DETRIMENTAL FACTORS FOR POOR PERFORMANCE IN MATHEMATICS

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KESHAB PRASAD POUDEL

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KESHAB PRASAD POUDEL

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LATTER OF CERTIFICATE

This is to certify that Mr. Keshab Prasad Poudel, a student of academic year 2064/065 with campus Roll No. 271 thesis No 1150, Exam Roll No 281899 T.U. Regd No 9-2-240-115-2000 has completed this thesis under my supervision for the period prescribed by the rules and regulation of Tribuvan University, Nepal. The thesis entitled "Detrimental factors for poor performance in mathematics" has been prepaid based on the result of his survey. I, here by recommended and forward this thesis for the evaluation as the partial requirement towards the Degree of Master of Education.

_____ _____

(Mr Abatar Sudedi) (Assot. Prof Laxmi Narayan Yadav)

Supervisor Head

Latter of Approval

A Thesis

Submitted

By

Keshab Prasad Poudel

Entilted

"Detrimental Factors for Poor Performance In Mathematics" has been approved in partial fulfillment of the requirement for Degree of Masters of Education.

Committee for the Viva-voce Signature

Assot .Prof. Laxmi Narayan Yadav

……

(Chairman)

Prof. Dr. Hari Prasad Upadhyay

……..

(Member)

Mr. Abatar Subedi

(member)

……..

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Abstract

This is the survey research related to find the detrimental factors for poor performance in mathematics learning. The main objective of this study was to identify detrimental factors responsible for poor performance in mathematics at secondary level and to find the strategies by school mathematics teacher to improve achievement in mathematics. This survey studies the secondary level mathematics achievement in six schools of Chitwan district. This study also focused on inside school factors and out of the schools factors which are responsible for poor performance.

Stratified random selection of secondary schools with sample size 200 students and 6 secondary level mathematics teachers and 6 Head teachers were selected to participate in this study. Two research instruments, structured questionnaire for the students and interview schedule for the teachers and parents were the major tools for this study. To indentify the factors 33 items in questionnaire were used. The achievement score were obtained by schools sources then the score were judged and statistically analyzed in order to find out the detrimental factors for poor performance in mathematics.

After collecting the data from survey the data were analyzed using mean. Finding showed the students had influenced of various kinds of determinants in learning mathematics. In this research it was found that teaching learning process and time variable was more responsible than other variable. The research finding brought some meaning implications to the teaching and learning of mathematics at secondary level.

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Chapter I

INTRODUCTION

This research focused to find the detrimental factors for poor performance in mathematics in Chitwan district. Thus this chapter includes background of the study, statement of the problem, objectives of the study, significance of study, delimitation of study and definition of keywords.

Background of the study

Mathematics is the backbone of the community development. It is believed that the development of mathematics and development of civilization go together. Mathematics has lead the development of various subjects, vocations and technology nowadays mathematics is used throughout science, engineering, medicine and the social science. Mathematics not only practiced through the formal institution, the contemporary societies have been practicing it with own ideas and believes. Applied mathematics, the branch of mathematics concerned with application of mathematical knowledge to other fields. Numerology is considered as application in that it held a mystical view of numbers. Mathematician are also engaged in mathematical examinations and mathematics for its own shake, without having any application in mind, although practical applications for what began as pure mathematics are often discovered later.

In the field of teaching and learning, mathematics is the important aspect. Statistics have shown difficulty in teaching and learning of mathematics. According to the district education office of Chitwan the GPA of Chitwan district in mathematics is 2.206 in the result of SLC 2072. Mathematics in particular has resulted in mass failure

in examination. The mass failure in mathematics examination is real and the trend of the students has been declined.

There is a major problem in the field of mathematics instruction created by the different aspects. Most of research has indicated that in a context the teaching and learning process is very critical. The present day teaching of maths is far from being satisfactory. Everybody has a complaint against the teaching of maths. It is dull, boring, difficult and useless from the point of view of the learners. It is too remote from interest of students. Furthermore describing the real reason of failure mathematics, Butler and Wren (1965) writes, there is however good reason to believe that in most cases that real reason for much of the failure in maths is poor motivation and failure to provide clear insights in to the meaning and method of the subjects. Probably much of the unsatisfactory work in maths, and the dissatisfaction with which students view the subjects, can be traced to the fact that it has not been thought to them in such a way as to excite their curiosity and present them with and intellectual challenge but as a rather dull job to be done. Supporting this idea CERID states that "most of the teaching in secondary school consists of lecturing, rote memorization and group reciting." The causes of the most of these are connected with lack of training among the teachers, large class size in urban areas and poor physical facilities in rural school.

Learning mathematics may not be easy, and large number of students fails to developed an adequate understanding of mathematics concept, logically reasoning and problem solving skills. The lack of understanding in learning mathematics often causes discouragement among the students, which in variably lead to poor performance. A number of factors have been put forward to understand why mathematics learning is difficult. Mathematics language visualization abilities,

ineffective instruction poor reasoning skills are also another area of concern among secondary school students. Many are unable to extract necessary information from given data and many more are unable to interpret answers and make conclusions. Traditional approaches in learning mathematics emphasize more on how much the students can remember and less on how well the students can think and reason. Thus learning become forced and seldom brings satisfaction to the students.

School mathematics curricula of Nepal have given emphasis on mathematics learning from the beginning of schooling. There are mainly three issues in teaching and learning mathematics in reference to Nepalese schools. They are emphasis on learning mathematics, contextualization of learning mathematics and change from the traditional one -way class room to two- way interactive one.

While talking about the emphasis on teaching and learning mathematics, the curricular objectives are still insufficient to address the aspects of the changing context. Firstly, the curricula do not have a focus on “commutation”. According to the National Council of Teachers of Mathematics, importance and use of commutation in a mathematics class room is necessary to increase students reading, writing , discussing, representing and modeling mathematics. When students communicated their ideas, they learn to clarify, refine and consolidate their thinking (Perry2001). Secondly the curricula also lack an emphasis on “spatial reasoning”. Spatial reasoning haves to developed the understanding of everyday application. For example giving and receiving directions and reading maps, understanding of two and three dimensional objects, working with coordinates and graphing (Lindquist and Clements.2002)

Statement of the Problem

In the teaching and learning of mathematics personally the researcher have feeled too difficult for its application and comprehension. Being a mathematics teacher, the researcher never been satisfied by himself towards teaching in mathematics. The poor performance of students in mathematics in particular has been a thing of concern to mathematics educators, parents and government. The SLC exam annual reports in mathematics are good testimonies of those facts. It has been depicted in various achievement in mathematics in Nepal is relatively low and unsatisfactory. There is a deeper relation between achievement and learning variable. As mathematics is emphasized like language, most of student feels it as a difficult subject. By this problem the great deal of time, money. Effort and manpower of the nation have been wasted. And it seems that it is affected by various factors like home and school environment, physical facilities, attitudes towards the subject, peer groups, teaching and learning process equipment etc. we cannot achieve the expected goal without improving appropriate management of above mentioned factors of facilities in the student learning. Thus, the following research questionnaire were considered for this study.

- Does the school related factors affect the student's achievement in mathematics?
- Does the out of school factors affect the students achievement in mathematics?

Objectives of study

The following were the objectives of this study

- To identify the detrimental factors for poor performance in mathematics at secondary level.
- To find the strategies taken by school mathematics teachers to improve achievement in mathematics at secondary level

Significance of Study

Each and every research has significance. This research is completely aimed to find those factors that are related to the difficulties in the instruction of mathematics. Not only to point out the factors, it also suggested the ways to minimize the problem and what to be done this aspect. In the field of mathematics education this research is a step to analyze the effective way of instruction strategies and to take the action over its obstacles. Nowadays mathematics is the most hazardous to learn and teach. Thus in this circumstances my study is a supportive documents to teach math in a effective and productive manner. It will be fruitful for the stakeholder and agencies to step further. In short, following are Significance of the research

- This research revealed the detrimental factors for poor performance in mathematics which helps students to improve their achievements by minimizing the effect of these factors.
- This research suggested to the teachers and guardians to minimize the failure rate of students by giving appropriate environment inside and outside the school.
- This research helped to guide the curriculum planner, text book writer and policy maker to make the favorable curriculum, contents to the students.

Delimitation of the Study

This study was delimited under the following aspects.

- Only the public and private school if chitwan district were selected
- It is limited to compulsory mathematics
- The study is based on quantitative study.
- This study is limited only the response of head teacher, mathematics teachers, parents and students.

Operational Definition of the Terms:

The terms related to this study were defined as follows

Public School

The school that are established by community or government of Nepal and overall budget for the development and maintenance is provided by government is called public school

Private School

The school that are established by a person or group of person where ever development of school depends on school's income sources is called private school

School environment:

School environment means the internal and external surrounding of school from where the students learn something each day

Class size: class size means number of students in mathematics class

Detrimental factors: In this survey detrimental factors means school related factors (physical facility, teacher's behavior, peer's behavior, teacher's qualification, interest of students and teaching methods) and out of school factors (social variable, family background and time variable) are considered.

Physical facility: The facilities that provided by school like classroom size, play ground, number of benches according to number of student teaching materials are considered.

Chapter II

REVIEW OF THE RELATED LITERATURE

The review of related literature deals with the theories of research studies which have

been carried earlier. It helps to conduct the new research in systematic manner by providing the outline of research study and avoid the unnecessary duplication. Review of related literature is an essential part of research for the researcher because literature helps and guides research to meet theoretical way for the study literature provides authentic and string knowledge mainly the literature are previous thesis, book and journals, different sources use to site literature to make the research effective and truly new researcher had studied the different research found in the mathematics education department on his topic researcher has found some of research which just indicates the problem but researcher had tried to research on the strategies that can be taken as a remedial tools. In this regard the following were the related literature in this study.

Ghimire (1997) studied on a "A study on factors affecting teaching /learning mathematics at secondary level" with the objective to study the factors affecting in learning of school in terms of school environment, family backgrounds, motivational factors, physical facilities, interest of the learners, instruconal materials. The tools for the study were administered to the sample of ninety students and T-test was applied to conclude the result that, home environment affects the subject on rural areas and girls were affected more than boys. The student of Katmandu were more motivated to study mathematics than that of Arghakhanchi and chitwan

Similarly, Yadav (2001) did a survey type research carried out on topic. “A study on the effectiveness of the primary school teachers of the district of sirha” with the objectives to explore the extent of effectiveness parameters in determining the effectiveness of primary school teachers and compare the effectiveness of primary school teachers. Twenty-eight teachers (twenty-two trained six semi-trained teachers) were as samples. Questionnaires were prepared to solicit the opinions of the teachers. A classroom observation from was also developed to record the classroom situation and activities. U- test and Z-test were applied to conduct that teachers were found to be effective. The effectiveness of urban teacher was not found to be significantly different from those of rural teachers.

Poudel (2001) did a research work on “a study on the effectives of class work while teaching geometry at the secondary level” with aim to investigate if the class work turn to be effective while teaching mathematics. The researcher conducted experimental study. The researcher thought mathematics to both the groups (experimental and control group). The experimental group was taught the units class was entwined with the regular classrooms whereas the control group was kept detached as far as possible classroom work activities. An achievement test was given. The T-test was concluded that experimental growth did better than control group.

Subedi (2005) studied on factors affecting failure in mathematics in S.L.C. examination. The measure finding of the study are given below.The variable school environment has strong positive effect on the failures on mathematics achievement. The variable classroom teaching and time variable have a positive effect on the

mathematics achievement. The physical interest of the learners has low positive effect on mathematics.

Pandey (2008) did his thesis on "cause of low achievement in math" at Rupendhi district. It was a case study of six students of Nayagaun secondary school Butwal by using the school documents, observation note and interview he made the conclusion that traditional teaching is one of the major causes.

Giri (2008) "a critical analysis of SLC compulsory mathematics score 2063" intending well educational outcomes that state has finance large amount of money as well as guardian also have invented their children education, but the result of S.L.C. is still poor. Mathematics is being the measure causes of make student failure. There is a saying that the course content, the way of managing circumstances, evaluation system all are within the favor advantages group, which always ignore the marginalize and deprived group. Almost all research finding have shown that there is not a unique determination, with affects students' achievement. Factors on variable such as student's gender, as parents education , occupation location of school, students religion, eco-status, teaching skill, environment, class size, medical of instruction are supposed to be most influencing factor in mathematics achievement. This study was carried out with the view of finding among all variable state about which variable is most influencing

Bhatta (2011) conducted the research on "course of failures in math at grade VIII". For the study of this case he did survey with using the tools questionnaire, and interview among the 40 failures students of kavre district. His conclusion was

different variable like teacher training, home environment, socio-economic status of family, materials used in teaching learning activities are responsible to this less achievement in math

Baral (2011) has studied entitled "cause of failure in mathematics in SLC Examinitation (A case study of school in Bharatpur). In study he found School related factors are associated with school environment, physical facilities, teacher's behaviors, peer's behaviors, managed library, classroom environment , regularity of teachers and students, Instructional teaching materials etc. and out of school related factors are associated with family background, interest of learners toward mathematics, amount of time that student spent on school activities such as leisure reading , homework, discussion with peers, economical condition, motivation etc effect mathematics achievements through qualitative as well as descriptive research. With the objective to explore the main cause of failure in mathematics in SLC examination and to suggest the main cause of be improvement in result by finding the improvement. Programmers that can be carried out in school level. The population of this study students failure in mathematics in SLC examination of 2066 B.S. in public school of Chitwan district. The tools for the study were administered to the sample ofeighty students of eight school in which forty boys and forty girls from population of the student failure in mathematics in SLC exam which concluded the following result:

- The student were found to be indifferent in study because the same teacher who taught more than two subjects(i.e. comp. mathematics, science, Opt. math)

- The mathematics teacher was unable to address for varied cognitive levels students in class room while teaching.
- The school was trying to reduce problem of mathematics failure by managing extra classes in the evening.

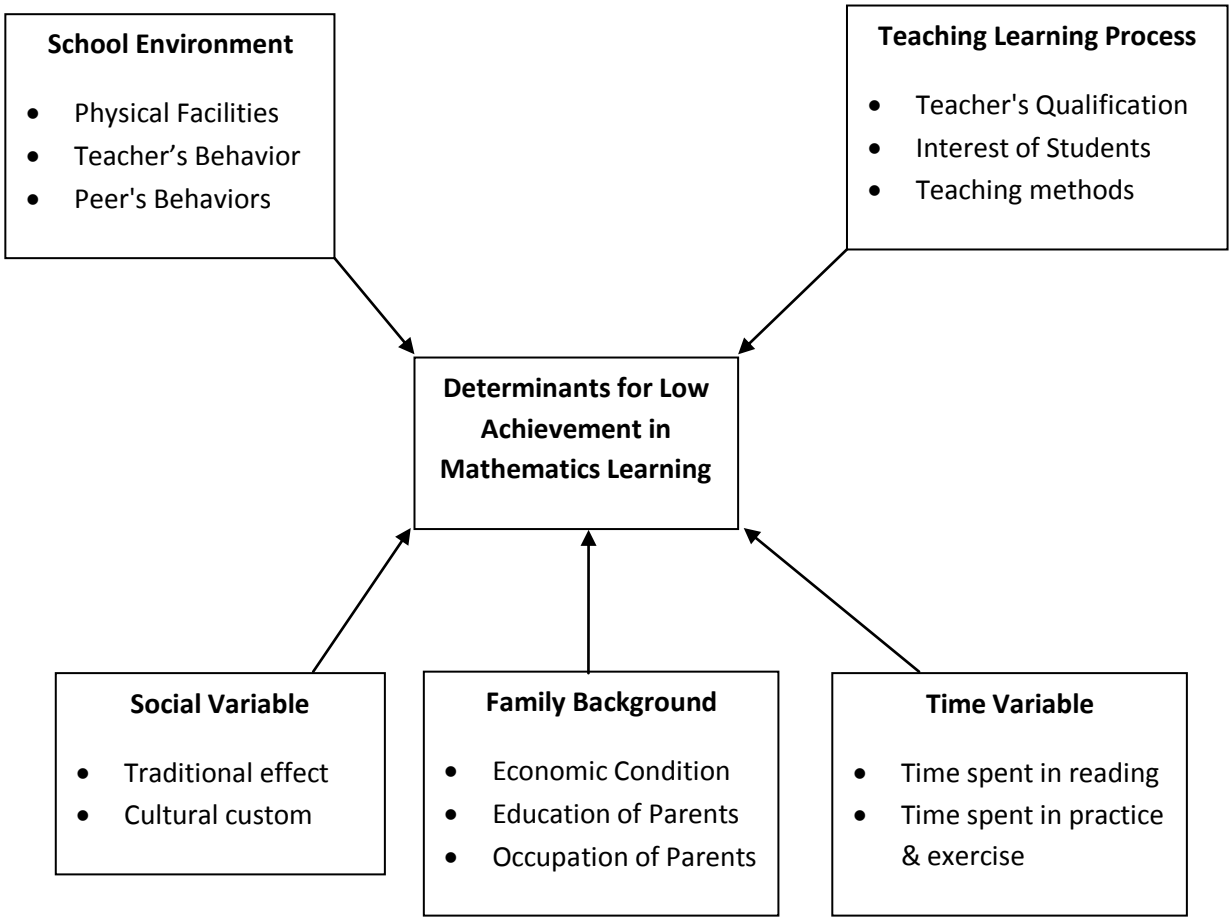
Mbugua(2012) studied on "factors contributing to students poor performance at Kenya certificate of secondary education in Kenya, a case of Baringo country, Kenya" with objectives to determine the school base factor that effect student performance in mathematics in secondary school, to establish socio-culture factors that affect student performance in mathematics in secondary school to establishment student personal factors that affect student performance in mathematics in secondary school the researcher used sample survey design in this study. In this study 1718 from 26 school 32 mathematics teachers and 26 head teachers were taken as a sample of the study, questionnaire are the tools of this research and descriptive statistics were used to analyze the obtained data. The researcher found that, the gender of the participation in the study where males were the majority in all categories, most of the teacher are trained but the over work load of teacher create problem in planning for teaching and the socio- economic factors, guardians education income of guardians, cultural factors affecting secondary school students performance in mathematics at Kenya certificate of secondary education (KCSE). In this research he concluded that factors contributing to poor performance include under staffing, inadequate teaching materials, lack of motivation and poor attribute by both teachers and students, retrogressive practices. Improving on these factors and sensitization of the local community to discard particles which prohibit student effective participation in learning mathematics could improve performance in mathematics.

Above Literature mainly focused on the causes and factors of low achievement students. In the past it was practiced researching about the causes of failure of students in mathematics. To improve the learning not only findings, causes of failures in low achievements but here needs to find effective factors of learning mathematics. So I was interested to find the affecting factors of learning. Still the researcher is unable to address the factors effecting mathematics at grade 10. The previous researcher has addressed only compression of public school and private schools marks results. by comparing that the researcher has shown better result of private school in the comparisons of private school. It was found that there is a gap between causes of failure and low learning. Thus to fulfill this gap this research has been conducted.

Conceptual Framework

As discussed above related literature achievement of mathematics may depend upon different variables. Generally achievements of mathematics are influence by school environment, home environment, social system, personal behavior, time variable and error in problem solving. Under the school environment physical facilities teachers' qualification, number of students in class and teachers behaviors was discussed. The variable home environment consists of parent's education, economical condition and parent's occupation. The variable related to school environment consists of physical facilities, teacher's behavior and peers behaviors. Similarly teaching learning process consists of teacher's qualification and interest of students. Social variable consist of traditional effect and cultural custom. Time variable consists of time spent in learning and time spent in exercise and practice. The conceptual framework with related factors are developed as follows

Chart: Chart of Factors for Low Achievements in Mathematics Learning



Source: Research on school related and out of school related factors (Fraser, 1994)

To make the more concept about the above chart researcher made tools. Questionnaires are the main tools of this study. To clearly the concept researcher prepared 10 questions for the statement school environment is a factor for poor performance. Similarly 10 questions for the teaching learning process 4 questionnaires for social variable, 5 questionnaires for family background and 4 questionnaires for time variable. Later the score obtained from the students were analyzed using mean and explained each result.

Chapter III

RESEARCH METHODS AND PROCEDURES

This chapter includes design of the study, study area, sample of the study, data collective tools, observation note, interview schedule, questionnaire, data collection procedure and data analysis and interpretation procedures

Design of the Study

Thus research design of the study was survey. To explore the detrimental factors for poor performance in mathematics at grade X, quantitave research design was adopted in general and the survey research design was followed in particular. Questionnaires for students were analyzed using average value, which is directly and indirectly related to the school and out of school factors. The study was designed to determine the factors affecting learning mathematics in private and public school. Later it was qualitative to describe the findings. Researcher used interview schedule. The design of research is authentic by quantative research.

Study Area

The Study was depended on private schools Samata Shiksha Niketan, Chitwan English secondary boarding school and Step by Step English secondary boarding school and public schools, Ramnagar Secondary School, Bal kumari Kanya higher secondary school and Prem Basti higher secondary school in Chitwan for grade X students on the academic year 2073.

Sample of the study

First of all the list of secondary school prepared from the list maintained by the district education office, there are 205 secondary schools in Chitwan district including public and institunal. But the researcher chooses only six schools altogether, 3 from Public and 3 from private schools for random sampling. 200 students were selected from all schools, 6 head teachers, 6 maths teachers were taken for the research.

Data Collective tools

To collect the data for study. The researcher took different tools like school documents, observation notes, interview, and questionnaire. All the required documents like students achievement records, teachers' details marks ledger, extra curriculum activities was studied.

Observation Note

The data from observation consists of detailed description of the people activities, behavior, action and personal experience. The direct observation has the advantage of putting researcher into first hand contact with reality. It is usually possible to observe only individual or groups. The observation note was prepared to observe classroom activities and environment. For this researcher followed participatory observation.

Interview Schedule

The interview is one of the major sources of data collection, and it is also one of the most difficult ones to get right. In qualitative research the interview is a form of

discourse. According to Mischler (1986) its particular feature reflects the distinctive structure and aims of interviewing, namely, that it is a joint product of what interview and interviewers talk about together and how they talk with each other. The record of an interview that we researcher make and use in our work of analysis and interpretation in a representation of that talk. Two types of interviews were used in research that is individual and group interview.

In depth, interview was used basically in qualitative study design with the same respondent several interviews will take in different times. The term in depth it suggests that one after another interview, new themes, perspective or issue will explore and these newly generated themes issues be followed in the next interview. So in-depth interview attempts to draw very inner meaning of phenomenon from the perspective of the respondent. It was taken periodically in different circumstance of the respondent but the settings all the time was natural. It was administered to know head-teachers, mathematics teacher, parents and students view about the factors contributing to student's poor performance in mathematics.

Questionnaire

At first the researcher developed the tools by himself and discussed with expert and thesis guide to make it more convenient. By receiving the feedback from experts, the tools was developed for the students. With the help of mathematics teachers and Head teachers of selected school the researcher collected the data from the students. After receiving the primary data it was tested and finalized.

Data Collection Procedure

Firstly, for the purpose of the study. The researcher selected school of Chitwan districts. For the research interview conduct to parents, head teachers, teachers and students to collect required facts. The researcher organized interview schedule in which parents, teachers, students and guardians about school facilities, motivation, Parent's role was discussed.

Data Analysis and interpretation Procedures

Data obtained through the research instruments were analyzed using Average value. to reduce the mistakes and it was easy to use, reliable, valid, easily available, economic and popular enough. Descriptive statistics were used to determine the frequency percentage. For the statements there were five options they are SA for strongly agree and weights for this options was 5marks. Similarly A for agree, U for unknown, D for disagree and SD for strongly disagree. The weights for these options were four, three, two and one respectively. Finally the researcher found the average value and describes the decision as favorable or not favorable to the statement. In this analysis if the average value is less than 3 then the decision is defined as not favorable to the statements and if the average value more than 3 then the decision is favorable to the statements.

Chapter IV

ANALYSIS AND INTERPRETATION OF RESULTS

This is a survey research sought to investigate the detrimental factors for poor performance in mathematics learning. The main objective of this study were to find school related factors and out of school related factors responsible for low achievement in mathematics in secondary level. Researcher randomly selected secondary school with sample size of 200 students. Two research instruments were used in this study. Structure questionnaires and interview schedule.

The obtained data were analyzed and interpreted under the following headings

- School environment related factors
- Teaching learning process related factors.
- Social variable factors
- Family background related factors
- Time variable related factors

School environment related factors.

There are many factors that directly or indirectly affect learning process. This study explored one factor that historically has received little attention by educational leaders. Researchers showed that planners should give serious consideration in designing learning environments outside of the traditional classroom, among with more attention should be given to exterior design of school building. The classroom lighting, color choices and windows play a significant role forming the learning environments. The teaching materials managed by school, library facility number of students in classroom, teachers behavior towards girls, poor behavior with their friends, collaboration, sharing of knowledge question answer between the teacher and students and roles, responsibilities and opportunities given by school and teachers to

the girls are main determining factors for learning mathematics. The following ten statements define the positive influence of school environment in learning mathematics.

Table no. 1: Statements Related to School Environment

S.N.	Statement	S.A	A	U	D	S.D	Average value	Decision
1	Teachers co-operative behavior is helpful to study mathematics	37 (18)	50 (25)	30 (15)	43 (21.5)	40 (20)	3.005	F
2	The teachers equally behave with weak and talent students	41 (20.5)	42 (22)	27 (13.5)	50 (25)	40 (20)	2.970	NF
3	The teacher equally behaves girls and boys.	67 (33.5)	30 (15)	25 (12.5)	52 (26)	26 (13)	3.300	F
4	The teacher helps students offer the class also	55 (27.5)	43 (21.5)	30 (15)	32 (16)	40 (20)	3.205	F
5	Teacher individually cares the students	17 (8.5)	41 (20.5)	39 (19.5)	75 (37.5)	28 (14)	2.72	NF
6	There is a provision of unit test after completion of each unit	45 (22.5)	75 (37.5)	19 (9.5)	36 (18)	25 (12.5)	3.395	F
7	Learning environment is better in classroom because peer's cooperative behavior	35 (17.5)	38 (19)	20 (10)	40 (20)	67 (33.5)	2.67	NF
8	There is sufficient number of physical facility	59 (29.5)	71 (35.5)	19 (9.5)	41 (20.5)	10 (5)	3.64	F
9	Size of classroom numbers of benches, are sufficient for student	19 (9.5)	62 (31)	13 (6.5)	65 (32.5)	41 (20.5)	2.765	NF
10	Students get opportunity to read additional book of mathematics in school library.	32 (16)	46 (23)	36 (18)	45 (22.5)	41 (20.5)	2.915	NF

(Parenthesis in the above table indicate the percentage of students)

The teacher's cooperative behavior is helpful to study mathematics has average 3.005 so it is favorable to the statements. It shows teachers cooperative behavior motivates the students to learn. If teacher does not cooperate the student then

there be less interest to the matter which affect mathematics learning. Similarly the statements two the teacher equally behave with weak and talent student is not favorable which means teachers give more attention towards talent student which course below average students to be dissatisfy and affect mathematics learning. The statements 3, the teacher equally behave girls and boys is favorable and it has the average value 3.300 it is the positive expect to learn mathematics. Similarly teacher helps students after the class also has the average value 3.205 which is favorable to the statements and the statement 5 that teacher individually cares the students has average value 2.72 which is not favorable. If teacher cannot pay proportional time for each students, mostly students be careless and performance would be decrease which affect mathematics learning. Statement 7 is related to peer's behaviors which have the average value 2.67 and not favorable to the statement. The students from different locality are there in school. The peer's negative behaviors make the students to feel humility which affect them to learn mathematics.

The statement 8,9 and 10 are related to school administration. The statements, there is sufficient number of physical facility has average value3.64 which is favorable to statement. Similarly statements nine, size of classroom number of benches are sufficient for students have average value 2.765 which is not favorable to the statement. It shows that uncomfortable sitting also affects the mathematics learning so it is also one of the detrimental factors in mathematics. Hence the most of the students are disagree with the statement students get opportunity to read additional books of mathematics in school library. This statement has average value 2.915 and not favorable to the statement. It means if student don't get chance to go library for additions knowledge they cannot show their performance well which affect the achievement of students. Do student get opportunity to study in library? According to

him "*we have small library, books may not be enough and we have not divide special time for library study but some of the students go to library during Tiffin time and leisure period.*" Interviews were taken with school mathematics teachers related to the statement class size and number of benches are sufficient for the students?. Mathematics teacher- "*anyway students are adjusted but according to the number of student the size of class room and number of benches are not sufficient. While writing students feel uneasy and for the teacher also it's being difficult to care individually*"

Most of the teachers view was that not only the school environment but the interest of the student also determines the result of mathematics. Some of the students are very curious to learn mathematics and they except more time and ideas from mathematics teacher but we have no leisure period and not well managed library for study. In small classroom we have to manage the different level of students we cannot give special treatment and guide to them. After the response the teacher the researcher went toward the head teachers and asked "Do you agree that motivation of administration affect the mathematics learning". According to the head teacher "a highly motivated person puts in the maximum effort in his or her job. Today the relationship between teacher and pupils if often up down; pupils come because they must and teachers teach because they are paid to teachers mourn that their profession is not respected and complain that they are inadequately paid for the duties they are required to do they look over their shoulders at other professions and condition of services for a better life"

Hence from the above discussion it can be concluded that the school environment is not better to acquire high result is also the cause of low participation in learning mathematics.

Teaching Learning Process in Mathematics

Theoretically, it was assumed that student achievement in mathematics is influenced by the teaching learning process. Teacher's qualification, interest of learners, expectation views and beliefs towards mathematics are explained under the teaching learning process. Teacher's qualification as determined by education and experiences. Expertise and license holder has been shown to be the single most significant factor contributing to student achievement. If student do not have curiously to learn, the teacher cannot teach the expectation of teachers, parents and students themselves have a significant effect on achievement levels. Different researches show that students who are expected to learn are more likely to achieve in school. It has been shown that teachers generally tend to have lower expectation for minority children from poor family (Games and Davis, 1990). Students attitude and believes also affect the mathematics learning. Many articles suggest that students have negative attitudes and expectation for their performance in mathematics. Teacher's teaching styles such as their use of co-operative rather than comprehensive learning techniques also play a vital role of students in mathematics achievement. A highly motivated person puts the maximum efforts in his/her job. According to Farrant(1968), today the relationship between teacher and pupils is often upside down. This ascertain by Farrant (1968) exhibited lack of motivation on the part of both teacher and students. More so, it may contribute to ineffectiveness and inefficiency in academic work and its effect. The following ten statements define the teaching learning process that can be influence in learning mathematics.

Table no. 2: Statements Related to Teaching Learning Process:

S.N.	Statements	S.A	A	U	D	S.D	Average value	Decision
1	Teachers are qualified enough to teach mathematics	28 (14)	52 (26)	75 (37.5)	23 (11.5)	22 (11)	3.205	F
2	Teacher motivates for new ideas	17 (8.5)	41 (20.5)	39 (19.5)	75 (37.5)	28 (14)	2.72	NF
3	Teachers discuss about previous lesson before starting new lesson	32 (16)	56 (28)	59 (59.5)	35 (17.5)	18 (9)	3.245	F
4	It is easy to learn mathematics if teacher use teaching materials	75 (37.5)	55 (27.5)	23 (11.5)	25 (12.5)	22 (11)	3.680	F
5	Teachers give opportunity for discussion dividing students into small group	20 (10)	48 (24)	65 (34.5)	28 (14)	35 (17.5)	2.890	NF
6	The teacher teaches mathematics through much drilling	15 (7.5)	18 (9)	22 (11)	102 (51)	43 (21.5)	3.700	F
7	Teachers use different teaching methods to teach mathematics	10 (5)	25 (12.5)	42 (21)	48 (29)	65 (32.5)	2.185	NF
8	Student like to learn mathematics with peers group	22 (11)	88 (44)	44 (22)	12 (6)	34 (17)	3.260	F
9	Students practice already though exercise again	25 (12.5)	55 (27.5)	62 (31)	38 (19)	20 (10)	3.135	F
10	Students think mathematics is a difficult subject	19 (9.5)	26 (13)	36 (18)	46 (23)	73 (36.5)	2.360	NF

(Parenthesis in the above table indicate the percentage of students)

Table shows that 6 statements among 10 statements are favorable. The statements Teachers are qualified enough to teach mathematics is favorable; It has the

favorable value 3.205. The quality of education depends on the teacher's qualification. If the teacher fails to keep himself in touch with the rapid scientific and educational development then he/she would become inefficient and ineffective. It is the quality of teacher on which the populations of class mainly depends for excellence. Teachers are different with respect to their attitude and in what they expect from students. The statements teacher motivates for new idea has the average value 2.720 it is not favorable for the statements. If a teacher experiences the classroom as a safe, healthy, happy place with supportive resources and facilities for teaching learning, Improving the motivation and status of teacher generally improves teaching. The students learn more in classroom with highly dedicated and motivated teachers. So it is also one of the detrimental factors for poor performance in mathematics.

Similarly most of the students are agree with the statement It is easy to learn mathematics if teacher use teaching materials. The average value of this statement is 3.680 which favorable to the statements. Use of different teaching materials in mathematics plays the essential role to make the clear concepts. The statement that teacher give opportunity for discussion dividing students into small group is not favorable. It has the average value 2.890 which means the students do not get chance to learn by sharing their ideas from the peer group. Similarly the statement the teacher teaches mathematics through much drilling has the average value 3.700 which is also favorable to the statement. For this we can say the teacher use much drilling rather than use of sufficient teaching materials the statement eight, nine and ten are related with the interest of the students. The response of almost students shows that they do not have much interest in learning mathematics

For the statements use of teaching materials, the reached took an interview with maths teacher. According to him “we use different teaching method and teaching

materials not only this lecture method sometimes we divide them into small group and let them to make them to discuss for better understanding. We are ready to use teaching materials if administration provides us but we cannot force them. . After the response the teacher the researcher went to the Head teacher and asked do you agree that motivation of administration affect the mathematics learning? According to the head teacher "*a highly motivated person puts in the maximum effort in his or her job. Today the relationship between teacher and pupils if often up down; pupils come because they must and teachers teach because they are paid to teacher mourn that their profession is not respected and complain that they are inadequately paid for the duties they are required to do they look over their shoulders at other professions and condition of services for a better life".*

The statements concluded that the teachers qualification, interest of learner, use of teaching materials, expectations etc are the influencing factors in learning mathematics of students. For additional information, the interviews were taken from the mathematics teachers and head teacher to derive qualitative information regarding the influence of teaching learning process in learning mathematics. The question was "Do the performance of the students depend on teaching learning process inside the classroom?" most of the teacher said that performance of the students highly affected by the teaching learning process inside the classroom that not only the fact. Performance of the students depends on their interest. We use expository approach of teaching mathematics which limits students classroom activities to just listening to teacher's words and copying from the boards are the major method of instruction by most one question about the interest of students and teacher activities in the classroom was " do the students like mathematics than other subjects or they feel difficult?" The head teacher's view in this query was most of the teachers had positive attitude

towards mathematics. They believe that mathematics is not difficult by nature but the students study mathematics just to pass the S.L.C. exam. According to the information achieved from the teachers and head teachers it can be said that the main influencing factor on learning mathematics are interest of learners, teacher's activities in classroom and method of teaching lack of using teaching materials.

Hence from the result obtained from the responses of teachers and head teachers through interview it is concluded that the teaching learning process is main influcing factors in learning mathematics.

Social variable in learning mathematics

Social economic status: Social economics status is most commonly determined by combining parent's educational level, occupational status and income (Jeynes,2002). In most of the studies done on academic performance of students, it is not surprising that social economic status of one of the major factors studied while predicting academic performance. According to Graetz(1995). Ones educational success depends very strongly on the social economic status of the parents. Considene and Zappala (2002) argue that families where the parents are advantaged socially, educationally and economically foster a high level of achievement in their children.

The different social variable such as social system, cultural customs, and traditional effects of gender biases are the main factors that hinder learning mathematics. In earlier days and in present day also boys are exposed to the society but girls are restricted. On the other hand, the conception of the people also has vital influences on learning of mathematics. The following four statements define the social and cultural factors which affect on learning mathematics.

Table no 3: Statements Related to Social Variable

S.N.	statements	S.A.	A	U	D	S.D	Average value	Decision
1	Social environment affects to the mathematics learning	52 (26)	75 (37.5)	42 (21)	18 (9)	13 (6.5)	3.675	F
2.	Our tradition affects while learning mathematics	17 (8.5)	52 (26)	59 (29)	48 (24)	25 (12.5)	2.955	NF
3.	Mathematics learning depends on cultural backgrounds	52 (26)	45 (22.5)	63 (31.5)	15 (7.5)	25 (12.5)	3.42	F
4	Society encourage the students to learn mathematics	38 (19)	58 (29)	52 (26)	13 (6.5)	39 (19.5)	3.215	F

(Parentheses in the above table indicate the percentage of the students.)

The above table shows that only one statement among four statements is not favorable. It has the average value2.955, Statement one, three and four are favorable. The average value for statements social environment affects to the mathematics learning is 3.675 it means the decision is favorable for the statement. For more convenient result the researcher took an interview with parents that "Do you think that the surrounding environments affect the students to study?". In the response of question he answered " of course surrounding affect the children learning, if all the children always play and do not care about study then the friends who are studious are also slowly involved playing rather than study. The average value of statement two is 2.955 so the decision is not favorable for the statements "our traditional affect while learning mathematics the researcher again took an interview with head teacher for the same statements". Head teacher- "*our tradition partially affect the students but we can't claim that tradition is only the factor for affecting students learning. The*

pupils from different culture and tradition are here. Same students have got very good environment at home but could not improve as inspection but some students are doing better although not getting enough time are environment to study. Some parents are sending government school to the daughter and private school to the son but many students from government school have shown better performance than the students of private school". The society has equally literate and illiterate people. But most of the people don't encourage and admire the girls to learn mathematics. Thus, the social variable which includes social system, cultural customs and traditional effect of gender directly influence on learning mathematics of students.

Besides quantitative testing, qualitative information was collected from students and their parents regarding the social variable that affect the roles, responsibility and opportunities given by society to the students in learning. Researcher asked a question to the mathematics teachers that "Do you believe that social variable affect the student's mathematics learning?" mathematics teacher responded on social factor contributing to poor performance in mathematics cited circumcision, beliefs, early marriage and family income. Also cultural constraints negatively impact on achievement level among students. Children who come from insecure environment caused by socio-cultural problems at school. They lack concentration in class and confidence in whatever task they are given to do.

Family background related factors

Home is consideration as a foundation of education. Theoretically, it is assumed that the achievement in mathematics is highly influenced by the home environment. Parent's education, socio-economic conditions of family, study hour at home, practice time of mathematics and gender bias in family generally considered as

the home environment. The achievement of child depends not on the part played by teachers but also on the parent's awareness, interest and knowledge about handling and guiding their children's at home. The economy status of the parents directly affects the child learning. Various researches show that higher the socio- economic status of family greater the child achievement. The role, responsibilities, constraints, opportunities, practice time given by family to daughter in home played the vital role in learning mathematics. The following five statements given in table-4 are related to the home environment that supports in course of learning of mathematics.

Table no.4: Statements Related to Family Background

S. N.	Statements	S.A	A	U	D	S.D	Average value	decision
1	The economic condition of parents is sound.	31 (15.5)	82 (41)	25 (12.5)	52 (26)	10 (5)	3.36	F
2	The educational status of parents is important to learn mathematics at home as well	25 (12.5)	55 (27.5)	35 (17.5)	62 (31)	23 (11.5)	2.985	NF
3	The occupation of parents has direct effect on student's progress in mathematics.	21 (10.5)	56 (28)	43 (21.5)	32 (16)	48 (24)	2.85	NF
4	concept and views of parents towards mathematics have direct effect on their children to learn mathematics	22 (11)	56 (28)	23 (11.5)	65 (32.5)	34 (17)	2.835	NF
5	Guardians discuss with teachers about student's progress	29 (14.5)	73 (36.5)	45 (22.5)	18 (9)	35 (17.5)	3.215	NF

(Parentheses in the above table indicate the percentage of the students)

From the table it showed that the statement four and five is favorable to the statements its average value is 3.36 and 3.15 respectively socio economic status is determined to be a predictor of mathematics achievements. This study discovered that parent's annual level of income is correlated with student's maths achievement scores. The study showed that parents with higher socio- economic status are more involved in their children's education than the parents if lower socio-economic status. From the table it showed that the statement one and five is favorable to the statements, it's average value is 3.36 and 3.215 respectively.

Beside the quantative data, the researcher had conducted interview of the students, parents and teachers to collect qualitative information about the influence of home environment in learning mathematics. In course of interview period, the researcher asked questions to the students as "Do you get sufficient time and environment to practice mathematics?" the student's views were "*I have to go to the work after coming from school, sometimes for cutting grass, sometimes in field, sometimes in kitchen and I have to do any work after returning from school*". Most of their views were not supportive for learning mathematics. Similarly, the parents concern about education for student's education and visiting with math teacher. Teachers responded that "*we have such type of students whose parents are under economic status, low or no education background. From these types of parents how we expect supportive learning environment in the home, they neither consult with us about their children education nor take the progress report. They only visit school at the time of admission and some are in parent's day".*

Hence from the above analysis, it can be concluded that parent's education, parents behaviors, study time at home are the influencing factors in learning

mathematics. Due to the less priority given by parents to their students in learning mathematics is main cause of low achievement in mathematics.

Time variable in learning mathematics

Certain kinds of time-on –task are positively related to student's achievement. It is reasonable to expect that instructional approaches which foster that kind of time-on-task would be successful in promoting achievement increases. Mastery learning, with its emphasis on specific objective, careful teaching to those objective and provision of additional time allotments to those students who initially fail to reach a predetermined criterion on formative tests, has frequently been found superior to no mastery approaches in fostering achievements gains. After acquiring the mathematical concept or knowledge, the most important thing is to make it long lasting. To make it permanent drill, review and maintenance are the main factors. Appropriate drills not only develop the knowledge and skills in students but also develop the habit of practice. Similarly review of mathematical concept is one of the most important factors in learning process. The main purpose of review is to organize and retain learning. It provides new motion to the students. At last, the most important factor to permanent the learning is maintenance. It prevents the students to forget the mathematical concept, skills and relations. The following four statements given in the table below are related to time variable that could create positive environment for students in learning mathematics.

Table no 5 Statements Related to Time Variable

S.N	statements	S.A	A	U	D	SD	Average value	decision
1	Students spend much time on learning and practicing mathematics in class	22 (11)	52 (26)	15 7.5)	68 (34)	43 (21.5)	2.710	NF
2	The course of mathematics is completed on time	45 (22.5)	75 (37.5)	22 (11)	48 (24)	10 (5)	3.485	F
3	Sufficient time to solve and practice mathematical problems is provided	15 (7.5)	38 (19)	29 (14.5)	68 (34)	50 (25)	2.500	NF
4	Sufficient time is provided to read and think on mathematical obstacles	18 (9)	25 (12.5)	45 (22.5)	63 (31.5)	49 (24.5)	2.500	NF

(Parentheses in the above table indicate the percentage of the students)

Above table shown the decision of statement two, the course of mathematics is completed in specific time is only favorable for the statements. It shows that the completion of course in time is not a major problem in Chitwan district. But the decision of other statements are not favorable they have the average value below three. It shows that time management for study mathematics is one of the major problem or detrimental factor for poor performance in mathematics. From these it can be concluded that most of the students do not give much time in studying, reviewing the problems of mathematics due to this reason the achievement of mathematics of students has become low. At last it is concluded that time variables is also an

influencing factor that affects in learning mathematics. Time variable in reading & practicing is very important for achievement in mathematics learning.

In addition to surveying the factors that affect the learning mathematics, the researcher had taken interview with teachers and students for information. The teacher's views regarding this time variable were also similar with the result obtained from the quantative techniques. Most of the teachers focused on drill, practice and maintenance or review of studied lessons done by students are the main factors for betterment in mathematics. They also added that the students do not give more time to study mathematics, which are the main causes of low achievement in mathematics.

Chapter V

SUMMARY FINDING CONCLUSION AND RECOMMENDATIONS

On this section major findings of all the research and its conclusion are listed. From this study we have got different types of ground realities of the private and public school as well as all the schooling practice of Nepal. It is only concerning about to identify the detrimental factors for poor performance in mathematics and its remedial measure, findings, conclusion and recommendation are listed one by one.

Summary

Especially this research survey is under the survey of poor performance in mathematics. It had tried to seek the detrimental factors of low achievement in mathematics and its measure. as the purpose of the study is to identify the detrimental factors for poor performance. Here researcher has got many points on it. Not only to identify the causative factor of poor achievement it was concerning on its remedial measure too. Students use mathematical concepts and logical reasoning to solve their daily problems. So the higher achievement in mathematics is expected by parents and individuals involved in education. Thus it is necessary to conduct research study on factors affecting students achievement in mathematics. A range of sources shows that high rate of failure in school mathematics is a problem not only in Nepal but also in other countries around the globe. Poor performance in mathematics is creating difficulties in teaching learning activities at school. Providing individual right to education and managing classroom with different cognitive levels to bring out common educational outcomes is a matter of problems to the school administrator. They are also challenges for the curriculum designers.

To fulfill the objective of the study the researcher selected six schools in which three were public school and three were private school. 200 students were selected by stratified random sampling from grade ten. The selected school's mathematics teachers and head teacher are 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..

Findings of the study:

The findings of the studies are following

- For the poor performance of the students in mathematics, school related factors and out of school related factors are responsible
- In the comparisons of school related factors, out of school related factors is more responsible for poor performance in mathematics
- Teaching methods, teacher's qualification, size of class room, peer group's behavior, teacher's behaviors towards students affect the achievements of the students.
- Motivation in mathematics also affects the student's achievements.
- Parental love, education of parents and society also affect the student's performance in mathematics.
- From the analysis of the data, it is found that continuous practice, review and application of mathematical concept affect on learning of mathematics.
- The students who were encouraged by the society to study mathematics did better in mathematics where as those who were discouraged did not do well in mathematics. Thus it can be concluded that the social variable such as social

system, cultural customs, traditional effects of gender directly influence in learning mathematics of the students.

- The learner's interest had strong positive effect on achievement of mathematics result.
- Effective classroom teaching had strong positive effect on mathematics learning
- Physical facilities had not satisfactory effective on achievement of mathematics.
- Financial condition was not strong enough to send their children at schools and couldn't afford them in their further education. Most of the parents were illiterate and their children were usually used as means of earning money for their simple livelihood.
- Parents influence their children to complete their house leaving the school. Some of the parents did not encourage their children to go school.
- The environment of the school was poor. There was no suitable environment for the students. The rooms were too hot.
- Teachers did not give homework for the students. If given. They did not check regularly. Students were not encouraged to do homework regularly.

Conclusion:

The mathematics achievements of students are correlated with school environment. In terms of correlation of school environment, effective classroom teaching, physical facilities and family background have also positive impact upon the student's achievement because they were positively correlated with each other.

Teacher's beliefs about the nature and purposes of mathematics and how students learn have a powerful effect on the practice of teaching. Although the school seems to have sufficient physical infrastructure and qualified teachers but the teachers seem to be unable to maintain individual differences and promote slow learners in teaching learning activities of mathematics. Classroom practice, time variables, family background and school environment were the main cause of low achievement of students in mathematics at secondary level.

Recommendation

After conducting this study, the researcher got some important findings as mentioned above. On the basis of those findings, the researcher would like to provide some recommendations for the improvement in mathematics achievement and get rid of the threatening problem of failure and low achievement in mathematics.

- The study of this kind should be conducted at all levels of school and in others subjects as well.
- This study was limited to the students of grade nine and ten from six secondary schools, hence the researcher cannot generalize the findings of this study to all grades and to the whole country. So, similar studies should be done region-wise as well as in order to establish the findings of the study.
- Promoting research and development efforts for increasing mathematics achievement.

There should be effort on the rising of people's awareness and commitment. In rural area, parental attitude towards education is below the threshold level because their immediate concern is with daily subsistence. Thus in such a situation, necessary zeal for sending children to school may be lacking. The teacher should be equipped

with skills and abilities to deal with the subject matters and students. A proper teacher training program focusing on the learning outcomes in mathematics should be implemented. Parents should be made aware to enhance the education of their children.

In order to enable students to attain the learning outcomes, the school management should continuously identify the learning problems faced by the students and take remedial measure to address them.

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APPENDIX-A

QUESTIONNAIRE

Direction: please check(√) and rate yourself honestly based on what you actually do given the statements using the following scales:

S.A.- strongly agree A- agree U- unknown D- disagree

S.D.-strongly disagree

Statements Related to school environment:

s.n	Statements	SA	A	U	D	SD
1	Teachers co-operative behavior is helpful to study mathematics					
2	The teachers equally behave with weak and talent students					
3	The teacher equally behaves girls and boys.					
4	The teacher helps students after the class also					
5	Teacher individually cares the students					
6	There is a provision of unit test after completion of each unit					
7	Learning environment is better in classroom because poor's cooperative behavior					
8	There is sufficient faulty member of physical facility					
9	Size of classroom numbers of benches, are sufficient for student					
10	Students get opportunity to read additional book of mathematics because of availability of library in school.					

Statements related to teaching learning process:

SN	Statements	SA	A	U	D	SD
1	Teachers are qualified enough to teach mathematics					
2	Teacher motivates for new ideas					
3	Teacher discuss about previous lesion before starting new lesson					
4	It is easy to learn mathematics if teacher use teaching materials					
5	Teachers give opportunity for discussion dividing students into small group					
6	The teacher teaches mathematics through much drilling					
7	Teachers use different teaching methods to teach mathematics					
8	Student like to learn mathematics with peers group					
9	Students practice already thought exercise again					
10	Students thinks mathematics is a difficult subject					

Statements related to social variable:

SN	Statements	SA	A	U	D	SD
1	Social environment affects to the mathematics learning					
2	Our tradition affects while learning mathematics					
3	Mathematics learning depends on cultural backgrounds					
4	Society encourage the students to learn mathematics					

Statements related to Family Background

SN	Statements	SA	A	U	D	SD
1	The economic condition of parents is sound.					
2	The educational status of parents is important to learn mathematics at home as well					
3	The occupation of parents has direct effect on student's progress in mathematics.					
4	concept and views of parents towards mathematics have direct effect on their children to learn mathematics					
5	Guardians discuss with teachers about student's progress					

Statements related to time variable

SN	Statements	SA	A	U	D	SD
1	Students spend much time on learning and practicing mathematics in class					
2	The course of mathematics is completed on time					
3	Sufficient time to solve and practice mathematical problems is provided					
4	Sufficient time is provided to read and think on mathematical obstacles					

APPENDIX-B

Guidelines for interview with students

Name of students:

Class:

No. of family members:

Parent's Education

Parent's Occupation:

Major Area of Interview

- Study hours at home
- Study hours for mathematics at home
- Support of Parent's
- Learning environment at home
- Interested area of study
- Views about mathematics
- Views about mathematics teacher and his teaching methods
- Peer group relations and participation in learning
- Homework and class work progress
- Further planning
- Gender bias at home, society and school

APPENDIX-C

Guidelines of Interview with secondary Math teacher

Data of interview: ……

Name of teacher: ……. Ethnicity: ……

Qualification: ……..

Religion: …….

Trained/ Untrained: ……. Sex: ……..

Teaching Experience: …….. Age: …….

Address: …….. VDC/Municipality

Ward No: ……..

Major Areas of Interview

- Teaching strategies of mathematics
- Home environment and influence in learning mathematics
- School environment
- Social variables
- Behavior towards students

APPENDIX- D

Interview Guidelines for Parents

Name of Parents:

Education status:

Occupation:

Income (Monthly):

Interview Areas:

- Views about education for children
- Needs of mathematics in our daily lives
- Gender equity and equality at home
- Support to their children in their study in terms of economic and academic

APPENDIX-E

List of school

S.N.	Name of schools	No. of students	No. of maths teacher
1	Chitwan English Secondary	21	1

	Boarding School, Bharatpur-02		
2	Samata Shiksha Niketan, Bharatpur	48	1
3	Step by Step English Secondary Boarding School, Bharatpur	30	1
4	Ramnagar Secondary School, Bharatpur	35	1
5	Balkumari Kanya Higher Secondary School, Bharatpur	40	1
6	Prem Basti Higher Secondary School, Bharatpur	26	1
	Total	200	6