FACTORS INFLUENCING STUDENTS' HIGH PERFORMANCE IN MATHEMATICS

A

THESIS

BY

SATYA NARAYAN SINGH

FOR THE PARTIAL FULFILLMENT OF THE REQUIREMENTS FOR THE DEGREE OF MASTER OF EDUCATION

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Letter of Certificate

This is to certify that **Mr. Satya Narayan Singh** a student of academic year 066/067 with Campus Roll No. 962/067, Exam Roll No. 281384 (2067), T.U. Regd. No. 6-1-3232-64-2002 has completed her thesis under my supervision during the period prescribed by the rules and regulations of Tribhuvan University, Nepal. The thesis entitled, "**Factor Influcing Students' High Performance in Mathematics"** embodies the results of his investigation conducted during the period of 2014 under the Department of Mathematics Education, Central Department of Education, University Campus, Kirtipur, Kathmandu. I recommend and forward that his thesis be submitted for the evaluation for awarding the Degree of Master of Education.

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Mr. Arjun Neupane Prof. Dr. Lekhnath Sharma

(Supervisor) (Head)

Date: .....

Letter of Approval

Thesis

By

Satya Narayan Singh

Entitled

"Factor Influcing Students' High Performance in Mathematics" has been approved in partial fulfillments of the requirements for the Degree of Master of Education

Committee for the Viva-voce	**Signature**
1. Mr. Laxmi Narayan Yadav (Member)	……
2. Prof. Dr. Hari Prasad Upadhyay (Member)	……...
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Date : …….

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…….

Satya Narayan Singh

ABSTRACT

The purpose of this study was to identify and understand factors influencing the high performance of students in mathematics. The research questions guiding this study were to find the factors which contribute to better performance in mathematics and to examine the role of parents and teachers for student's high performance in mathematics.

This study sought to understand the factors that shaped the participants' decision to persist and succeed in mathematics. This study employed interpretive case study methodology in which interview data from six high-achieving students from public schools were collected, transcribed and analyzed. To draw the conclusion from the case study a comparison was made with the six average performing students collecting date and analyzing them by applying same methods and procedures. The study employed elements mainly from family and school environment for analysis. High achieving and average achieving students were determined on the basis of mathematics score of final exam of immediately previous class.

Findings indicate that parent's educational level, satisfaction of the student with teacher's teaching style and active participation in classroom learning have excellent effect on student's high performance in mathematics. Further, parent's guidance & counseling, parent's financial condition and regular attendance in classroom have moderate effect on performance of students in mathematics. And, motivation from parents, parent's expectation, teacher's expectation and motivation in school also contribute in student's high performance in mathematics but not in great scale.

TABLE OF CONTENT

ABBREVIATION

TAKS	=	Texas assessment of knowledge and skills
ERAS	=	Elementary Reading attitude Survey
AR	=	Accelerated Reader
HPS	=	High Performing students
APS	=	Average performing Students
SSSS	=	Shree Shanti Secondary School
SJHSS	=	Shree Janajagariti Higher Secondary School
SDJHS	=	Shree Dhana Guau Jyoti Secondary School

Chapter I

INTRODUCTION

Background of the Study

History of mathematics reveals that mathematics is creation of human being for the needs of solution individual as well as social problems. According to the dictionary “Mathematics in a strict sense is the abstract science which investigates deductively the conclusion implicate in the elementary conception of spatial and numerical relations”. Also it has been defined as a science of number and space. The term mathematics has been explained in various ways such as: it is the numerical and a calculation part of man’s life and knowledge. Mathematics is the science of number and their operation, interrelation and collection of skill and methods. At the primitive times mathematics was originated for counting by the use of stones and tying knots in a string. Ancient people developed the mathematics structure, rules, formulas, theories etc.

'High performance in a given situation results from the interrelationship between efforts, ability and role perception as modified by environmental forces' (Byars Anrue, 1971).

High performance in education is defined in different ways. It includes many aspects. These are abilities to handle the problem, ability to tackle the situation, ability to organize different functions/ activities in the surrounding environment.

The achievement of the students is measured on the basis of performance examination tests conducted at the different time in the session. These kinds of test are basically designed to measure knowledge, understanding, and skill of the students in a specific subject or group of subjects. Achievement in education is defined in different ways. It includes many aspects.

These are abilities to handle the problem, ability to tackle the situation, ability to organize different functions/ activities in the surrounding environment.

In relation to students' performance, job or task of the students means to obtain the high score in the class, regular attendance in the class and active participation in the class. Those who have such competence might appear as a high performer in the class. Again, there is relationship between high performance of the children in everyday lives in home and school. Conditions that occur in their everyday lives can influence the children's performance. Some of the conditions are physical condition of home, child-rearing conditions of home and school (Anderson, 1995).

High performance is most preferred any time and everywhere either it be in school or college or professional life. In mathematics also high performance is celebrated widely. But because of its complex and abstract concept most of students in Nepal and over the world it is taken as hard and difficult subject.

But still there is still a small mass of students who have appreciated mathematics and demonstrated high performance in mathematics in school level. This high performance creates the questions like; Opposite to large mass of students what makes them to perform outstanding in mathematics? What could be the reason behind it? What is in school as well as at their home that lead them to demonstrate high performance in mathematics? How their school and home environment, teacher and parents facilitated them? To answer these questions in the Nepalese context, specifically in the village and government school environment, I selected a case study approach to investigate and explore about six high performing students currently studying in three public schools, also comparing with other six students who are average performer in mathematics. There may be many concrete and hidden reasons behind their high performance in mathematics. But all will not be possible to study in

this mini research due to limited time and resource. As being student related environment classroom conditions and home condition may play vital role in their mathematics learning and showing high performance in mathematics. So, especially this research study has focused on school and home environment of six high performing students and six average performing students in mathematics from public school.

Obviously, the indicators of high performance in mathematics in different time and situation may be different. Mathematics educators also have a challenge to define what might be considered as high performance in mathematics. Some believe that being able to answer any mathematical problem quick and correctly is intelligent in mathematics. Other believe being regular, obedient and discipline and participate in every day classroom discussion are the basic criteria for high performance in mathematics. Many more accept high score as high performance in mathematics. Keeping in view of above beliefs and criteria the study has limited the meaning of high performance as scoring high marks in school exams and active participation in mathematics class activities for study purpose.

Statement of Problem

In Nepalese context, mathematics is taken as difficult and hard subject in school level and university level also. High failure rate in mathematics has become a headache for most of mathematics teachers, educators and for parents. Beside this there are some of students who enjoy mathematics and are showing outstanding performance in mathematics. This study was mainly concerned with the home and school environment that lead them to high performance in mathematics.

This research paper was seeking the answer of the following questions;

1. How the factors influence students to achieve high performance in mathematics?

2. How does school and home related factors contribute to demonstrate high performance in mathematics?

Objective of the Study

The main objective of this study was to find out home and school related factors which are supportive to the student's high performance in mathematics. The objectives these studies were as follows:

1. To find the factors which contribute to better performance in mathematics.
2. To examine the role of parents and teachers for student's high performance in mathematics.

Significance of the Study

As stated above, mathematics is one of a headache subject for most of teacher, parents, and students and high failure rate has been a critical problem for the administrators and policy makers. But this is not an inevitable problem because a small mass of students is still there enjoying mathematics and demonstrating high performance in mathematics. So this study can be of a great significance among those students, parents, teachers who are facing mathematics as a burning problem.

This study has following significances:

- This study communicates to the teachers, students and parents about the factors affecting high performing in mathematics.
- This study provides knowledge about how home and school environment may affect student’s performance in mathematics.
- This study will enlighten teacher, parents and students about their role in high performance.

- This study can help school administrator and policy makers to formulate school effective policies and strategies for student's high performance in mathematic.
- It will help to decrease student's failure rate.
- It will provide a wide range of knowledge that may guide their research.

Delimitation of the study

Limitation of this study was as follows:

- This study covers the students of government schools of Baglung District.
- This study was done over the six high performing students and six average performing students in mathematics from the public schools in Baglung.
- This study has covered only the conditions that are related to student's home and school environment.
- Meaning of high performance has been limited to the high scores in final examination and active participation in mathematics classroom.
- The data taken for this study was the data and information provided by the related school and mathematics teacher.

Definition of Terms

Conditions

Conditions refer to the necessary situations or state that must exist in order for students to show a high performance in mathematics. Here conditions for high performance in mathematics are limited to the necessary situations inside home and school.

High performance

High performance is the state of high scoring in examination and active participation in mathematics classroom.

Students' personal related factors (variables)

It is defined as the interaction in mathematics study, prior knowledge (previous final exam scores) time spent in watching T.V., participation in games and sports, time spent in studying mathematics at home.

Public School

The school run by the local community together with the help of government.

Private School

The school run by the personal fund is known as private schools. The single people or the group of people investing together can run it.

Secondary Level

The level of grade IX and X.

Factors:

The term factor is defined as the one of several things that cause or influence something e.g. educational factors, Social factors and economic factors.

Family background

Family background refers what of family a student come from. It related with consciousness of Guadiana, educated, economic status freedom and other facilities.

Achievement

The mark obtained by the student in mathematics at grade IX & X.

Teacher

A person who teaches mathematics at the grade IX & X of Baglung district.

School Related Factor

The variables such as teacher's behaciour, prior achievement and peer group influence are taken under school related factors. Those variables affect the attitude of students in selecting mathematics.

Out of School related factor

The variables such as family background, self-confidence, further study, school influence, influence of occupational goal in future and personal interest are taken under out of school related factor. These variables affect the attitude of girl and boy students in selecting mathematics.

Chapter-II

REVIEW OF LITERATURE

This chapter deals about the review of related literature to the study and framework for the study. Review of literature is an essential part of all the studies. A critical review of the literature helps the researcher to develop a thorough understanding and insight into previous research works that relates to the present study. It is also a way to avoid investigating problems that have already been definitely answered. The review of related literature involves the identification and analysis of documents related to the study undertaken. The previous studies cannot be ignored because they provide the foundation to the present study.

Empirical Literature

Saritas (2009) did a research entitled '*Identifying the factors affecting the mathematics achievement of students for better instrumental design'* in Turkey. This study was conducted to identify the factors affecting the mathematics achievement of students through collecting the opinion of mathematics. Results revealed that instructional strategies and method, teacher's competency in mathematics, and motivation or concentration were three most influencing factors affecting student's performance in mathematics shit should be considered in the design decision.

Upadhyay (2001) did a research entitled *"Effect of construction in mathematics achievement of grade V students in Nepal*." The researcher's main target was to explore the fact if construction approach turn to be effective to raise student's achievement on terms of immediate learning retention and net gain, from this research the researcher had concluded

the possibility of constructivism in Nepalese schools with significant differences in achievement that conventional method of teaching.

Adhikari (2001) conducted a research study on the topic *"A comparative study of Achievement by orphan and Non-orphan students in Mathematics at primary level Dhading District."* The researcher was intended to compare achievement of orphan and non-orphan students in mathematics at grade V and about orphan's education. In this study, 38 students (19orphan and 19 non-orphans) were selected from Dhading district. Score of orphan and non-orphan students were taken randomly by the help of class teacher and set of opinion were used to collect teachers and guardians responses and analyzed the collected data by applying percentage, mean, standard deviation, and two tailed t-test at 0.005 level of significance.

He found that (a) Non-orphan student's achievement score was higher than orphan students achievement score and there is significant difference between their means scores (b) orphan boys achievement score was higher than orphan girls achievement score (c) Non-orphan boys score was higher than orphan boys score (d) Non-orphan girls score was higher than orphan girls score. (e) teacher's opinion was negative towards orphan's education and (f) Guardians view was negative towards orphan's education.

Similarly, Linda (2009) did a research on '*Factors Affecting Student's Achievement in Mathematics in Selected Texas High School*' as her doctorial thesis in 2009. The purpose of her study was to examine the relation between the levels of kinstructional spending per pupil, the teacher's average years of experience, student's attendance rate the student's achievement on mathematics portion of Texas Assessment of Knowledge and Skills (TAKS) in selected Texas. The study utilized the Pearson's correlation test statistic to examine the relationship between student's achievement in mathematics and instructional spending per pupil, the

teacher' average years of experience, student's attendance rate to determine if there was a statically significant relationship. Finding showed a non negative correlation between achievement and funding per student. Finding also indicated statically significant relationship between achievement and teacher's experience and attendance rate of student.

Stanfield (2006) did research report Evaluation, Test/questionnaire on *"Incentives the effects on reading attitude and reading behaviors of third grade students"*. The propose of this study was to investigate whether third grade literally students who receive incentive reward as part of their instruction will exibit significantly higher reading habits and attitudes towards recreational reading than they did before the incentive were introduced. The study examined is third grade students with fairly high intellectual abilities. The students were given an Elementary Reading Attitude Survey (ERAS) as a pre and post measure weekly data were kept on the number of Accelerated Reader (AR) books read as well as Scores on the AR tests. Baseline was the first four weeks. Findings indicated that student's attitude became worse over the entire length of the study. Prizes included certificates, food, books, pencils, bookmarks or anything that might be attractive to the recipient. The conclusion was that the reading incentive were counterproductive even though the number of books read and the scores on the test remind the same.

Budhathoki (2004) did an experimental research on *"effectiveness of cooperative learning method in teaching mathematics at secondary level"* with aims to find out whether the co-operative learning method is more useful than traditional method in teaching probability, as well as, to compare the achievement between the groups of the students taught by using cooperative learning method and traditional method of teaching. Thirty-two students were sampled and divided into two equivalent groups. They were applied and concluded that cooperative learning method was better than the traditional method of teaching in probability.

Tiwari (1984) carried out a research on *"A comparative study of boys and girls attitude towards Mathematics.*" The researcher was intended to find students attitude towards mathematics and to determine the relationship between parents and their children attitudes towards Mathematics. The required data were collected by using questionnaire developed by Georage Levine (1971). The collected data were analyzed by applying; two tailed t-test at 0.005 level of significance and person product moment correlation coefficient. And found that, although mathematics can be learned by anyone and in society boys and girls both are the students of mathematics, boys seemed to exhibit higher success rate in mathematics learning. The mean measures of the attitudes of boys and girls differed significantly. Student's performance and their parent's social status and mathematics knowledge were found to be closely related. And the correlation between and students attitude toward mathematics and their achievements in this subject were found to be significant.

Neupane (2006) conducted a research on "*Effect of socio-economic status of mathematics achievement*" for this study, the research develop the achievement test paper, parents questionnaire form and 84 sampled students of grade III and V government school of Lamjung district. The research concluded that the score obtained by students in mathematics was founded significantly correlated with parent's education, family size and structure of family were founded negatively correlated with mathematics achievement.

Neupane (2001) conducted his Ph.D. research on *"Mathematics Achievement of primary school children of various ethnic groups in Nepal*." And concluded that (a) Mathematics achievement of the children varies by ethnicity, sex and location, (b) Newar and Gurung children were found better than Magar, Kumal and Tharu children in the area of mathematics. (c) boys performed better than girls and (d) tarai children achievement less than Hill children in the area of Mathematics.

Sin, Lee and Kim (2009) jointly did a research entitled "*Student and school factors affecting mathematics achievement*". The purpose of the study was to comparatively examine the student and school level factors affecting mathematics achievement in Korean, Japanese and American students. The result of the study showed that different patterns of relation between students and school level predictors and mathematics achievement were presented among three countries. Especially, the predictors of competitive learning preference were significant on mathematics in Korea and Japan but not in US. For Korean and Japanese students mathematics interest was a stronger predictor then was instructional motivation in contrast the pattern was reverse for American. For school-level predictors, school disciplinary climate was a significant predictor on the achievement difference in all three countries. However, the variable of student-teacher relationship turned out to be significant only in Korea.

When it comes to participate and achievement in mathematics education, it has been shown that family background characteristics have a considerable influence on how a child performs socio-economical sills, parent's occupation etc. Other influential factors involve a parent's choice of occupation. For instance it is a common for a child of mathematician to also pursue in mathematics because their parents choose to close to concentrate in those areas. Having them as positive role model provides guidelines and hence children are more likely to take plugged in the same direction. Here, parents serve as positive example to their children.

Children have an unbelievable thirst for knowledge. If parents do not tap into that drive in early childhood it could be lost before the children even enter the school system. The parents that do not foster learning are easily identified. It is truly amazing how little children mention their parents. Parents' encouragement to achieve and interest in school performance are significantly related to student motivation and student achievement (Hawley et al., 1984).

It has been proved that teachers have an important influence on students' academic achievement. They play a crucial role in educational attainment because the teacher is ultimately responsible for translating policy into action and principles based on practice during interaction with the students (Afe, 2001).

School climate is closely linked to the interpersonal relations between students and teachers. According to Crosnoe *et al.* (2004), school climate is the general atmosphere of school. Trust between students and teachers increases if the school encourages teamwork.

The level of educational attainment of parents could influence the academic achievement of their children. According to European Union Monitoring Report (2013), those students whose parents have a tertiary level of education perform, on average, significantly better in tests of science, reading and mathematical ability than do those whose parents have only basic schooling. In a family where both the father and mother are educated, their children are always taken good care of in their academic activities. Such parents know the importance of getting educational materials for their children is school. They may go through their children's exercise books after school, or even employ a private teacher to teach them after school. By so doing, their academic performance will be improved; whereas in the case of illiterate family, the need to supervise the children's exercise books is not there, hence their children's low academic performance in school. Educated parents may also have library at home, stocked with novels, encyclopedia and other educational books and educational audio visual tapes. When children make use of these materials, it will enhance their intellect.

Peak (1995) states that some of the children that are lucky enough to have a home, live in housing projects. The projects tend to be high in stress, violence and crime. They also have cramped living conditions and poor community resources, which in fact, are not conducive to a quality-learning environment. Many of these children simply come to school

because they believe it to be a safe haven from the streets. They also know they will be warm in the winter and get a hot meal. Learning could be last on their list of reasons to come to school, if in fact, it even made the list.

Wallis (1998) suggests that you cannot purchase a child's success or wish it into existence, poverty affects a child's academic success in many ways. He concluded from analysis over 2500 studies on learning that an academically stimulating home environment is one of the chief determinants of learning. Conversation about every day event, encouragement and decision of leisure time. monitoring and joint event analysis of televiewing, and deferral of immediate gratification achieve a long term goal, expression of affection and interest improves children's academic and personal growth. Parents can play four fundamental roles as teacher, as supporter, as advocate and as decision maker for student's better achievement.

Parent's educational level has been shown to be factors in academic achievement. Parents serve as a role model and a guide in encouraging their children to pursue high educational goals and degrees by establishing the educational resources in home holding particular attitudes and values towards their children's learning. A number of students indicate that student's achievement is highly correlated with the educational attainment of parents. For instance Cambell, Homho, Mazzeo (2000) students whose parents had less than high school education obtain lower grades in mathematics than those whose parents had higher level of education. (Saritas and Akdemir, 2009)

According to Schunk (1991), "The factors affect what individuals attend to how they process information whether they perceive learning as useful and how they guess their capability for learning and performance". The important role of the teachers in the teaching-learning process is unquestionable. Teachers have a lot of influence on their classroom

practices. Teachers should have and apply specific abilities without which their influence may not be reflected in their students' performance in their subject. Teachers must use appropriate and effective instructional methods so that students can easily transfer what is taught in school and apply it to solve problems in real life.

All this above mentioned literature mostly related with the factors affecting student's achievement in mathematics. They nothing about how a student perform well than in past in mathematics. So intention of this study is to find the reason behind why and how a child can perform better in mathematics.

Theoretical Literature

Students high performance in mathematics depends upon many factors such as student's motivational level, teacher and parent's perception, expectation and treatment system, student's socio-economic status and many more. But my concern will be focused on students home and school condition. Still there may be several belief, concept and theories regarding home and school environment. Though there are many theoretical concepts regarding learning process the study will be specifically based on habitus theory.

Habitus Theory

Concept of habitus has been used as early Aristotle but in contemporary usages was introduced by Marcel Maciss and later elaborated by Pierre Bourdieu. Habitus is a social disposition, skills and way of acting that is really often taken for granted and which is acquired through the activities and everyday life. Perhaps in more specific Bourdieu elaborated in the notion of habitus by explaining its dependency on history and human memory. It describes the relation between the agent and contextual environment.

Bourdieu claims that, since the education system presupposes the possession of cultural capital, which few students in fact possess, there is a great deal of inefficiency in 'pedagogic transmission' (i.e. teaching). This is because students simply do not understand what their teachers are trying to get across. For Bourdieu, this is particularly apparent in the universities, where students, afraid of revealing the extent of their ignorance. (Bourdieu and Passeron, 1990)

Bourdieu sees power as culturally and symbolically created, and constantly re-legitimized through interplay of agency and structure. The main way this happens is through what he calls ‘habitus’ or socialized norms or tendencies that guide behavior and thinking. Habitus is ‘the way society becomes deposited in persons in the form of lasting dispositions, or trained capacities and structured propensities to think, feel and act in determinant ways, which then guide them’ (Wacquant, 2005).

Habitus is created through a social, rather than individual processes leading to patterns that are enduring and transferrable from one context to another, but that also shift in relation to specific contexts and over time. Habitus ‘is not fixed or permanent, and can be changed under unexpected situations or over a long historical period’ (Navarro 2006: 16).

Habitus is neither a result of free will, nor determined by structures, but created by a kind of interplay between the two over time: dispositions that are both shaped by past events and structures, and that shape current practices and structures and also, importantly, that condition our very perceptions of these (Bourdieu 1984: 170).

Conceptual Framework

As from the above paragraphs we can take the summary that the components of environment where a student interacts influence in the learning process. The major factors of

such environment can be grouped into two major groups which we can say school related factors and home related factors. This study has followed the habitus theory of learning and covered 10 factors, 5 factors each from home and school related factors, to identify their respective role in high performance of students in mathematics learning.

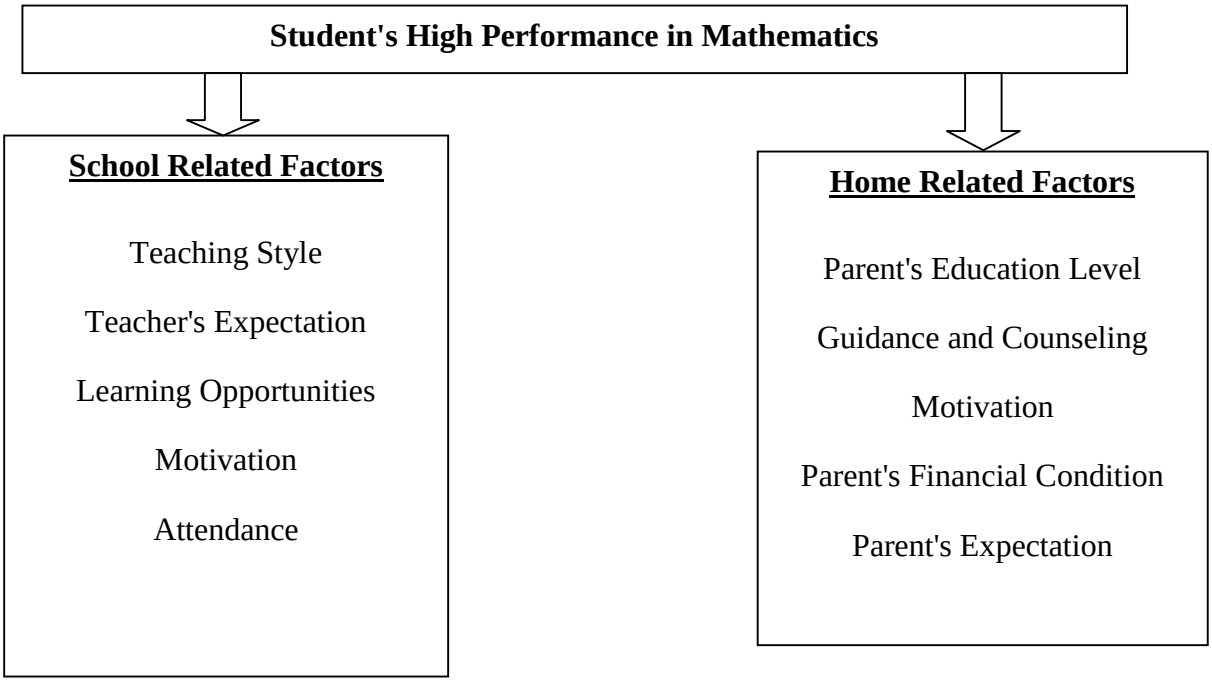

Figure1. Factors affecting student's performance in mathematics

Figure 1 shows some influencing factors for student's high performance in mathematics inside school and home. With reference to above mentioned literature these factors are gathered here. Especially, inside school, teaching environment in classroom is considered to have more influence in student's high performance. Teacher's pedagogical style, his perception, and expectation, classroom practices may have great influence on student's high performance. Similarly, parent's education level, guidance, and counseling, regular motivation and support, their perception and expectation, resource management and role modeling may provide positive reinforcement for students to perform better in mathematics.

Chapter-III

METHODS AND PROCEDURES

Method is an important chapter of any research study. This chapter deals with research design, selection of participation, research tools, process of data collection, and process of data analysis that researcher were use during fieldwork.

Research Design

The objective of this research is to investigate the conditions for high performing students in public school and examine the influencing factors. For this purpose average performing students in mathematics were also selected and studied about the same factors which were studied about the high performers for comparison. The researcher had selected home and school as major influencing factors for research. Five factors from each home and school related factors have been focused in the study. This study was designed on qualitative information basis. Thus, it followed tools and techniques demanded by the qualitative design. Due to limited time and resources it was not possible to explore school and home condition of all high performing students in mathematics. So, in this situation researcher used case study research paradigm to understand the real and in-depth condition of high performing students in mathematics.

Selection of Participants

This study was conducted in Baglung district. Three public schools were selected keeping in view the different socio-cultural background of the students. By using purposive sampling method, six high performing students were selected, two students from each school. And from the same schools other six average performing students in mathematics were also selected being two from each school. The students were selected from grade IX based on the

final result marks of class eight and mathematics teacher's recommendation. The researcher had observed classes of selected students to find out the conditions of classroom. Similarly, their everyday life at their home was observed during field research. Researcher also conducted an interview with their parents and mathematics teacher. The interview was taken with each selected students separately.

Research Tools

In order to collect the information form field work, the following research tools were used interview, observation, and review of documents.

Interview Schedule

Interview is a face to face conversation made to obtain certain type of quoted data. The data from interview consists of experience, opinion and feeling of selected participants. So to explore in depth reality about the hidden condition of high performing students in mathematics, researcher had used interview as a vital research tool. During research, period researcher conducted interview formally and informally with selected students, their parents and mathematics teacher. Since one time interview may not be sufficient, interview was organized in different sessions with the help of predetermined guidelines.

Class Observation Form

Observation is a fundamental research tool of inquiry that is used to discover complex interaction in natural setting. The data obtained from observation in this research consists description of selected students, their activities, actions and full range of interpersonal interactions as shown in home and school. Throughout observation researcher was prepared to identify the information which can either serve as data itself or can be used to formulate interview questions. In order to understand day-by-day activities of selected students, home and school conditions, researcher had formulated observation guidelines.

Review of Document

In addition, researcher had reviewed the related literature like thesis, dissertation, research report, and workshop report, article, and internet site and school documents in order to gain full detail understanding about research subject.

Reliability and Validity of the Tools

Reliability and validity of the research instrument are the necessary qualities of the instrument. The questionnaire consisting of 13 statements which was develop along under the guidance of the expert and supervisor, suggestions were taken from concerned experts the establish by its approval.

Data Collection Procedure

Data can be collected from two sources i. e. primary source and secondary source. In case study primary data plays vital role to understand and analyze the present status of given case. Similarly, secondary data helps to understand the historical background of case. In this research researcher had used interview and observation as main source for primary data and school document and interview as source of secondary data. The information about high performance in mathematics had been gathered form teacher's opinion and school marks sheet record. Similarly, parents view was conducted to analyze their interest and expectation. Their daily activities at home and school had been collect through face-to-face conversation and observation. In this study, in-depth interview with parents, teacher and student were conduct according to participant convenience.

Data Analysis Procedure

The data collected through interview with students was converted into numeric data and a descriptive analysis was made. Simply, the factors related to home and school were

identified as being favorable or less favorable for each selected student's mathematics study. This numeric data was further analyzed relating with the achievement of the selected students identified on the basis of school records.

All the collected data were analyze by using the conceptual understanding of the study. Also the result of the data was triangulate between multiple tools and techniques. The researcher was discussed with the head teacher, and mathematics teacher, about the high performance in mathematics. And also researcher was recorded the behaviour of those key children in the classroom. To analyze and interrelated the data, the research first, classified according to homogeneity and heterogeneity nature of data, then compared and analyzed the version of teacher, students and parents form the data collected through interview and observation through triangulation way of analysis.

Chapter IV

DATA ANALYSIS AND INTERPRETATION

This chapter presents the systematic presentation of data collection and their analysis. The data here are presented in the form of case analysis. The focus of the study is the high performance and it's supporting factors. For this the same factors with the average students were also studied and attempted to compare those with the high performing students in mathematics. Following these case descriptions, it was explained that how home and school influenced their success. Finally, some of the obstacles that these students faced in high school and college as they persisted in their mathematics careers are presented.

To understand the classroom and home factors that contributed to high-achievement of students of three different public schools in mathematics, total twelve students, six being with high performance and six being with average performance in mathematics were interviewed. The students selected for this study were of village areas and the school's selection was carried out considering the different socio-cultural environment. The selected schools were Shree Shanti Secondary School Khungkhani, Baglung, Shree Janajagriti Higher Secondary School Bogandovan, Baglung and Shree DhanGau Jyoti Secondary School Taman, Baglung. In this study, high performance has been defined as high score and active participation in mathematics classroom. By interviewing these students individually and collectively, I gathered the information necessary to answer my main research question.

Performance of Students in Mathematics

The students were selected for this study was by seeing the last year marks (final exam) from the marks record of the selected schools. Two students with best performance in each schools were taken as high performers and other two were selected from each school randomly as being average performer.

The researcher calculated the average marks obtained by the sampled high performer students and average performer students in last year final exam in mathematics subject. The data shows that some students were highly competent in mathematics subject and get high scores as compared to others even if they are also belong to the same locality and school as others belong. If we see the overall environment it may be seen same to all the students but if the environment is seen component wise they may not be in equal footing. The average mark of high performer's was 84 and average performer's was 50.50 out of full marks 100. The average marks difference was material being 33.50 marks. This data shows that some students are exceptional and they do best performance in mathematics.

Those high performing students studied here explained themselves to be perceived their trajectory through mathematics in ways that suggest a gravitational attraction toward success. Their parents, teachers, and social environment seemed to pull them toward success because all of these entities seemed to be aligned to encourage the students' success. The alignment of expectations and support by parents, schools, and peers, provided a critical mass of influence that seem to attract the student's toward success, despite any negative influences that may have been presented to them. In these students' perception, they seem to have no other thinking but to succeed in school and mathematics because they thought they had to, given all of the structures set up for their success. It was clear that the student did have a choice whether or not to succeed in mathematics. However, their individual wills seemed to

be overshadowed by the strong parental, school, and social support systems that were directing them toward success and persistence.

Home Related Factors

In general, the students' experiences began with caring, supportive, and engaged parents who instilled success-related values in their children, provided early educational experiences, encouraged them to succeed and advocated for them in school. In most cases, mothers created the foundation for their formal school career, while the fathers cultivated an early interest in mathematics. Both parents provided consistent reinforcement for their children's success and provided the first layer of this mass of influence toward success.

"I think this education would not play vital role in individual's learning. expect my children could do some occupation as soon as possible by leaving school."

(Parents View)

The above view of parents, going school is only to spend time. instead of that they can join other occupation to earn some money to help the family or care of the younger ones while their parents are at work.

"*I had an opportunity to make my career a high. However, it was little bit far from my home village. To care my boy I ignored and selected local opportunity which was not suitable with my subject of study and level."* (Parent's View)

"*Parents who are educated can understand the psychology of their children and can care better. This contributes to the better home environment."*

(Mathematics Teacher View)

Home environment to be influential the major components of home environment which have direct relation with a student must be excellently positive. The components are, inter alia, parent's education level, guidance & counseling, parent's financial condition,

motivation and parent's expectation. Here, we focus on these five major factors which are related to the home environment of the students selected for our study.

Parent's Education Level

It is considered in general that parent's education level affects their children's success in the education. If it is specifically the related subject it will help to make better the same subject of their children. For this factor the related question asked in the interview was "Whether your parents have got higher education or higher mathematics study?"

"We don't have basic things in our house how long can we go in this way. Nobody in the family earn money. We are in difficult situation to survive. How can we send the children to school?" (Parent's View)

It indicates that the economic condition is one of the major factors. Due to low economic condition they were unable to send their children to school.

"Government should formulate and implement programs to train uneducated parents on how to behave with their children and what are their physical & mental requirements to narrow the gap between parents and children. Most uneducated parents do not know their children's requirements changing with their age."

(Mathematics Teacher View)

While finding out the education level of the parents, it was considered enough if one of the parents got higher education to be sufficient as "educated". The data collected shows that four out of six higher performer student's parents have got higher education. Adversely, only one parent of the average performer students has got higher education. This data shows that the parent's higher education is influential to the student's success in mathematics and it has positive effect.

Guidance and Counseling

The parents provide guidance and counseling on the study matters of their children in home environment. Our question was "Whether your parents provide guidance and counseling to you on your study matters?"

We had analyzed the student's response on the question related to their parent's guidance and counseling for their better study. The data shows that out of 6 high performing students 5 students get guidance and counseling from their parents for their mathematics study whereas only there out of six average performing students get the same. This also shows the positive effect of parent's guidance and counseling on the student's better mathematics achievement.

"We generally do not counsel our children. When they do any wrong, then we guide and counsel. There is school, where they go every day, to teach and counsel them."

(Parent's View)

Motivation

Motivation is the situation where the students are encouraged to study and get better marks in the study subjects. In home environment motivation can be provided by any family members. A student can also get motivated from the role model in his/her family who have been successful in his/her career and most family member praise it. The interview question was "Whether you are motivated for better study from your home environment?"

"Most of the parents do not know how to motivate their children for better academic performance. Generally, students who live in joint family are more motivated. Students who are facing family disputes may be in frustration and cannot do well in their study."

(Mathematics Teacher View)

The answers we got shows that role of motivation factor is equal in the study of the high performing and average performing students. Out of total 6 students each in the group 4 students from respective group feel motivated from their home environment.

Parent's Financial Condition

In general sense, if parent's financial condition is strong they can fulfill their children's daily requirements well and they can arrange the extra educational facilities to their children. We can see the children supporting their parents earnings, they cannot get enough time for study in their home time. Our interview question was "Whether your parents earn enough to satisfy your needs?"

"In this area most of the people are marginal. Only few parents are able to fulfill all necessities of their children. Students who get well facilities are sure to do well in their study because financial condition affects almost every aspects of one's life."

(Mathematics Teacher View)

The study shows that parent's financial condition directly affects their children's performance in the mathematics. If parents are able to fulfill their children's daily demands they can get free of stress and be satisfied because of not feeling lack of resources. Out of six high performing students 4 students were seen satisfied with their parent's financial condition. Adversely, out of 6 average performing students only two students were satisfied with their parent's earnings.

Parent's Expectation

Generally, parents expect high performance of their children in every field. However, it may not be spoken by their behavior. Parent's expectation is a motivation factor to the students. If parents show their high expectation and motivate their children on the subject

matter saying the matter "not tough, you can do better" it can be the positive factor for the high performance of the students. Our research question was "Whether your parent's show their expectation in your mathematics study and motivate for better results?"

Based on our study on parent's expectation phenomenon we can say that parents always expect and try to motivate their children for their better performance. However, their expectation and related interest may not always be encouraging to the students. Five out of six high performing students feel that their parents expect to do better in their mathematics study and four out of six average performing students also feel their parents such expectation. We can conclude here that parent's high expectation from their children may not be so encouraging to the students to do better in their mathematics study.

In the above paragraphs, we studied the home-related factors, how the students feel about their home environment and whether they are strong enough to make positive effect on their mathematics study. In the following paragraphs other 5 school related factors are presented.

School Related Factors

In high school, the high performer students continued in accelerated and advanced programs. In these programs, they had caring teachers who held high expectations; they participated in rigorous mathematics coursework; and they had positive peer support and influence. All of these factors helped them to remain successful in school mathematics. With strong home and school support structures, students perceived that they had no-choice but to excel in mathematics. Their parents, teachers, and society seemed to expect them to continue to excel in their mathematics coursework, and they obliged this expectation. In school, they were encouraged to continue their high performance and were selected for various scholarship programs. Some student received some sort of financial support and/or

scholarship. They also believed that their mathematics degrees would be an asset to whatever occupations they choose, although many were unsure of their specific career paths. Because of the high expectations and support, these high achievers were pulled toward success in their high school mathematics subject.

"The school has few teaching material for teaching mathematics but the future plan of school is available and we are trying to manage required materials."

(Headmaster View)

When researcher visited the schools, he found that the mathematics teachers were experienced of at least 6 years. There was no problem about mathematics teacher. But there was a problem of teaching materials because the schools were situated in remote area.

"I often use student centered method as well as explain problem step by step. But school has problem of teaching material. We have not sufficient teaching material as we need. But our school usually promotes the students participation for teaching in the classroom." (Mathematics Teacher View)

The above statement says the teacher is using student oriented teaching method, however, during the class observation it was found that the method of teaching was lecture method. There was no sign of teaching materials during the mathematics class. Even school was unaware of use of teaching materials for the better mathematics learning and result.

Several of the high performer participants reported that they enjoyed the challenges of mathematics and believed in their ability to meet the challenges of the discipline. It was apparent from their experiences that they had high self-efficacy in mathematics. In addition, many saw themselves among an elite group of Nepali students who were given the opportunity to “be with the best and the brightest”. Therefore, they felt a social responsibility

to represent their group or caste. Success was not perceived merely as a personal accomplishment; their success reflected the success of others and doing a great job.

"*Our mathematics teacher has great influence on us. He often explains us about the importance of mathematics in our daily life and in our career building. He is also a mathematics genius in his career. So, we take him as our role model for mathematics study*." (Student View)

In addition, the community gave them a sense of spiritual connection that was utilized in times of extreme challenge and difficulty.

"We have strong manpower to fulfill the educational targets of the Nepal. Government entrusted to us. Our community and school leadership is always ready to support to the right things. However, our society is yet to be developed. There are two way relationships between the society and educational institutions. Because of educational institutions, society learns more, and, only with the support of the society educational institutions can fulfill their entrusted targets." (Mathematics Teacher View)

Despite the many positive influences of home and school, several participants described some perceived entities that presented obstacles to their success. These forces included lack of role models, negative perceptions of teachers, and their own feelings of not being “a mathematical genius.” Despite these perceived negative factors, these high achievers had a strong enough support system and positive influences that these opposing forces could not steer them off course of success. In the following paragraphs five school related factors have been presented.

Teaching Style

Different students may have been from the different socio-cultural environment and different earlier mathematics base. Teachers should be aware of this factor and they should formulate appropriate teaching program to cover the students from high achievers to low achievers. Different students may have different opinions on the appropriateness of the teaching style of the same teacher based on their background. Our interview question was "Whether you are satisfied with your mathematics teachers teaching style?"

On the research matter, satisfaction level of the high performing and average performing students on their mathematics teacher's teaching style the data shows that the high performing students are all satisfied with their mathematics teacher's teaching style. However, four out of six average performing students did not show satisfaction on their mathematics teacher's teaching style. From this data it can be concluded that students with strong mathematics background are satisfied with the teaching style and teachers teaching programs and methods are not good enough to cover the learning of students with previous strong mathematics background to the poor mathematics background. When the researcher observed the class, it was found that mathematics teachers of all three schools were competent.

"*I don't think our mathematics teacher makes all of us happy with their teaching methods. She focuses more to the high achiever students."* (Mathematics Teacher View)

During the class observation it was observed that all three mathematics teachers were using lecture method of teaching. They simply explained the subject matter followed by the practical exercises provided in the study material. There was less interaction between the students and teachers, and almost all the time of the class teacher provided contents and he asked some questions to the students.

Teacher's Expectation

Teacher's responsibility is to make the students understand the subject matter well and motivate them to work hard for their mathematical learning. If teachers are able to make students feel easy on the subject matter and make students understand that they can do better, students can be motivated on their study. They can feel equality in the classroom. Our interview question was "Whether your teacher expects better from you or he/she is ignorant on your performance in mathematics subject?"

The data on this matter shows that all the students, whether being high achievers or average achievers, feel that their teacher expects more from him/her and encourages to do better. All the students had feeling that their teacher wants better performance from them. From the data, it can be concluded that teachers have good knowledge of their student's performance and they try to make their learning better. However, their results did not seem to be fruitful.

"*Our teachers always try to make us learn more. And, they expect our growth day by day. However, we are not doing well keeping in view of their efforts."*

(Student View)

Mathematics teachers were seemed to expect more from the students. Durng our classroom observation all the mathematics teachers motivated the students and expected more from them. However, students were not informed about their growth in mathematics subject. Without students are informed about their growth and gap points they cannot manage their efforts in required contents.

Learning Opportunities

In the context of mathematics study learning opportunities can be defined as the chance of participation in the day to day interactive classroom and in the extra-curricular

activities related to mathematics. Students getting learning opportunities continuously can do better than the students not regular or having fewer learning opportunities. Our interview question was "Whether you are active participant in the day to day interactive classroom and other extra-curricular activities?"

Our study shows that high performing students always get the learning opportunities. Out of 6 high performing students all the students feel that they have got continuous learning opportunities. However, 3 out of 6 average students feel that they have not got continuous learning opportunities. From this data, we can conclude that continuous learning opportunity is the very influential factor for the mathematics student's achievement.

"*We always try to make our class participative and feel all the students free to participate in the classroom and make inquiries."* (Mathematics Teacher View)

During the class observation it was found that the classes were less interactive. The front seaters only participated in the classroom and raised questions. The teaching method was lecture method. The teachers provided classwork, however, did not passed feedback on the solution presented by the students because they did not check the classwork individually.

Motivation

Motivated students can always do better. Students to be motivated in the school overall school environment must be good. In overall school environment school's physical resources, behavior of principal and teachers with the students, good teaching style and method, interactive classes, participation in the extra-curricular activities, student's previous educational background, overall result of the students, qualified teachers, etc. are included. We had asked the students the question "Are you motivated from the overall school environment?"

On the question about motivation environment in their school environment, the answers were negative. Three high performers and four average performers gave negative answer on the overall school environment being strong enough to motivate the student's mathematics learning. The result shows that in spite of not being motivated from the overall school environment some students are high achievers in mathematics.

The students were not seemed to be properly motivated to study the mathematics. During the class observation it was found that enough physical facilities were not available in the schools. Students were not enthusiastic to learn mathematics and there was some fearness of the mathematics subject. However, teachers were trying to motivate students as possible with the available resources.

Attendance

Students learn the subject matter in the classroom. Other environment factors are the supporting to the learning. They stimulate the classroom learning efficiency. If students are not regular in their classroom they cannot learn the basic concepts of the mathematical study. We tried to find the regularity of the students in the class by looking the attendance register and got the regularity status. The attendance record was also cross checked by asking the students a question in the interview phase "Are you regular in the classroom?" And students responded correctly.

As per our observation all, the high performing students are regular in the school. However, three out of six average students were not regular in their mathematics class. Here, we can say that regularity in the classroom has strong influence on the high performance of the students. Out of three irregular students two answered that they support their parent's work for generating income.

"I cannot come regular in school. We have a roadside hotel. I have to support to my parents in need. I know I am not doing well in my study. However, we have hand to mouth problem. All we have is that small hotel." (Student View)

Mathematics teacher of Shree Dhana Gau Jyoti Secondary School Taman shares his experience:

"Most students irregular in school are from poor family. Their parents expect help in their work from their children. This problem is out of scope of school. We can only solve the problems which arise within the school or related to the school learning process. Government should care of such problems." (Mathematics Teacher View)

In the classes which were observed some students were absent. When we checked the attendance register we found that girls were more irregular than the boys.

Cultivating an Environment for Achievement

The Role of Preschool Educational Experiences on Mathematics Achievement and Success Participants highlighted several key roles that their parents played in their success in mathematics, particularly in their early years. The roles that their parents played were multi-dimensional and spanned their entire educational careers. However, their parent's influence was most prominent in their early years up until their entry into accelerated programs in elementary school.

All of the students in this study began their formative years in a two-parent household, and the values and structures of these households provided a firm foundation for their entry into school and into formal mathematics learning. In these households, their mothers and fathers had important and distinct functions. However, both parents' presence in the household had a positive impact on their preparation for school, initial interest in

mathematics and science, and early mathematics-related experiences. In many of these cases, being from a two-parent home allowed one-caretaker, primarily the mother, to take an active role early in their child's education.

The mothers provided essential pre-school experiences and supervision that created a nurturing environment that helped foster an initial interest in learning and provide an academic structure that was essential to these students' latter success in school. We see from the above that these participants' mothers played a major role in providing early educational experiences that shaped their interest in learning and readiness for school. In addition, these mothers provided needed supervision that provided a nurturing and structured home environment for their children. Although not all of these early educational experiences were mathematics and science specific, they were positive experiences that cultivated a love of learning, problem solving skills, and key reading skills. Having these skills helped these students place in Gifted and Talented and Accelerated programs in early elementary school.

In two parent families, the fathers also played an important role in their children's educational lives, particularly in their mathematics learning. These early mathematics experiences with their fathers were particularly dominant in the majority of the female participants' experiences (4/6), and many of them perceived these experiences as being a key component in their initial interest in the discipline. This interest latter grew into a love for the subject that was essential to their success.

During their early educational period, parents continued to play a dominant role in their children's success in school; however, the role of the elementary school becomes more pervasive. What we learn in the following section is that the parents and educational institutions were viewed as partners in these high achievers' successful launch into formal schooling.

Chapter V

SUMMARY, FINDINGS, CONCLUSION, AND RECOMMENDATIONS

This chapter presents the major outcomes of the data analysis and recommendations made to improve the research area. The chapter includes the summary of the study, findings of the study, conclusion of the study and recommendations in short and precise form.

Summary

The purpose of this study was to identify and understand the factors that influence in success of students in mathematics. Borrowing elements from family and school factors identified in mathematics education research, this study sought to understand which factors shaped the participants decision to succeed in mathematics. This study employed interpretive case study methodology in which interview data from a purposeful sample of six high achieving students was collected. And also to support the study of six high achiever's case, other six average achiever's case was also studied with the same variables.

Interview data was transcribed and analyzed. Each student was considered a case and data was reported by cross-case analysis. Qualitative methods were used in order to capture the essence of the groups' experiences and to give voice to these students who have been successful in mathematics.

The data obtained from individual interviews were analyzed to generate themes that provide an understanding of the family and educational factors that had an impact on these high achieving students' success and persistence in mathematics.

The study was based on the Habitus Theory of learning. According to this theory environmental factors influence in the learning process and a student is an agent of all related environmental factors. Our research concluded that being home related factors parent's

education level, parent's guidance and counseling, motivation by family members, parent's expectation from their children and parent's financial condition play the important role in the student's high achievement in the mathematics study. Also, being school related factors teaching style, teacher's expectation, getting continuous learning opportunities, motivation from overall school environment and attendance play vital role in the student's high achievement in mathematics. We can conclude here that all students are the agents of their surrounding environment and react how their environmental components are.

Findings

The study's findings, which are detailed in chapter four, are summarized here.

1. The family, specifically the parents played a major role in the participants' success and persistence in mathematics through college. The mothers provided essential pre-school experiences and supervision that created a nurturing environment and helped foster an initial interest in learning. This early interest provided an academic structure that was essential to these students' latter success in school. Their fathers helped cultivate an early interest in science and mathematics.
2. Their home environments promoted academic achievement. Once they entered elementary school, the teachers in their accelerated programs also held high expectations and provided them with challenging and engaging mathematical experiences that helped to cultivate an interest in mathematics.
3. Parent's education level has strong influence on the high achievement of students in mathematics.
4. Parent's guidance and counseling and parent's financial condition have strong influence on the high achievement.

5. Lack of motivation in home environment and lack of parent's well communication of their expectation on their children's better performance and the easy environment in home result negative environment in learning process.
6. Teaching style, teacher's well communicated expectation with continuous learning opportunities affect high performance of the students in mathematics.
7. Motivation level in the overall school environment is weak in the study schools. The efficiency of the students has been deteriorated by this factor. Some students do not regularly attend school. Students who attend their class regularly can improve their achievement level.

Conclusion

This study has presented some of the family and educational factors that impact students' success in mathematics. Although additional research is still needed on this population, the findings of this study supports existing research on high achievers and provides a glimpse into the experience of successful students in mathematics. This study's findings and the above discussion suggest that the family, particularly the parents, educational institutions, and the community worked in concert to ensure that these high achieving students in mathematics had the access to and opportunities for success in mathematics.

At each phase of their pre-academic and academic lives, they had structures inside and outside of school that gave them the support they needed to be successful and persist in a demanding discipline such as mathematics. These family, educational and community support structures also gave them a sense of outside accountability to parents, teachers, and peers. Because of this accountability, these high achievers perceived that they had no choice but to achieve and persist despite any challenges that they may have faced. In addition, they

had several forms of adult advocacy that helped them navigate their educational careers. Over time, however, they developed their own self-efficacy and personal agency that allowed them to take ownership of their own mathematics success in high school level.

Recommendations

From our study it can be concluded that related environment in home and school have strong influence in the achievement level of the students in the mathematics study. Students who have better environment factors can achieve high performance. Adversely, students with negative environmental factors cannot get good results in mathematics study. So, it is recommended that the supporting factors like parent's education level, parent's financial condition, motivation in home and school, teaching style in school, continuous learning opportunities, etc. must be improved to make students getting high achievement in mathematics.

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Appendix A

General Interview Questions Asked to High Achiever Students

Research Question	Interview Questions
General Background	1. Can you tell me a little about yourself? 2. What is your educational and family background? 3. How do you like school being a mathematics student?
What perceived factors contribute to high- achievement of students studying in public schools in mathematics?	4. What would you say was the key(s) to your success in mathematics?
What perceived factors contribute to high- achieving students in secondary level?	5. Why did you choose mathematics as a major subject? 6. Explain some of the experiences that lead to your decision towards mathematics?
In what ways do the school plays the key role in success in mathematics?	7. Was there anything in your school experience that influenced you to achieve in mathematics? 8. What experiences in school would you say most shaped your success in mathematics?
In what ways do they perceive the role of the community in their persistence and success in	9. How did your community impact your achievement in mathematics?

mathematics?	
In what ways do they perceive the role of their families in their persistence and success in mathematics?	10. How would you describe your family experiences? 11. What role did your family play in your success in mathematics?
In what ways do they perceive their own role in their persistence and success in mathematics?	12. What kind of mathematics student are you? 13. Is there anything about your personality that you would say makes you a successful mathematics student?

Appendix B

Interview Schedule with All Students (High Achievers and Average Achievers)

S. No.	Factors	Questions
	Home Related Factors	
1	Parent's Education Level	Whether your parents have got higher education or higher mathematics study?
2	Guidance and Counseling	Whether your parents provide guidance and counseling to you on your study matters?
3	Motivation	Whether you are motivated for better study from your home environment?
4	Parent's Financial Condition	Whether your parents earn enough to satisfy your needs?
5	Parent's Expectation	Whether your parent's show their expectation in your mathematics study and motivate for better results?
	School Related Factors	
6	Teaching Style	Whether you are satisfied with your mathematics teachers teaching style?
7	Teacher's Expectation	Whether your teacher expect better from your or he/she is ignorant on your performance in mathematics subject?
8	Learning Opportunities	Whether you are active participant in the day to day interactive classroom and other extra-curricular activities?
9	Motivation	Are you motivated from the overall school environment?
10	Attendance	Are you regular in the classroom?

Appendix C

Place:		Class:	
Date:		Class Time:	
Subject:		Hour(s) observed	
Topic:		No. of Students:	
Room No.:		Observer:	
Observation No.			

Classroom Observation Form

Observation Contents

S. No.	Observation	Comments
1	Class starts class on time.	
2	Teacher gives polite lecture.	
3	Teacher starts class by summarizing previous lectures of current topic.	
4	Teacher uses enough illustrations.	
5	Teacher uses instructional materials.	
6	Teacher provides class works.	
7	Students finish class works in given time.	
8	Teacher provides feedback on class work.	
9	Teacher seems to expect all students	

	to do well in his/her subject.	
10	Teacher informs growth of student in his/her subject and reason for.	
11	Teacher explains success stories to encourage the students.	
12	Teacher cares all students.	
13	Teacher checks home works of all students.	
14	Students do not hesitate to ask questions.	
15	Teacher asks questions frequently and up to the students seating in last bench.	
16	Teacher promotes to take active participation in the class.	
17	Class seems to be interactive.	
18	Students seem to be enthusiastic to learn mathematics.	
19	Enough physical facilities are available in the classroom.	
20	Teacher tries to make students feel that mathematics is not the difficult subject.	
21	Students ask creative questions.	
22	All students are present in the classroom.	
23	All boys are present.	
24	All girls are present.	
25	No one came late in the classroom.	
26	Teacher is satisfied on student's attendance.	
27	Teacher ends class on time.	

Summary:

What went well in this class?

What, if any, part of the class could have been enhanced or done differently?

Recommendations for Improvements, if any:

Additional Comments

Appendix D

Name of Sampled Students and School

S.N.	Students Name	Name of Schools
1	Maya Chhantyal	Shree Shanti Secondary School Khungkhani, Baglung
2	Tijan Magar	
3	Rana Bahadur Budha	
4	Gopal Chhantyal	
5	Surendra Chhantyal	Shree Janajagariti Higher Secondary School Bonadovan, Baglung
6	Uma Magar	
7	Nirmala Chhantyal	
8	Gyandeep Budha	
9	Bhagawati Budha	Shree Dhana Gau Jyoti Secondary School Taman, Baglung
10	Kopila Sirpali	
11	Ram Chhantyal	
12	Resham Sunchauri	

Appendix E

Marks Obtained by the Students

High Performing Students	**Previous Year's Final Exam Marks**	**Average Performing Students**	**Previous Year's Final Exam Marks**
Maya Chhantyal	91	Shekhar Pahari	52
Surendar Chhantyal	83	Uma Neupane	46
Bhagawati Budha	86	Nirmala Chhantyal	55
Gopal Chhantyal	79	Keshav Upadhyay	50
Gyandeep Budha	85	Ram Chhantyal	49
Kopila Sirpali	80	Resham Rai	51
Average Marks	**84**	**Average Marks**	**50.50**
Average Marks Difference			**33.50**

Appendix F

Parent's Education Level

High Performing Students	Education Level	Average Performing Students	Education Level
Maya Chhantyal	B.Ed.	Shekhar Pahari	Illiterate
Surendar Chhantyal	I Ed.	Uma Neupane	SLC
Bhagawati Budha	8th Class	Nirmala Chhantyal	B Ed.
Gopal Chhantyal	M.Ed. English	Keshav Upadhyay	Illiterate
Gyandeep Budha	Illiterate	Ram Chhantyal	6^{th} class
Kopila Sirpali	B. Ed.	Resham Rai	Illiterate
Total Literate	**4**	**Total Literate**	**1**
Total Illiterate	**2**	**Total Illiterate**	**5**

Appendix G

Guidance and Counseling

High Performing Students	Getting Guidance and Counseling?	Average Performing Students	Getting Guidance and Counseling
Maya Chhantyal	Yes	Shekhar Pahari	No
Surendar Chhantyal	Yes	Uma Neupane	No
Bhagawati Budha	Yes	Nirmala Chhantyal	Yes
Gopal Chhantyal	No	Keshav Upadhyay	Yes
Gyandeep Budha	Yes	Ram Chhantyal	Yes
Kopila Sirpali	Yes	Resham Rai	No
Positive Reply	**5**	**Positive Reply**	**3**
Negative Reply	**1**	**Negative Reply**	**3**

Appendix H

Motivation

High Performing Students	Motivated ?	Average Performing Students	Motivated?
Maya Chhantyal	No	Shekhar Pahari	Yes
Surendar Chhantyal	Yes	Uma Neupane	No
Bhagawati Budha	Yes	Nirmala Chhantyal	Yes
Gopal Chhantyal	No	Keshav Upadhyay	No
Gyandeep Budha	Yes	Ram Chhantyal	Yes
Kopila Sirpali	Yes	Resham Rai	Yes
Positive Reply	**4**	**Positive Reply**	**4**
Negative Reply	**2**	**Negative Reply**	**2**

Appendix I

Parent's Financial Condition

High Performing Students	Satisfactory Financial Condition	Average Performing Students	Satisfactory Financial Condition
Maya Chhantyal	Yes	Shekhar Pahari	No
Surendar Chhantyal	Yes	Uma Neupane	No
Bhagawati Budha	Yes	Nirmala Chhantyal	No
Gopal Chhantyal	Yes	Keshav Upadhyay	Yes
Gyandeep Budha	No	Ram Chhantyal	Yes
Kopila Sirpali	No	Resham Rai	No
Positive Reply	**4**	**Positive Reply**	**2**
Negative Reply	**2**	**Negative Reply**	**4**

Appendix J

Parents Expectation

High Performing Students	Parents Expect to Perform Better?	Average Performing Students	Parents Expect to Perform Better?
Maya Chhantyal	Yes	Shekhar Pahari	No
Surendar Chhantyal	Yes	Uma Neupane	Yes
Bhagawati Budha	Yes	Nirmala Chhantyal	Yes
Gopal Chhantyal	Yes	Keshav Upadhyay	Yes
Gyandeep Budha	Yes	Ram Chhantyal	No
Kopila Sirpali	No	Resham Rai	Yes
Positive Reply	**5**	**Positive Reply**	**4**
Negative Reply	**1**	**Negative Reply**	**2**

Appendix K

Teaching Style

High Performing Students	Satisfaction in Teaching Style	Average Performing Students	Satisfaction in Teaching Style
Maya Chhantyal	Satisfied	Shekhar Pahari	Not Satisfied
Surendar Chhantyal	Satisfied	Uma Neupane	Not Satisfied
Bhagawati Budha	Satisfied	Nirmala Chhantyal	Satisfied
Gopal Chhantyal	Satisfied	Keshav Upadhyay	Not Satisfied
Gyandeep Budha	Satisfied	Ram Chhantyal	Not Satisfied
Kopila Sirpali	Satisfied	Resham Rai	Satisfied
Positive Reply	**6**	**Positive Reply**	**2**
Negative Reply	**0**	**Negative Reply**	**4**

Appendix L

Teacher's Expectation

High Performing Students	Do Teacher Expect Better?	Average Performing Students	Do Teacher Expect Better?
Maya Chhantyal	Yes	Shekhar Pahari	Yes
Surendar Chhantyal	Yes	Uma Neupane	Yes
Bhagawati Budha	Yes	Nirmala Chhantyal	Yes
Gopal Chhantyal	Yes	Keshav Upadhyay	Yes
Gyandeep Budha	Yes	Ram Chhantyal	Yes
Kopila Sirpali	Yes	Resham Rai	Yes
Positive Reply	**6**	**Positive Reply**	**6**
Negative Reply	**0**	**Negative Reply**	**0**

Appendix M

Learning Opportunities

High Performing Students	Getting Learning Opportunities Regularly?	Average Performing Students	Getting Learning Opportunities Regularly?
Maya Chhantyal	Yes	Shekhar Pahari	Yes
Surendar Chhantyal	Yes	Uma Neupane	No
Bhagawati Budha	Yes	Nirmala Chhantyal	No
Gopal Chhantyal	Yes	Keshav Upadhyay	Yes
Gyandeep Budha	Yes	Ram Chhantyal	Yes
Kopila Sirpali	Yes	Resham Rai	No
Positive Reply	**6**	**Positive Reply**	**3**
Negative Reply	**0**	**Negative Reply**	**3**

Appendix N

Motivation in School

High Performing Students	Motivated from Overall School Environment?	Average Performing Students	Motivated from Overall School Environment?
Maya Chhantyal	No	Shekhar Pahari	Yes
Surendar Chhantyal	Yes	Uma Neupane	No
Bhagawati Budha	No	Nirmala Chhantyal	No
Gopal Chhantyal	Yes	Keshav Upadhyay	Yes
Gyandeep Budha	Yes	Ram Chhantyal	Yes
Kopila Sirpali	Yes	Resham Rai	No
Positive Reply	**3**	**Positive Reply**	**2**
Negative Reply	**3**	**Negative Reply**	**4**

Appendix O

Attendance

High Performing Students	Regular in School?	Average Performing Students	Regular in School?
Maya Chhantyal	Yes	Shekhar Pahari	Yes
Surendar Chhantyal	Yes	Uma Neupane	Yes
Bhagawati Budha	Yes	Nirmala Chhantyal	No
Gopal Chhantyal	Yes	Keshav Upadhyay	No
Gyandeep Budha	Yes	Ram Chhantyal	Yes
Kopila Sirpali	Yes	Resham Rai	No
Positive Reply	**6**	**Positive Reply**	**3**
Negative Reply	**0**	**Negative Reply**	**3**