% mother are educated. Adversely 22% father and 32% mother are

illiterate. This shows that education level of sampled student's parents is low.This

result reflects the low education rate in study area. Thus,they may not be good role

models for their children in academic matters.Desarrollo (2007) indicated that the

extent to which parents or other family members are actively engaged in a student's

education had appositive influence on the student's achievement

To see effect of parent's level of education in student's achievement researcher

conducted FGD, interview and questionnaire.

Table 4.3: *Students view*

Question	Never (low 20%)	Seldom (20-40%)	Sometimes (40-60%)	Often (60-80%)	Always (above 80%)	Mean Score	Result

How often does your parents guide you to study in home.	36	29	24	11	0	2.1	NF
How often does your parents check your note copy and give feedback?	42	32	22	4	0	1.9	NF

From above table 4.3, 36% parents never guide their children to study at home and 29% parents seldom guide their children to study at home. Only 24% parents sometime guide their children to study at home. Furthermore 11% parents often guide their children to study at home. Similarly, 42% parents never check note copy and give feedback and 32% parents seldom check note copy and give feedback. Only 22% parents sometime check note copy and give feedback. Furthermore 4% parents often check note copy and give feedback.

The researcher also analyzed mean score of affect of home environment in mathematics learningin SPSS. Mean score of parents guidence at home was 2.1 which indicates that parens guidence at home was not favorable. Also mean score of parents check note book and giving feedback at home was 1.9 which indicates parents check note book and giving feedback at home was not favorable. We conclude that not educated parents could not guide their children at home also they could not check note cope and give feed back. Thus home environment effect their children to study mathematics and other subject.

Parental Income

Low incomes of parents may have an impact of failing to pay school fees, buying school uniforms and other scholastic requirements needed for students and eventually causing students to become truants, a factor that that also links to poor academic performance.

The information regarding the annual income of parents is given in the table 4.4.

Table 4.4: *Parental income*

S.N	Income level	Income range(annually)	Num. of parents
1	Low	Below 50,000	35.6%
2	Medium	50,000-1,00,000	56.7%
3	High	More than 1,00,000	7.8%

From the table 4.4 it is observed that, 35.6% students from low family. Moreover, 56.7% students from medium family.Furthermore 7.8% students from high family. This shows that governmentschool has more students from medium family and low family. To find out effect of economic status in achievement in mathematics, the researcher conducted FGD, interview and questionnaire.

Table 4.5: *Students view*

Question	Never (low 20%)	Seldom (20-40%)	Sometimes (40-60%)	Often (60-80%)	Always (above 80%)	Mean Score	Result
How often does	3.3	12.2	21.1	60	3.3	3.5	F

your parents provide reference book, note copy and other study materials?							
How often do you take tuition, coaching for difficult subject	5.6	13.2	22.2	51.1	7.8	3.4	F

From above table 4.5, 3.3%% parents never provide reference book, note copy and other study materials to their children and 12.2% parents seldom provide reference book, note copy and other study materials to their children. More over 21.1% parents sometime provide reference book, note copy and other study materials to their children. Furthermore 60% parents often provide reference book, note copy and other study materials to their children and 3.3% parents provide reference book, note copy and other study materials to their children. Similarly, 5.6% parents never allow to take tuition, coaching and 13.2% parents seldom allow to take tuition, coaching. Moreover 22.2% parents sometime allow to take tuition, coaching. Furthermore 51.1% parents often allow to take tuition, coaching and 7.8% parents always allow to take tuition, coaching. The researcher found students from low income family has low achievement. In addition, low achiever student answered that their family never provide reference book, note copy and other study materials and allow tuition. So we conclude that parental income affect on students achievement.

The researcher also analyzed mean score of effect of parental income in mathematics learningin SPSS. Mean score of parents provide referencebook, note copy was3.5 which indicates that parens parents provide referencebook, note copy was favorable. Also mean score of parents allow for tuitionwas 3.4 which indicates parents parents allow for tuition was favorable.

Chapter V

Summary, Findings, Conclusion and Recommendations

The preceding chapter has presented the results of the factors affecting performance in mathematics. This chapter highlights the main findings of the study and the overall study conclusions and implications of the study findings. It also provides concrete recommendations on what needs to be done based on the identified factors responsible for the poor academic performance.

Summary

The study was concerned with the causes of poor performance in mathematicsof Bardiya district. Poor performance in mathematics is a problem not only in Nepal but also in the worlds. For this research, researcher used questionnaire, interview, FGD and classroom observation to collect data. The researcher applied survey research design where the researcher employed cross-sectional survey.

To fulfill the objective of the study the researcher selected three schools by Purposive sampling technique. 90 students were selected by simple random sampling from grade ten. The selected school's mathematics teachers are also the sample of the study. The data of the study were collected from students, teachers by questionnaire and interview schedule. For the analysis and interpretation of the result, descriptive analysis technique (frequency, percentage and average value) was adopted. Also some qualitative data were gathered from the help of observation and FGD organized in three of the sampled schools with each of the sampled students.

After analysis and interpretation of the obtained data the researcher found that there is strong association with causing variables and mathematics achievement. The variable like pre-knowledge of students, practice and participation, teacher's training and implication, method, motivation and materials, teaching learning environment of

the school, home environment of students etc. directly affect student's mathematics performance. At last low student performance is the function of weak academic foundation of students, poor assessment and promotion practices, poor teacher management.

Findings

Over the past few years, concerns have been raised about the poor academic performance of students in mathematics. The situation raises questions about the depth of understanding of factors affecting the low performance of students in mathematics. The study therefore sought to examine factors responsible for the low academic achievement of students and to suggest strategies that may help to improve student's academicperformance. More specifically, the research has identified teacher relatedfactors, student factor, homeenvironment, classroom environment aresignificantly affecting student's academic performance.The findings of the study on the basis of analysis of the collected data are as follows.

FindingsBased on Student Factor

) The researcher found poor condition in mathematics at observed schools of Bardiya district.

) Students had shown negative attitude towards mathematics. Such as; I have fear in mathematics, mathematics lessons are boring and difficult. They don't like doing mathematics more than any other subject. So the researcher found that Psychological impact of the students towards mathematics isa difficult subject.

) Students have problem in prior knowledge of mathematics and interrelation between past knowledge and present achievement, i.e. the students

wereweaker in mathematics in lower classes soprior knowledge could not support present achievement.

) Class regularity is essential part for student to learn. The student who is regular in school, generally he can solve mathematics problems and the student who is not regular in school, he has a problem to solve mathematical problem.

FindingsBased on Teacher Factor

) Preference of teachers on particular instructional strategies affects the level of their teaching performance.

) Motivation in classroom is the key factor to encourage students in mathematics study. But research shows thatmotivational treatment had not applied to encouraging students in teaching.

) There was lack of relevance of many of the training components to the real needs of teachers and demand of actual classroom situations they might face.

) Teacher did not use all method of teacher training. Research shows that teacher often attended teacher training and returned to their school with no obligation or expectations that they would use or even share the information.

Findings Based on Class Environment

) The average class size of the sampled schools for this study was 91 students per class. This indicates that class size was very big. So class size is a factor contributing to secondary school student's poor performance in mathematics.

) Availability of infrastructure was satisfactory in observed school. This indicates that availability of infrastructure was not a factor contributing to secondary school student's poor performance in mathematics in observed school.

) Teachers were unknown about use of ICT material in mathematics teaching.

) Although most of the mathematics teachers believe that teaching mathematics needs resources butthey did not use any, other than the white board and text book.

Findings Based on Home Environment

) Researcher found that education level of low achiever student's parents was low.

) Parent support plays important role on mathematics achievement. Those students whose parent supports them regularly had highest achievement then that of others.

) The parent, whose education level was low, could not guide their children at home also they could not check note copy and give feed back.

Conclusions

Following conclusions have been drawn from the analysis of finding;

Student related factor such as prior achievement, student's attitude towards mathematics, class regularity and homework had strongly effects on achievement in mathematics. It concludes that student related factor is very essential for increasing the mathematics achievement. Teacher related factor such as implication of teacher's training, teacher's behaviour, teaching method, classroom motivation are major influence on poor performance in mathematics teaching learning. Therefore all mathematics teachers improve in these variables to teach better.Classroom environment such as class size, use of teaching material and ICT and availability of infrastructure are also major effect on poor performance in mathematics teaching learning. When class size is small and teacher use teaching material and ICT in classroom, students can learn easily.

Recommendations

After concluding this research, the researcher would like to suggest some recommendations for the educational implication and further study to improve poor performance in mathematics.

- Teachers should identify the pre-mathematical knowledge of students while teaching every unit. Also teacher and school should focus on better teaching learning activities and achievement from lower level of school not only in class 8 or SEE.

- Teacher training should be given in demand base.

- The Ministry of Educationshould provide training on use of ICT and teaching material to the secondary level mathematics teacher and also should encourage touse of ICT and teaching material in class room.

- The Ministry of education and schools managements should motivate teachers especially after the release of examination results. This includes recommendation for promotion.

- Parents should attention about their children. They have to look about how their children are doing in mathematics, they are doing their homework or not. They have to provide enough time to study at home and also have to visit school at least once in a month to see their children's progress.

- The study was confined to few of the factors that can influence secondary school student's performance in mathematics. Further and related studies on other factors are recommended to be conducted.

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Appendix I

विद्यार्थीको लागिप्रश्नावली

प्यारा विद्यार्थीभाई बैनीहरु,

तपाईको प्रतिक्रियागोप्य राखिनेछ र अनुसन्धानकार्यको लागीमात्रप्रयोग गरिने छ, र अरुकुनै उद्देश्यको लागिप्रयोग गरिने छैन ।त्यसैले स्वतन्त्रतापूर्वक सत्य जवाफदिनुहोला ।

विद्यालयको नाम ....कक्षा............

तपाईको कक्षामाविद्यार्थी संख्या........................

गतवर्ष गणीत विषयको अन्तिम परिक्षामाप्राप्तांक:.............................

बुवाको शैक्षिकअवश्था:

आमाको शैक्षिकअवश्था

परिवारको आर्थिक अवश्था:

क्र.स	प्रश्न	कहिलेनाई (२०%भन्दाकम)	विरलै (२०-४०%)	कहिले काहिं (४०-६०%)	प्रायजसो (६०-८०%)	सधै (८०%भन्दाबढी)	कैफियत
१	तपाईकतिनियमितविद्यालय जानुहुन्छ ?						
२	गृहकार्य प्रायकतिको गर्नुहुन्छ ?						
३	तपाईको शिक्षकले गणित शिक्षणमा ICT र शैक्षणिक सामाग्रीको प्रयोग कत्तिको गर्नुहुन्छ ?						
४	तपाईकक्षाकार्यमाकत्तिको सहभागी हुनुहुन्छ ?						
५	तपाईकक्षामा साथिहरु संग छलफल कत्तिको गर्नू हुन्छ ?						
६	तपाईकक्षाकार्यमाकत्तिको सक्रृय हुनुहुन्छ ?						
७	तपाईको अभिभावकले घरमाकत्तिको सिकाउनु(मार्ग दर्शन) हुन्छ?						

८	तपाईको अभिभावकले कत्तिको नोट कपि हेर्नुहुन्छ र प्रतिकृया दिनु हुन्छ?						
९	तपाईको अभिभावकले शन्दर्भ सामाग्री, नोट कपि र अरु शिक्षण सामाग्रीकत्तिको किनिदिन हुन्छ?						
१०	तपाई गणित विषयको ट्युशन, कोचिङ कत्तिको लिनुहुन्छ ?						

११. गणित प्रतिविद्यार्थीको स्वभाव/डर

विचार	अत्यन्त सहमत	सहमत	अनिर्णीत	असहमत	अत्यन्तअसहमत
मलाई अरु विषयभन्दा गणित धेरै मन पर्छ					
मलाई गणित देखि डर लाग्छ					
गणितका पाठहरु झ्याउलाग्दा हुन्छन					
गणित जिवनमाउपयोगी हुन्छ					
दैनिकजिवनकालागि गणित आवश्यक छ					

शिक्षक सम्बन्धितकारक

१२. तपाईलाई पढ्न प्रोत्साहनगर्नको लागितपाईको शिक्षकले के गर्नु हुन्छ ?

    क) मैले प्रत्येक पाठ बुझेको निश्चितगर्नु हुन्छ ।

    ख) मलाई थप ट्युशन पढाएर सहयोग गर्नु हुन्छ ।

    ग) मेरो शिक्षामा म के गर्न सक्छु भनेर बताउनु हुन्छ ।

    घ) जब मैले राम्रो गर्छु प्रशंशागर्नु हुन्छ ।

    ङ) केहिपनीहोईन, मेरो ख्यालगर्नु हुदैन ।

१३. तपाईको शिक्षकको विद्यालय/कक्षामाकामगर्ने बानिको कसरी बर्णन गर्नु हुन्छ ?

क) धेरै मेहनती

ख) मेहनती

ग) सामान्य रुपमाकामगर्नुहुन्छ

घ) अल्छि

ङ) शिक्षणको बारेमाख्यालगर्नु हुदैन

१४. तपाईको शिक्षकले प्रायकुन शिक्षण विधीप्रयोग गर्नु हुन्छ ?

क) प्रबचनविधी

ख) सानो समुह छलफल विधी

ग) प्रदर्शन विधी

घ) समस्या समाधानविधी

ङ) अन्य:

Questionnaire for Students

Dear students,

Your response will be keeping secret and will be used only for research study and not for any other purpose. So please feel free to give true facts.

Schools Name ……………………………Class……………………..

Number of student's in your class……………………

Marks in mathematics of previous year final examination:………………………..

Father's education status:

Mother's education status:

Economic Status:

S.N	Question	Never (low 20%)	Seldom (20-40%)	Sometimes (40-60%)	Often (60-80%)	Always (above 80%)	Remarks
1.	How regular do you go to school?						
2.	How often you do your homework ?						
3.	How often your teacher do use ICT and other teaching material in mathematics teaching ?						
4.	How often do you aactively participate in class work ?						

5.	How often do you involve in Peer discussion in class room ?						
6.	How often do you actively participate in class work ?						
7	How often does your parents guide you to study in home.						
8	How often does your parents check your note copy and give feedback?						
9	How often does your parents provide reference book, note copy and other study materials?						
10	How often do you take tuition, coaching for difficult subject ?						

11. Student's attitude/fear in mathematics

View	SA	A	UN	D	SD
I like doing mathematics more than any other subject					
I have fear in mathematics					
Mathematics lessons are boring					
Mathematics is useful in life					
Mathematics is essential for daily life					

Teacher Factors

12. What do your teachers encourage you to study?

    a) Makes sure I understand each lesson

    b) Help me with extra tuition

    c) Explains what I can do with my education

    d) Praises me when I do good

    e) Nothing. Does not care about me

13. How would you describe your teacher work habit in school?

    a) Very hardworking

    b) Hardworking

    c) Works normally

    d) Lazy

    e) Does not care about teaching

14. Which teaching method do your teacher frequently use?

    a) Lecture Method

    b) Small Group Discussion

    c) Demonstration Method

    d) Problem Solving Method

    e) Other

Appendix III

Interview Guideline For Teacher

Name: Date:

Qualification: Sex:

Training:

Experience:

Teaching Level:

Number of student's in class:

1) Teacher training and its implication in classroom.

2) Teaching method.

3) Use of teaching material and ICT in mathematics teaching.

4) Availability of infrastructure.

5) Work load and its effect on mathematics teaching.

6) Low performer student's attitude in classroom.

7) Low performer student's performance in classroom.

8) Use of homework and class work.

9) Causes of low performance in classroom.

10) Recommendation to mitigate low performance of students in mathematics.

Appendix IV

Focus Group Discussion Guideline

1. Peer interaction

) Discussion about the peer interaction in the classroom.

) Participation of the student in the classroom about the interaction.

) Participation of the student in the class work

2. Class size

) Suitability about the teacher and students ratio.

) Class size according to the no. of the students.

3. Attendance in the class and school

) Student regular in the class

4. Teacher's behavior

5. Teaching method, Teaching material and use of ICT

6. Student's attitude/ fear in mathematics classroom and subject.

7. Parents Status

) Economic status

) Education Status

8. Mathematics study in the home

) Time spend in the study at the home.

) Guidance of parents to their children

9. Causes of poor performance

10. Recommendation to mitigate poor performance from students view

Appendix V

S . N	Description	Low 1	Moderate 2	Satisfactory 4	Good 5	Excellent 6	Remarks
1	Teacher's Personality/Behaviour						
	Neat and clean						
	Self confidence						
	Clear voice						
	Language						
	appearance						
2	Initiation of the topic/ class motivation						
	Class management						
	Motivation class						
3	Presentation						
	Knowledge of the subject matter						
	Order of the presentation						
	Appropriateness of examples						
	Relation of the curriculum						
4	Student activity /performance						
	Student participation						
	Question answer						
	Discipline						
	peer discussion						
5	Use of the instructional materials						
	Clear visible						
	Clear understanding						
	Related to the topic						
	Appropriately used						
7	Teacher activities						
	Lecture						
	Demonstration						
	Encouraging students						
8	Appropriateness of teaching method						
9	Class room environment/ Availability of						

	infrastructure					
	Desk, bench					
	Projector/ICT material					
	white board					
	Seating management of students					