

Chapter I

INTRODUCTION

Background of the Study

Pupil's performance, defined as, the ability of pupils to do something (Oxford Advanced Learners Dictionary, 1994) academic performance refers to the quality and quantity of knowledge, skills techniques and positive attitudes, behavior and philosophy that learners achieve or acquire (Ferguson, 1990). This ability is evaluated by the marks and grades that the pupils attain in a test or examination which is done at the end of a topic, school term, and year or education cycle. The scores and grades that each pupil obtains measure the degree of achievement. The quality of the grade and the number of candidates who pass in various grades determine the level of academic performance in a given class or institution in a given period in a particular examination, be it internal or public (Ferguson, 1990).

Low achievement is a concern for teachers, curriculum planners and administrators throughout most areas in Nepal. Most students have the desire to be successful in his/her class however most of them are failed. Moreover, many of them fail to reach the academic level due to different causes that affect mathematics achievement. Low achievement appears to be a common phenomenon in our schools and many students are suffering from poor achievement in mathematics

In spite of an increased focus on education, a large proportion of people in many countries are still being denied its full benefits. In developing countries like Nepal it is essential that all its resources are fully utilized because a large number of pupils suffer from poor achievement. It is the responsibility of every country to take the necessary steps to ensure their students maximize their academic potential.

Realizing the potential of every individual child should be one of the main objectives of education. There are children of all ability levels who, for various reasons, fail to reach their full development and do not attain the scholastic level expected from the majority of their contemporaries. Moreover, among children, many not only fail to reach the academic level of which they are capable, but quite often their school performance is constantly lower than that of their ability peers (Terman and Oden, 1947; Burt, 1962; Pringle, 1970; Whitmore, 1980; Gallagher, 1985).

Achievement of an individual is an outcome of his mental and physical potential, besides the experience he has gained in the process of exploration and learning. In a study considering the factors of school achievement, it is possible to ignore those aspects in which individuals differ from one another. The starting point may be academic achievement itself where wide ranging variations occur from the point of non-performance to the point of outstanding achievement. If we consider a group of students, it is normal that a few students are found to be high achievers on the one hand, and a few are underachievers on the other, while a sizable number of students usually appear as moderate achievers. The question arises why such a difference in achievement appears when the schools provide more or less uniform instructional and environmental facilities? Is this difference due to certain psychological factors? Does this difference depend upon inherent qualities? Is there any single factor or host of factors, which account for all differences in scholastic achievement? These questions often appear in the minds of educators, educationists and the psychologists, but with hardly satisfactory answers. Various investigations have explored numerous factors which are found responsible for academic success and failure. It has been widely documented that the academic achievement of students is linked to a number of socio-cultural variables. Among the socio-cultural variables associated with academic

achievement are the educational and occupational attainment levels of parents, family income and composition, ethnic and language minority status, and the absence of learning material in the home (Arias, 1986; Rumberger, 1983, Steinberge, Blinde, Chan, 1984).

Under achievement is widespread and concerns the school population of all ages. In spite of an increased focus on education, a large proportion of people in many countries are still being denied its full benefits. In developing countries it is essential that all its resources are fully utilized because a large number of pupils suffer from poor achievement. It is the responsibility of every country to take the necessary steps to ensure their students maximize their academic potential.

Nepal is one of the poorest countries of the world. All the basic facilities are being developed in Nepal. Education indicators are also poor. The educational institutions are centered in Kathmandu valley. Some of the cities out of Kathmandu valley have good educational institutions like Chitwan, Nepalgunj, Dharan, etc. Most of the areas in Nepal lack the good physical infrastructure and, similarly, educational institutions. As an example of condition of mathematics achievement of our country Nepal, Pass Percentage (PP) and National Average Achievement (NAA) of S. L. C. in mathematics from 2005-2013 have been presented in table below which indicates that there was low student achievement in mathematics.

Pass Percentage and National Average Achievement in Mathematics

Year	2005	2006	2007	2008	2009	2010	2011	2012	2013
PP	42.89	41.21	42.81	63.04	52.18	59.67	73.03	61.06	64.10
NAA	28.23	27.51	28.20	37.70	32.32	37.71	42.42	44.37	47.51

Source: School level educational statistics of Nepal, 2013

In the above table achievement in mathematics data of Nepali students has been presented. The table shows pass percentage in 2005 being 42.89% and national average achievement 28.23%. These percentages have been increased to 64.10 % and 47.51% in 2013. The increase in achievement seems to be material; however, it is still having not reached to the satisfactory level. Compared to developed countries, Nepal's achievement in mathematics is very low.

Statement of the Problem

There are number of reasons to be failure in mathematics. Most of the researchers have compared mathematics achievement of student on the basis of ethnicity, parent's education, occupation and income, and they have also found its effect on mathematics achievement. These researchers were found that the different causes of low achievement in mathematics. But no one explored the causes that bring low achievement in mathematics properly and satisfactory. So this study is expected to be helpful to determine the causative factor that determines low achievement. As well as, this study determines why the achievement level is low? which was the significance of this study.

This study was concern with the causes of low achievement in mathematics. The school annual result shows that the achievement in mathematics is lower than the other subjects. The mathematics exam result of class six of Nagarjun Valley Boarding School, Banasthali, Kathmandu of year 2070 was as under:

Mathematics Result, Year 2070, Nagarjun Valley Boarding School, Banasthali

Exam	First Division	Second Division	Third Division	Fail	Absent	Total
First Term	16	9	4	5	2	36
Second Term	6	3	10	16	1	36
Pre-Final	11	11	3	11		36
Final	18	6	5	7	0	36

Source: Nagarjun Valley Boarding School, Banasthali, 2070

The table presented above shows the four exam results held by Nagarjun Valley Boarding School, Banasthali in year 2070 of class six. Total class size was of 36 students. In first term only 16 students got first division marks. This number falls in second and pre-final exam with 6 and 11 respectively. Total fail and absent students were 7, 17, 11 and 7 respectively in first term, second term, pre-final and final exam. In final exam only 50% students got higher marks and 20% students failed. Rest 30% students were passed with average marks. This case is a representative case in Nepalese context. In Nepal private schools are far better than government schools. Also, private schools in Kathmandu valley have shown excellent performance compared to private schools in other areas. In spite of this situation the case of mathematics subject is different. Even students of schools with good results are not doing well in mathematics. So, the topic "Causes of Low Achievement in Mathematics" had been chosen for the research.

In the modern world, all the science and technologies are dependent on mathematics knowledge; so, mathematics is a major factor for every student to his/her career. The need of mathematics is apparent for everyday life as well as for higher studies in the field of science and technology. The study was concerned with the study

at primary level. The following were the research question for this study.

-) Why is the low achievement occurring in mathematics?
-) How do home and school related factors affect for low achievement?
-) How personal factors do brings low achievement in mathematics?

Objective of the Study

The major focus of this study is to find the causes of low achievement in mathematics at lower secondary level. So, this research intended to achieve the following objectives:

-) To explore the institution factors focus that brings low achievement in mathematics.
-) To find the causes of low achievement mathematics.

Significance of the Study

It deals with the rationale of the study. Mathematics is an essential part of school curriculum. It has been taught for all students as compulsory subject at school level. So every student needs the fundamental knowledge of mathematics to solve his/her daily life problem. Generally, mathematics is considered as difficult subject; most of the students afraid from it and are failed in mathematics in S.L.C.

This study is expected to be significant for the reason that it will help to determine the factors for low achievement in mathematics which can use to improve the mathematics teaching/learning process and to reduce the failure rate in mathematics. This study provides the appropriate information about the difficulties of students in learning mathematics. This study also expected to open the door for further research in the field of learning problems of students. So the research has been

more relevant and contextual. So, significance of this study can be listed as follows:

-) This study has explore the causes of low achievement in mathematics, which are valuable things for teacher, researcher, curriculum designer and other stakeholders related to mathematics education.
-) The study is important to identify how the learning environment affects in the achievement of mathematics.
-) This study would be useful for government, NGO, INGO and related committee to improve the educational status of students and those communities have deficiency in education.
-) It would be helpful to decrease the rate of low achievement in mathematics.

Delimitation of the Study

Any study cannot overcome all the fields. Among all private school of Kathmandu district only one sample school was taken accordance with researcher convenience and the study result was only based on mathematics classroom of selected grade of private school. So, the result of this study cannot be generalized in other schools. So, delimitations of this study can be listed as follows:

-) This study was focused only one school of Kathmandu district.
-) This study was done in Banasthali ward no. 16 of Kathmandu district.
-) This study was based on lower secondary level students of private school.
-) Four low achieved mathematics students were taken as respondents for the study.
-) This study was conducted for a short period, so every aspect of the students was not searched in-depth.

Operational Definition of Related Terms

Achievement

Achievement in this study was defined on the basis of mathematics score obtained by the students in the test taken by school.

Causes

The term causes was defined as the reasons that are affecting in the achievement of student such as practice, environment, teaching learning strategies and motivation.

Low achievement

Low achievement was defined as the state of low scoring in examination, along with not taking active participation in mathematics classroom and not being regular in mathematics classroom.

Socio Economic Condition

Socio economic condition was defined as the social status of the student's family & relations with the various social forces and financial ability of the parents and their occupation.

Home Environment

Home environment was referred as the aspects of student's domestic lives that contribute to his/her educational achievement.

Parent Occupation

Parent Occupation was meant to be a regular activity performed by the student's parents for generating income.

Case

Case was defined as a student selected to study on, to unfold the reality of low achievement in mathematics.

Parent's Income

Parent's Income was referred to as the amount of money generated by the occupation of the student's parents.

Parent's Education

Parent's Education was defined as the level of academic degree had by the student's parents either by one or higher of both.

Teaching Style

Teaching Style was defined as a method of teaching adopted by the mathematics teacher. It includes use of teaching materials, preparation of lesson plan, interactive learning in classroom, etc.

Teacher Student Relationship

Teacher Student Relationship was defined as the easiness felt by the individual students regarding teaching of mathematics teacher and his/her personal relationship with the math teacher.

Supervision

Supervision was defined as the supervision carried out by the head teacher and management committee of the school on learning process.

Practice of Mathematics

Practice of Mathematics was defined as the time spent by the students in

practice of mathematics subject apart from school classroom.

Pre-knowledge

Pre-knowledge was defined as the track record of the student's marks in mathematics subject in previous classes.

Personal Interest

Personal Interest was taken as the personal favor showed by the students on mathematics subject and extra time contributed to the mathematics study compared to other subjects.

Chapter II

REVIEW OF RELATED LITERATURES

Review of literature is an essential part of all studies, it is a way to discover what other research in the area of the one's problem has uncovered. The review of the literature helps the researcher to develop an understanding and insight into previous research works that related of the present study. It also provides away for investigating particular problems that research want to answer. The present chapter attempts to review the research studies and literature in the domain of causes of low achievement in mathematics with special references. Also, the purpose and question addressed in his study. It helps the researcher to know the work carried out in the area of his/her research project. The main purpose of review of related literature is to develop some expertise in one's area to see what new contribution will be making and receive some idea for developing a research design. The review of related literature helps to make the concept clear for the study and also directed to analyze and interpret the data.

Empirical Literature

Lamichhane (2001) did a research on “A comparative study of mathematics achievements of primary level students”. The objectives of this study was to compare the mathematics achievements of the children under grade teaching and subject teaching and to find the attitude of grade teachers towards grade teaching and its relationship with students’ achievements in mathematics. The conclusions were: The mean scores of the students under the grade teaching were higher than the mean score of the students under subject teaching. There were a positive attitude of grade teachers towards grade teaching and the correlation between attitudes of grade teachers with

the students' achievement was found to be 0.73 and it was found significant at 0.05 levels.

Similarly, the first survey of Scottish Council for Research in Education (1933) showed that difference between boys and girls in average scores was negligible but the Scatter of the boys score was greater than that of the girls. In the same year another fact was drawn by the above mentioned council after a survey that the children of large families tended to have lower score than those from smaller families. A second survey (Scottish Council for Research in Education 1949) on the same scale as the first, confirmed the findings that the average score was negatively associated with the size of families.

Sousa (2003) observed that a combination of factors both in the home and at school can cause underachievement. On the basis of current research in cognitive development and reading comprehension, two important reasons for students' underachievement in any academic area can be identified: (1) their inadequate understanding of how to select, adapt, and monitor strategies for learning; and (2) their insufficient motivation to actively apply the understanding they have (Ryan 1989). Ryan stressed that reading plays an important role in achievement. His research indicated that for the attainment of any reading or writing goal, an individual has four types of cognitive capabilities available for use: (1). Basic abilities (2). Acquired knowledge, (3). Strategies and (4). Met cognition. Ryan further observed that 75% of underachieving pupils in primary schools had reading problems among other things, whereas only 35% of the other pupils had reading problems. The former group underachieved in all subjects. Adequate attention should be given to reading and writing when the issue of underachievement arises, especially in countries where English is a second language. If pupils do not learn how to read effectively early,

when they are in school, they may have difficulty at later stages and may withdraw from learning rather than risk being exposed to shame.

Teachers often mistakenly assumed that underachievement is a simple problem. This is why one often sees on school reports dreaded stereotyping comments such as 'not working to potential', 'lazy', or worse still, 'dumb' but in disguised terms. The review has attempted to address the issue of underachievement in schools, especially at the secondary level. The lack of generally accepted definitions and agreed causes of underachievement was found to be a long standing problem among educationists. The gifted underachiever was identified as one of the types of underachievers that have attracted greater attention in recent time. The available literature has provided insights into the problem and revealed promising intervention strategies for the remediation of the situation, suggesting that underachieving learners can still learn if provided with the appropriate help. (Ogbonnia Chukwu-Etu, 2009).

Low achievement appears to be a common phenomenon in the Nepal's educational system. Low achievement in mathematics is a major challenge to mathematics education in Nepal. The issue is not only a question of efficient education, but concerns the need to create an equitable education system.

Chopra (1964) had studied the "Relationship of socio-economic factors with achievement of the students in the secondary schools." The investigation aimed at studying the relationship between socio-economic factors and academic achievement with measured intelligence held constant. Some of the important findings have been listed below. The percentage of failures among the students from the professional, administrative, executive and managerial groups was twenty seven while that for the other groups ranged between fifty nine and sixty one. On the basis of father's

education and occupation, family income, types of lodging, size of the family, cultural level of home, students belonging to the higher qualitative group showed significantly higher mean achievement than students coming from lower categories. The difference between the academic achievements of different castes was significant at 0.5 level. The groups of different castes matched for father's occupation did not show significant difference in achievement.

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 (19 orphan 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.

Sapkota (2011) studies on "Cause of failure in mathematics at school of a public school in Lalitpur district." The objectives of this research were to find the cause of failure in mathematics as secondary level and to identify the strategies taken by the school in improvement of mathematics achievement. This research design was qualitative as well as descriptive in nature. The respondents of the cause study were students, corresponding parent, teacher and head teacher. From the case school six low achiever students including three boys and three girls were selected according to differ family background and performance in mathematics examination. To collect the primary and secondary data school documents, observation note and interview guideline were used. The result of this research was classroom practice and the

curriculum was closely. Achievement of students is always affected by different variable such as schools learning environment facilities at home, classroom environment school policies, mathematics instruction, assessment of classroom and soon.

Pant (2014) conducted a research study on the topic "Causes of low achievement in mathematics of girls students". The main objectives of this study was to identify the causes of low achievement of girl students in mathematics as secondary level and to find out the ways of using materials, strategies and procedures for mathematics learning. The study is design as the case study, related to causes of low achievement in mathematics of girl's student, which is qualitative and descriptive in nature. Girl students have not enough time for home study and to do exercise practice of mathematics as home because of household woks and domestic problems. Because of non educated parents culture of the home is also not good for study. This study is major causes of low achievement of girl in mathematics. As a whole lack of student oriented teaching learning process, bad school environment and home environment, negative attitude towards mathematics of girls, no interaction with teacher, no per group discussion, no discussion with senior, no homework checked, no class work is given, no library and instruction materials are the major factors of causes of low achievement.

Lareau, Annette (2003) observes that socioeconomic status is typically broken into three categories, high, middle, and low to describe the three areas a family or an individual may fall into when placing a family or individual into one of these categories any or all of the three variables income, education, and occupation can be assessed. Additionally, low income and little education have shown to be strong predictors of a range of physical and mental health problems due to environmental

conditions may be the entire cause of that person's social predicament to begin with.

They also state that "low maternal education and minority language status are most consistently associated with fewer signs of emerging literacy and a greater number of difficulties in preschoolers." Having inadequate resources and limited access to available resources can negatively affect families' decisions regarding their young children's development and learning. As a result, children from families with low socioeconomic status are at greater risk of entering kindergarten unprepared than their peers from families with median or high socioeconomic status.

Gachathi, (1976) indicates that Occupational prestige as one component of socio-economic status encompasses both income and educational attainment. Occupational status reflects the educational attainment required to obtain the job and income levels that vary with different jobs and within ranks of occupations. Additionally, it shows achievement in skills required for the job. Occupational status measures social position by describing job characteristics, decision making ability and control, and psychological demands on the job (Erick, Nyakundi et al, 2012).

Families with low socioeconomic status often lack the financial, social, and educational supports that characterize families with high socioeconomic status. Poor families also may have inadequate or limited access to community resources that promote and support children's development and school readiness. Parents may have inadequate skills for such activities as reading to and with their children, and they may lack information about childhood immunizations and nutrition.

Castejon, S. and Perez, A. M. (1998) say that the learner's perception of family support directly affects performance, while the mother's level of education does so indirectly. Those learners whose parents are not adequately literate are

disadvantaged because these days' parents are required to assist their children with their assignments and projects that are supposed to be done at home.

Hawley, W., Rosenholtz, S., Goodstein, H., & Hasselbring, T. (1984).

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).

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. On the contrary, Kara and Russell (2001) comment that there has been no consensus on the importance of specific teacher factors, leading to the common conclusion that the existing empirical evidence does not find a strong role for teachers in the determination of academic achievement. The study therefore sought to investigate the influence of teacher characteristics on students' performance: whether teachers give assignment, mark and revise on time and reward or motivate the students' to learn.

Since from above review, there have been many researches on achievement study of different ethnic group, factor affecting learning mathematics and causes that affect mathematics achievement. From which the researcher has found that there is

many factor such as culture, physical facility, home environment, teaching learning process, motivation, teacher behavior and interaction are the influencing factor in learning mathematics.

Theoretical Literature

Many theories about the learning and development of children such as cognitive, behaviourist, humanist, social constructivism of which constructivism is one of the theories to analyze and interpret the data of mathematics or resolve the problem. To analyze and find the suitable solution in the area of low achievement in mathematics; constructivism becomes one of the possible theory to solve the problem on the topic of "causes of low achievement in mathematics". Every child learns from society from social contact with home, family and universe.

Constructivism becomes related to educational theory to deal with the problems of mathematics. It resolves the problem of low achiever in mathematics. It is a theory based on observation and scientific study to deal the problem of learning. It asserts on forming the understanding and knowledge of the world through experiencing things. When we encounter something, our mind perceives the things and reconcile with previous ideas which has already existed or reconciled with pre exist idea. It means our mind becomes active creator to reach and act with present surrounding. In the similar way constructivist idea of learning can point towards number of different teaching practice. It encourages the student to involve themselves actively and use techniques of learner centered, group work discussion, learning by doing, use outside tools to be more practical and gain high achievement in mathematics rather than classroom it focus on real life learning environment, social interaction and use of complex idea share with others outside of classroom easily.

Constructivism transforms the students from passive receipting of information to active participant in teaching process. Constructivism based on three axioms that are as follows.

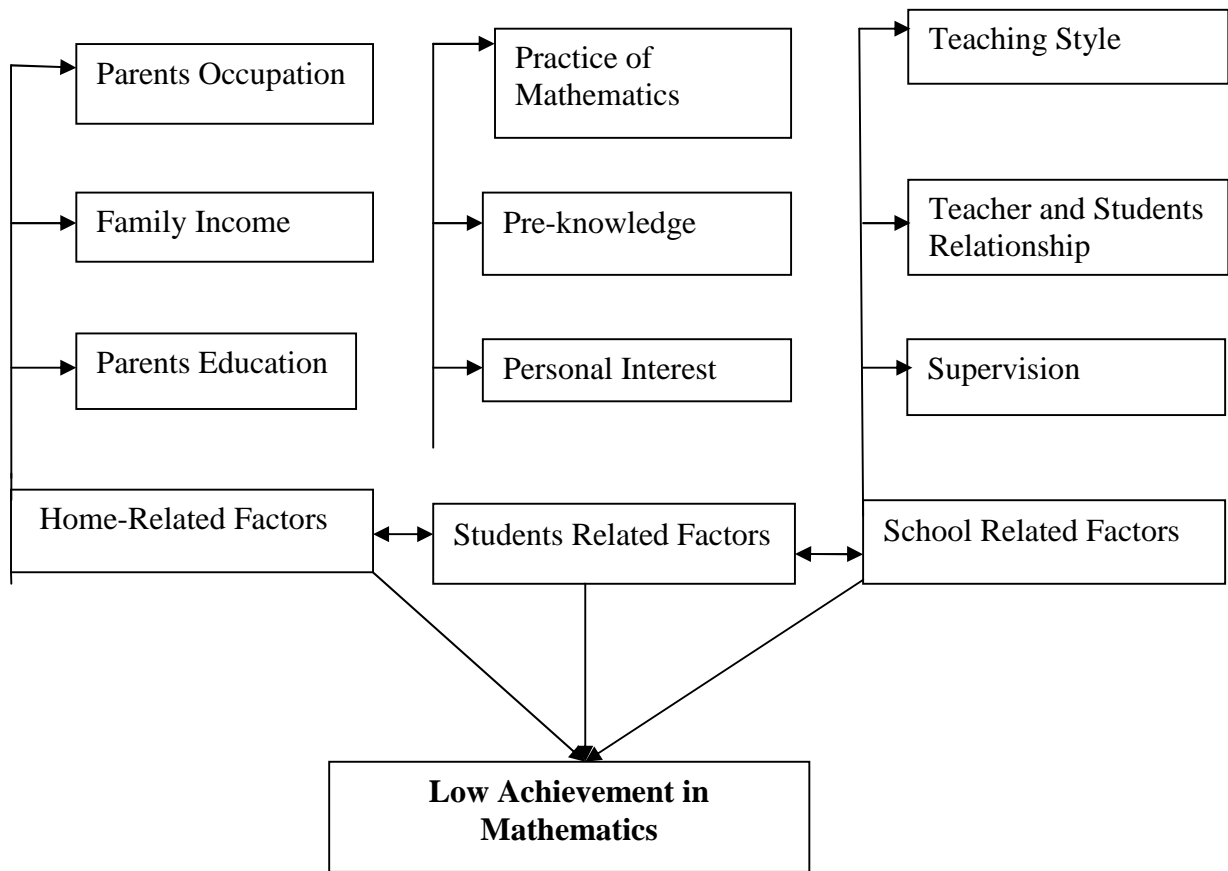
-) Learners learn knowledge from their active participation
-) Learners gain knowledge while reflecting on their own action.
-) Learners gain knowledge when they try to convey their solution to others.

From above axioms Upadhyay (2001) took three terms action, reflection and scaffolding to describe three broad aspects of constructivism, psychological aspect, philosophical aspect and sociological aspect. Piaget stresses on the key word "action" through which he advocates that knowledge is gained. He said that essential way of knowledge is not directly through our sense, but primarily through our action. Philosophical aspect of constructivism is also called radical constructivism, which is led by Glasserfeid who also advocates social constructivism leaded by Vygotsky, who states that knowledge is socially constructed.

Conceptual Understanding of the Study

Considering the related literature discussed above following conceptual framework was formulated and was the framework of this study.

Figure 1: Factors Affecting Achievement of the Students



There may be various reasons which result low achievement in mathematics. We can group those reasons into three categories for systematic study i.e. home related factors, student related factors and school related factors. The factors may not be equally effective depending on variance in place and social factors. From the literature discussed above three major factors related to each category had been picked and studied further. Finding out how those nine factors contribute to the low achievement in mathematics in Nepalese context was the major objective of this study. Home related factors parent's occupation, parent's income & parent's education, School related factors teaching style, teacher student relationship & supervision and Student related factors practice of mathematics, pre-knowledge & personal interest had been selected from the studies carried out by Chaudhary, Lamichhane, Ghimire,

Sousa, S.L. Chopra, Adhikari, Sapkota, Lareau, Gachathi, Howely, W. Rosenholtza, S. Goodstein H. and Hasselbring T.

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Chapter III

METHODS AND PROCEDURES

Research method is a plan, which determines how to complete the research systematically. This chapter describes the design of the study, rationale of selection of study area, site selection, selection of sample school, selection of case respondent, instruments for data collection, data collection procedure and data analysis and interpretation.

Design of the Study

Research design is the conceptual structure, strategy of the logical, systematic plan and direction of research. It is a way through which a researcher collects, interprets and analyzes the data. This study was a case study related to low achievement in mathematics. This case study was qualitative as well as descriptive in nature.

Case of the Study

Case study is a process or record of research into the development of a particular person, group or situation over a period of time (Oxford Dictionary). Case study research excels at bringing us to an understanding of a complex issue or object and can extend experience or add strength to what is already known through previous research. Case studies emphasize detailed contextual analysis of a limited number of event or conditions and their relationships. Researchers will use the case study research method for many years across a variety of disciplines. Social scientists, in particular, have made wide use of this qualitative research method to examine contemporary real life situations and provide the basis for the application of ideas and extension of methods. (Yin, 1984)

This case study was done over the period of one month. This case study is expected to be helpful to understand the complex relationship between the student's low achievement in mathematics and related environmental factors at home and school. Basically, the case study has pointed out the personal environmental drawbacks related to the selected students and a conclusion was drawn on the basis of the case study indicating the level of effect of those environment factors.

Selection of Study Area

The selection of study area is very important in case study. Students who were studying in the school, obtaining easy access, establishing immediate rapport, getting information, and gathering data directly related to the researcher's interest were the main criteria for selection settings. So, researcher selected purposively Nagarjun Valley Boarding School, Banasthali, Kathmandu. The researcher had a convincing reason for selecting the school that it is located in this area. There were low achiever students who had not completed lower secondary level due to the math's problem. And it was considered to be suitable for the researcher to study the cause of low achievement in mathematics.

Selection of Case Respondents

The respondent of the case study were low achiever students, their parents, mathematics teacher of related grade and head teacher. The respondents were selected purposively to find out the cause of low achievement in mathematics. From the selected school, only four low achieved students on the basis of mathematics score of previous exam were chosen according to gender, socio- economic background. The parents of case students, head teacher, and mathematics teacher were select as the respondents of the case study. For this study purpose, the researcher had prepared the

conceptual understanding of the study in literature review. To get additional information about the case students and his/her family backgrounds, researcher had prepared the individual students records of low achiever in mathematics of grade VII students.

Tools for Data Collection

Data collection is the most important part of the study. On the basis of data collection tools, researcher had collected the data and analyzed every aspect of the causes. The consequences of the study depend on nature of the data and data depends on tools. To collect the primary and secondary data, the following tools were used.

In-depth Interview

This study was focused on the interview data. The researcher undertook interview under the guidelines in unstructured form. With the help of developed unstructured interview the researcher carried out interview with key students, mathematics teacher, head teacher and corresponding parents to collect primary data. Making parallel with objectives, the researcher had developed the themes to collect data from students, parents and teacher.

Observation

The observation tool was applied to observe mathematics activities in classroom during teaching learning period, which was focused as per the theoretical framework and objective of this study. The observation was mainly concerned with the issues related to teacher's teaching style, teacher and student relationship and supervision provided to the students.

School Document

School record of the students, teacher profiles, mark ledger, attendance, past

result and other relative documents of the school were used.

Data Collection Procedure

At first researcher visited selected schools and established relationship with teachers and students. Then the researcher conducted interview with the selected responds. Teachers and head teachers were also interviewed for extensive information about the sampled students. The selected students were again be interviewed after getting extensive data about the students from their parents, head teacher and math teacher.

To collect the qualitative data, class observation was also carried out regularly for one month in mathematics classroom to observe activities. Researcher watched, listened, interacted and recorded the essential data from the information in a natural setting through using non-participant observation. On the basis of observation form the researcher observed mathematics class in grade VII of the school and behavior of the students in the classroom. On this observation form classroom behavior, difficulties they feel in mathematics learning and other essential information were carefully collected and noted every day during the class observation period of one month.

Data Analysis and Interpretation

The analysis of data was descriptive. The collected information at first was categorized according to the category of the respondents and then different themes were given in the text of interview and observation note. These themes were considered as a code. The similar code version of the respondents were analyzed and interpreted by using the framework the researcher developed in literature review. Written documents and school reports were used to identify the situation of the students and school's assessment on them. Cross-match and tabulation were adopted to validate the information and the conclusions were formed.

Chapter IV

ANALYSIS OF DATA AND INTERPRETATION OF THE RESULT

This is a qualitative study. The main focus of this study was to unfold the reality of low achievement in mathematics learning. This chapter deals the analysis and interpretation of the collected information derived from the case study. The researcher used in-depth interview and class observation procedure in this study. The researcher had observed the case students behavior, activities, and interaction with teacher in his research. The students' home environment and his behavior were evaluated by the researcher with the help of interview schedule.

The collection information were analyzed and described under the following headings:

Relations of Different Environmental Factors in Achievement

All of the amazing advances in today's world are born by learning and the teaching duties. Its improvement is the basis of all activities in the educational institutions. The credit of an educational system depends on the learning of its learners. As accepted globally, learning and academic performance is affected by many factors, including personality, IQ, family background, gender and age, as well as acquired factors such as learning styles and methods of study would have the effect. Studies in the field of cognitive psychology have shown that learning and study strategies improves the academic performance. In addition, numerous studies have shown that the impairment in learning and study skills could negatively be overshadowed by all the benefits of a good learning environment, even personal intellectual capabilities and mental /physical health. On the other hand, in the case of effectiveness could adjust or compensate many potential failures in an educational

setting and shortcomings in academic motivation and mental /physical health that can have a favorable impact on academic performance.

Most of the studies carried out in the Nepalese context are of survey type. They tend to inter-relate the socio-personal factors with the student's academic performance. However, there has not been any focus on the complexity and reliability of the study which carries many factors and covers a wide range of students. Moreover, there may be major personal factors which may relate to the psychology and habits of the individual student. And there may be specific environment in student's home that prevents the student being concentrated on their study. In the chapters below the researcher has tried to unfold the reality of low achievement in mathematics on case to case basis.

Student Related Factors

Respondent I

Our first case was the male student studying in Grade VII in the Nagarjun Valley Boarding School, Banasthali, Kathmandu. He was 13 years old boy students. He lives in home nearby school. There were five family members in his house and they all believed in Hindu religion. He was not known as a disciplined boy in the school. His interested subject was English in school and his aim in life was to be a businessman. In his career as a student till this point he never counted above the normal student in mathematics subject. He always had second division marks in mathematics.

His parents were uneducated. His parents had a business of selling sweets. They are counted as successful businessman in their area. From the childhood he had everything he wanted. His childhood was luxurious and without any disturb he used to

make decisions in his affairs. Being uneducated his parents could not supervise the study of his child. His one brother and one sister were studying in three, five in the same school.

He is a regular student in school and reaches school on time with school uniform. While observing the mathematics class, the researcher saw him with homework regularly but according to the mathematics teacher sometimes he comes without homework. After returning home from the school he takes his snack and then goes to play football with his friends. He returns home at evening. In the evening he studies 2 hours. Mainly he completes his homework and goes to sleep. He rarely revises the previous class subject matters.

He rarely helps his family members in their household works and business related works. He is extrovert in nature.

"He does not contribute much time in his study. However, he has never been failed in his career. We sometimes encourage him to study more. We often become busy in our business, so, we cannot make much attention in him. He had made many friends. He spends most of his time with his friends. His friends are also average students like him. He studies if he wants. However, his study is not regular at home. Keeping in view of her study we have not involved him in any family related responsibilities."

Parent View

He says that he was not excellent in mathematics since his childhood. From the early school days he had felt hardship in his study. Especially mathematics, he never gave special attention. He studies in the evening at home. He rarely studies in the morning. He frequently visits his friends and they often discuss about their enjoyment. In his home, there is no-one to guide. His family members often inspire him to be laborious and hardworking like his father.

"I cannot study regular at home. I normally finish my homework in time. Before exam I revise my school books and make exam preparations. My hobby is to travel and play football. I want to become a football player in future. " Student View

He has everything what a student needs for the study, extra materials, calculators and guides. However, he rarely uses those materials. In his school he is not counted as brilliant student.

"I have never seen him being sincere in his study. We try to focus him and improve his study. However, we are not satisfied with his improvements."

Mathematics Teacher View

Respondent II

Our second case was the girl student studying in Grade VII in the Nagarjun Valley Boarding School, Banasthali, Kathmandu. She was 12 years old girl student. She lives 10 minutes walking distance from her school. She is studying from her first grade in this school.

In her house there are 7 family members including her. She belongs from a Hindu family and they speak Nepali language. Her main aim in life was to be a good dancer.

Her class roll number was 19. Her favorite subject is Nepali. Her father is a government employee. Her mother is a housewife. Being 7 family members in the family and only one person earning they have not able to manage above the middle class family life. She regularly participated in school level and district level dancing competition and mostly won the prize. She is regular in her class. She often helps her mother in his household works.

"She has not satisfied me with her study results. Her father and I always encourage her to study more. I think she is honest in her study. However, in her results she does

not get higher marks. She never wastes her time except her dance classes. I sometimes see her studying till midnight."

Parent View

As per her mother in spite of great effort her daughter has not got good results in mathematics subject. In her past school records, it can be seen that before Grade V she used to get higher marks in mathematics. From grade V her mathematics achievement got gradually diminished. And now, on an average, she is even below the average students in her mathematics subject.

"I have never attended any tuition classes. I have not taken any guidance from my family members also. I contribute greater time for mathematics subject than other subjects. However, I cannot understand the fundamental things of mathematics. I am average in other subjects also. I think I cannot improve my study much."

Student View

In the course of interview with her it could be seen that she has surrendered with her situation in her study. She was satisfied with her efforts in the study. However, she was confirmed that she cannot get higher marks. She had got enough result what she could get from her efforts.

She used to present mathematics homework but rarely with perfect completion. She was regular in her school. There were no other things which show that she is not sincere in her study.

"She is a good girl. She is not excellent in her study. However, she dances very well. Our school has won many prizes in dance competition because of her. We are proud of her. However, as expected her study is not good enough."

Mathematics Teacher View

Respondent III

Our next case is girl student. She is 14 years old. Her residence is nearby her

school, Nagarjun Valley Boarding School. There are four family members in her family. In comparison with other dalit family, her family seemed small. Her father is a labor in work in construction site. They have small tea shop in Banasthali, Kathmandu. Her mother becomes busy in the tea shop morning to night. Her younger brother is at Grade III in the same school.

She could not respond about her favorite subject. She says that she has not chosen any subject as favorite subject. However, she says that she is good in social study. Her mother becomes busy in her tea shop from the morning to evening. She has got the full responsibility of looking after her younger brother. She has to help her mother in the tea shop work because her mother alone operates the tea shop. If there is special order of tea in any functions she cannot handle herself. In those days she has to leave her study. She remains in her tea shop and prepares tea for special delivery. Till evening normally she works in her tea shop after school.

"We are poor and dalit people. If I do not run the tea shop, we cannot afford food for morning and evening. My husband works in the construction site as labor. However, he often drinks local wine. We rarely get help from him. I am not happy on her involvement in the tea shop. She has no time to study. In the evening she gets tired of her daily work."

Parent View

She had less time in her home for her study and irregular in the classroom. Her school records showed her poor performance in mathematics from the childhood. While observing the mathematics class, researcher saw that she had not always presented her homework and immediately solved the mathematical problems which the teacher worked out in the class work. She had little friend in the classroom with whom he used to sit and outside the school too. She seemed satisfied with the school environment. She always respected teacher and staff of school because she thought

that they provided the opportunity to get the equal education to all thought that knowledge of mathematics should be applied to the day life.

"We sometimes go to her tea shop. She works hard there. We know she cannot have much time for her study. However, we have tried to make her study better. We have provided her scholarship. She should not pay the monthly fee to our school. However, her parents are not much concerned with her study. If they want she can improve her study. Her parents should make her less involved in their household and tea shop work."

Mathematics Teacher View

Respondent IV

Our next case was a girl student. She lives nearby the Nagarjun Valley Boarding School. She has 5 members in her family. She is 12 years old. Her father runs a wholesale business of garments. She has got two brothers, one works in a private company as a senior accountant and other helps his father in his business. Her mother is a housewife.

She has been grown up with all basic facilities available. Her father has managed their family life well. She is a brilliant student. She can catch everything she studies. In her home she has everything which is needed for her study. She rarely helps her mother in her household works. She has enough time for her study. When the researcher saw her past records she found that till Grade IV her marks were excellent. However, since Grade V her academic performance including in mathematics subject has been decreasing.

In the course of interview with her we came to know that she has got a health problem in her eyes. When she was in Grade V she felt some uneasiness in her eyes. She could not study regularly. Maximum effort in study resulted pain in her eyes. They consulted the eye doctor and started treatment. The doctor concluded that the

problem is not fully curable and she has to control her regular study and watching screens. Since then she studies less.

"My daughter is a brilliant girl. She is smart in her daily life. Because of her problem in eyes she is not able to get higher marks in her study. However, we are satisfied with her academic achievements in spite of her physical problems." Parent View

She always completes her homework. She studies 2-4 hours daily in her home. She tries to be refreshed after half an hour of her study.

She reaches in time in school. She is curious on her subject matters. She frequently asks question to the teacher. Teachers were found focusing on her specially considering her physical condition. She seemed completing her class work in time.

"She is a good girl. She has good relationships with her friends, teachers and other people. She is sincere in her study. We also do not make any pressure on her keeping in mind her eyesight problem. We know our responsibilities to her."

Mathematics Teacher View

School Related Factors

Teaching is the process of learning mathematics in the mathematics classroom. It is a science and art of providing and gaining knowledge via different method. It includes the method of teaching, process of motivation, opportunity to learn in classroom activities.

Teaching Style

During the course of class observation, the researcher had tried to know the teaching method used by teachers in mathematics classroom, teacher & student relationship and supervision of students while learning. This study focuses these things with the case respondents.

The mathematical problem can be solved by different process in mathematics.

The teacher's lecturing method directly affects on the mathematics learners. It is better to use student centered approach rather than teacher centered approach while teaching mathematics.

Many theories about the learning and development of children such as cognitive, behaviorist, humanist, social constructivism of which constructivism is one of the theories to analyze and interpret the data of mathematics or resolve the problem. To analyze and find the suitable solution in the area of low participation in mathematics; constructivism becomes one of the possible theory to solve the problem on teaching-learning. Every student learns from society from social contact with home, family, and universe. According to them, knowledge can be constructed from society. This kind of thoughts can be given by constructivism. The researcher analyzed suitable solution in the class of low participation in mathematics. States that knowledge construction is both a social and cognitive process.

When the researcher asked with the students the question "Is your mathematics teacher applies student centered teaching method?" The case respondents had taken mathematics subject as a most difficult subject in comparison with the other subjects. The responses to the questions were following:

"It is difficult to say, most of the time our mathematics teacher provides lectures and we follow her." Student View

"Our mathematics teacher takes care of students." Student View

"We are less participating in the learning process." Student View

"Teacher tries to make us involved in the learning process." Student View

From the above responses it could be said that case respondents do not feel that student centered teaching method has not been applied in the teaching-learning process. During the class observation the researcher also found mathematics teacher

applying lecture method in classroom. The main cause of their responses is taken as a method used by teachers while teaching learning activities in the classroom. When the present researcher tried to know the method of teaching of the teachers, the responses from the respondent teacher were as follows:

"I use student centered method as well as explain the problems step by step on the background while teaching mathematics. But I prefer to use problem solving methods most. If necessary I use teaching materials." Mathematics Teacher View

The above views indicated that the teacher is trying to use problem solving method but students are not feeling that change in their classroom. They feel that the teaching materials are not also enough for their study. Hence, we concluded that teaching method in the classroom was to be improved.

Teacher and Student Relationship

It is a theory based on observation and scientific study to deal the problem of learning. It asserts on forming the understanding and knowledge of the world through experiencing things. When we encounter something, our mind perceives the things and reconcile with previous ideas which has already existed or reconciled with pre exist idea. It means our mind becomes active creator to reach and act with present surrounding. In the similar way constructivist idea of learning can point towards number of different teaching practice. It encourages the student to involve themselves actively and use techniques of learner centered, group work discussion, learning by doing, use outside tools to be more practical and gain high achievement in mathematics rather than classroom it focus on real life learning environment, social interaction and use of complex idea share with others outside of classroom easily. Constructivism transforms the students from passive receipting of information to active participant in teaching process. "Do you have active relationship with your

teacher?" The responses were as following:

"I have never consulted with my mathematics teacher out of classroom. I sometimes ask questions in classroom. Teacher responds well." Student View

"I sometimes consult with my mathematics teacher. Our residence is nearby. She takes care of all problems I take to her." Student View

"I have good relationship with my math teacher. However, I have not visited her outside classroom for my study purpose." Student View

"I ask questions in classroom. Teacher responds well." Student View

The researcher observed the theory constructivism via student and teacher relationship. Some underlying matters were: Is the student frequently asks questions in the class? How teacher responds to the questions asked by the student? Are the answering shows the intimacy between the student and teacher? Do students feel free to consult with their teacher other than classroom time? This theory focus real life learning environment, social interaction and use of complex idea share with other outside of classroom early. It encourage the students involve themselves actively and use techniques of learners centered. Group work, discussion, and learning by doing use outside tools to be more practical.

"They are interested in singing, dancing, listening folk music and games. They are also interested in visiting and less of them consult us for their mathematics study."

Mathematics Teacher view

According to mathematics teacher, because of the poverty, most students couldn't invest money for tuition and coaching. They should consult their teachers after class time also to increase interest in mathematics subject. From the above responses, it shows that case respondent students are irregular to make the active relationship with their students.

Supervision

Most teaching methods fail because of lack of good supervision and feedback system. In a classroom different students may have different learning habits. Moreover, they may have different background and different experience about different chapters. In this situation they should be supervised analyzing all related things which can focus on the weak areas. For this a well designed feedback system must be applied. The observation and interview taken from students and teacher, it was found that the case respondents are not satisfied with the feedback system. It may have hamper on the teacher plan and overall achievement. When researcher asked the question "Do you satisfied with the supervision and feedback system of your school?" The responses to this question were as follows:

"Our school has no feedback system". Student View

"Teachers supervise us in most of the cases. However, feedback system is not god".
Student View

"We get feedback on our achievement rarely". Student View

"We are not getting point to point feedback which we need". Student View

According to the response it could be summarized that there teachers supervise the students in general and there is no effective feedback system in the school.

Home Related Factors

Children are supremely important assets of the society. Every child is unique. Children are after all what the whole process of education is centered around. All round development of the personality of children is the ultimate goal of education and therefore, the learning experiences provided to them contribute towards the achievement of this end. Right from the birth, the child is much influenced by all

those factors that surround him. The development is governed by many factors. In fact, what the child becomes is not solely determined by his genetic endowment but also by the environmental forces operative around him. Two institutes that influence most directly on the nature and quality of children's educational experiences and development are the family and the school. It is a common and plausible assumption that families prepare and reinforce the symbolic attribution required by schooling and that schooling builds upon and elaborates the symbolic resources derived from family membership. Families vary greatly in structure and functioning. Variations exist also in school and in children themselves. Given this diversity in families, there is a need to understand how children's experience within the family contributes to their educational outcomes. Since the acceptance of education is constitutional right of student in the age group of 6-14 years, secondary education has been an area of concern for both, the educationist and the government of Nepal. Though the figures of enrolment have risen consistently, increasing we still have a sizeable number of children outside the school stream. Universal enrolment is indeed a difficult problem, but even more so is the universal relation. Hence there arises the need to study the influence of family environment on secondary school student. Therefore, no matter what we do inside the school, we cannot make a significant impact in without the informed support of the family.

Parent Occupation

Home is the first school to every individual. The students spend most of the time in the house. The children learn many things from their parents. Parent's occupation determines the time contribution of the parents to their children's learning process. We all know that parents who contribute more time get the satisfaction of their children's high academic achievement. The occupation of the parents of the case

respondents were:

Respondent I : Business

Respondent II : Job

Respondent III : Labor

Respondent IV : Business

We had asked to the case respondents a question related to parent's occupation "Do you think your parent's occupation has affected your achievement in mathematics?" The responses were:

"I am free for my study. I can attend tuition classes and make my study good".

Student View

"I work at home and also regular in the school but I could not give more time at home."

Student View

"I have to help in the work at home and tea shop. I could not give time to my study. So, I do not participate in mathematics period."

Student View

"My study has been weak because of my physical condition not by my parent's occupation."

Student View

On the basis of the above response it can be said that the work load in the home hamper their study. They have to be irregular in the school because of the work at home. They could not give enough time for mathematics practice at home. So, they do not participation mathematics period.

The parents were asked some question by the researcher when the parents were asked about "What do they think about the education of their children." The following responses were obtained.

"I could not participated them, it is difficult to pay for their education so I think they

do not go to school and work at home with us for daily life." Parent View

"Now a day's everyone is educated so they have to go to study for good life."

Parents View

"It is difficult to live without education but it is difficult to pay for their education."

Parent View

From the above response it can be said that most of the parents are aware for their children's education. They think education makes life easy. According to them leave good life their children should study. Because their problems it is difficult to sent their children to school. At last it can be said that the all parents are aware for their children's education.

Parent's Income

Parent's income determines the level of physical facilities available to the children. Availability of educational materials, management of study room, freeness from home work load, etc. have direct effect from the parent's occupation.

When the parents were asked "how does a parent income affect their children's education?" their responses were as follows:

"We have earned enough for the education of our children. We have managed the basic needs".

Parent View

"The family size is large. So it is difficult to conduct the daily life. So it is difficult to provide education for them."

Parent View

"The source of income is merely enough to fulfill their demand, so we cannot afford for their good education"

Parent View

"The source of income is important for all families. People's happiness is directly related to the income level."

Parent View

From the above response the researcher found that parents have difficulty to

manage educational needs of their children. They have not enough income sources for good education. It can be said that income of the family effect the performance leaved of the children.

Parent's Education

We all know the value of education. Perhaps, all people want their family members to be educated and smart. However, there is a matter of discussion in this world that whether the education of parents affects the educational achievement of their children. Making concerns on the matter we have asked the respondents a question related to parent's education.

Among the parents of the respondent students, parents of two respondents were educated and parents of other two were uneducated.

The responses the question "how does the education of your parents affect your study were as following:

"The members in the home do not understand that we have to study in home also. They talk loudly. So we could not concentrate our mind. There is no person to help us on our need."

Students View

"My mother is uneducated but my father has got higher education. He guides me in my study. Further, he better understands my problems than my mother."

Students View

"My parents are not educated. So, they work as labor. We earn less and cannot afford good education. I have to suffer many times because they often do not understand my feelings."

Students View

"My mother and father both have got higher education. They understand my needs before I say to them."

Students View

From the above response it is found that educated parents can make difference in the academic achievement of their children. Students feel difficulty many times to make their parents understand their needs and problems. Schools and government authorities must frame programs to make the parents aware of their children's needs.

Chapter V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATIONS

Summary

Teaching learning process has been a very sensitive issue in this modern world. There are various important factors which affect learning process offered in school. From primary level to higher level of education such factors must be considered and must create such process and environment which affects positively in learning activities. Every effort exercised in teaching process has certain cost which may be economic, social efforts and personal efforts. The teaching learning process may have direct or indirect effect from such factors. This study was conducted to unfold the reality of low achievement in mathematics. The specific objectives were to explore the personal factors that bring low achievement in mathematics and to analyze the role of home and school related factors for low achievement in mathematics. Personal factors primarily included practice of mathematics, pre-knowledge and personal interest with their inner reality. Parent's occupation, family income and parent's education were studied as home related factors and teaching style, teacher-student relationship & supervision were studied as school related factors. The study was a case study. Four students were the case respondents. Case respondent students, their parents, mathematics teacher and head teacher were the source of information. A series of interview was conducted with them. Class observation was also conducted for the data collection. A descriptive data analysis method was applied for the case study. From the study it was concluded that environmental factors are vital to the mathematics achievement of the students and student related factors affect more to the achievement level.

Findings

This study was a research study to for unfolding the reality of low achievement in mathematics. The researcher found the followings in the study:

Respondent I have low interest in mathematics. He contributes most of the time except school in playing games. His rarely exercises mathematics at home.

Respondent II does not possess the good background in mathematics study. She had low level in her previous classes. Her personal efforts are not enough for the uplift of her study in mathematics. Respondent III keeps her busy in her household works and practices mathematics less. Many often she does not attend her mathematics classes.

Respondent IV is suffering from the physical problem in her eyesight. Because of eyesight she cannot exercise regular study.

-) Classes are less participatory. Mostly teachers apply lecturing method in the class. Student centered method of teaching is being applied sometimes.
-) In teaching learning process there is no proper feedback system. Student rarely get point to point feedback on their mathematics study.
-) Student of parents with business as occupation get more time at their home for study. Student of parents having job and labor as their occupation get less time at their home for study.
-) Parent's have difficulty in managing their children's study because of low income. Low class parents are not able to manage good accommodation facility and learning materials.
-) Parents are not educated. They are not able to understand their children's needs related to their study. Students are not feeling free to ask any help and for any need to the uneducated parents. Moreover, uneducated parents have low earning to fulfill their children's needs.

Conclusion

Home environment and school environment can be seen as overall learning environment. In addition of these two environments student related factors affect the achievement level of the students. From our data interpretation it can be seen that students focus more on school related factors than home and student related factors. This shows dependency mind set of students on school related factors. Interest of the student in mathematics decides his/her efforts in the mathematics subject. Many students keep specific hobbies of playing games, singing, dancing, etc. They contribute less time for their mathematics study and get low achievement. Some students have difficulty in mathematics because of lower background. They inherently feel that they are not good in mathematics in spite of great efforts applied regularly. Physical problems reduce student's ability to practice regularly and the result being poor mathematics achievement. Parent's occupation determines the free time of student at home for their study. Labor class parent's students rarely get chance of practicing mathematics at home. More family income and parent's education increases the student's achievement level in mathematics. Non-participatory teaching method has resulted low output level in mathematics classes. Lack of point to point feedback system has resulted poor confidence of students in the mathematics subject matter.

Recommendations

In this study "Unfolding the Reality of Low Achievement in Mathematics" student related factors, home related factors and school related factors have been considered. The study has been carried out as a case study. On the basis of this study the following recommendations and suggestions are made:

-) There should be proper management of time between the extra-curricular activities and the mathematics study of the students. Parents and school should give special efforts on the matter.
-) Special care must be provided to the students who feel that they have weak mathematical background. Their confidence level must be increased.
-) Special methods must be applied to assist the students who are suffering from physical problems and are not able to practice mathematics regularly.
-) Awareness to the parents regarding the time needed for their children for the practice of the study subjects must be enhanced. Further, parents must be aware on the daily needs of their children regarding their study.
-) Education must be easily reachable to the lower class people. Special packages must be applied to facilitate the student needs.
-) Teaching method must be participatory and student centered teaching method must be applied.
-) Teacher student relationship must be improved for easy access and assistance to the students in their need.

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APPENDIX I

Questions for Interview with the Selected Students

- J How old are you?
- J Where do you live?
- J How many members are in your family? What is your religion?
- J What is your interested subject? What are your hobbies?
- J What is your aim in your life?
- J Do you feel free to make your academic decisions?
- J Do your parents provide supervision and guidance on your study?
- J How much time do you study at home? Do you practice mathematics regularly?
- J Are you satisfied with the physical facilities available at your home?
- J Do you use extra materials for mathematics study?
- J Are you often become disturbed with your family problem?
- J Are you motivated from your school environment?
- J How often you visit to your friends and teachers for your mathematics study?
- J Are you satisfied with the teaching method used by your mathematics teacher?

APPENDIX II

Questions for Interview with the Mathematics Teacher

-) Is your student regular in school?
-) Are you satisfied with the class work and home work of your student?
-) What teaching materials do you use while teaching mathematics?
-) Do your students feel free to ask questions in your classroom?
-) Do you check homework regularly and provide immediate feedback to the students?
-) Whether the students are extrovert and comfortable with the group work?
-) What is your assessment of the different learning styles of your students?
-) How your teaching style is modified for different students with different learning styles?
-) Do you think student's home environment and personal factors are more responsible than school environment for low achievement in mathematics?
-) How your teaching methods and efforts are different for the low achiever students in mathematics?

APPENDIX III

Questions for Interview with the Parents

-) What is your academic achievement?
-) What do you do for your living?
-) How much do you earn from your occupation?
-) Do your children take self decision on their mathematics study?
-) Is your child self motivated to learn?
-) How much do you guide to your child?
-) Do you think your child is goal oriented?
-) Is your child regular in school?
-) How much time do you contribute to your children's study?
-) What is the past performance of your children?
-) Are your children involved in household works and your business/occupation?

APPENDIX IV

Questions for Interview with the Head Teacher

-) What is the overall achievement level of your school?
-) What are the special efforts to improve student achievement in mathematics?
-) Do you think your students are well encouraged?
-) Are learning habits of the students changed with age and class up gradation?
-) Does your school have sufficient physical facilities and teaching materials?
-) How much do you work on improving teaching methods of your teachers?
-) Do you arrange programs with the parents for improving student's achievement level in mathematics?

APPENDIX V
Classroom Observation Form

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

Observation Contents

S. No.	Observation	Comments
3	Teacher uses enough illustrations.	
4	Students ask questions.	
5	Teacher answers appropriately.	
6	Teacher provides class works.	
7	Students finish class works in given time.	
8	Teacher provides feedback on class work.	
9	Student listens lecture carefully.	
10	Teacher checks home works of all students.	
11	Teacher asks questions frequently and up to the students seating in last bench.	
12	Students answer the question. If not able they ask teacher for help.	
13	Students seem to be stress free in class.	
14	Students do not hesitate to ask questions.	
15	Students take active participation in the class.	
16	Students seem to be enthusiastic to learn mathematics.	
17	Enough physical facilities are available in the classroom.	
18	Teacher tries to make students feel that mathematics is not the difficult subject.	
19	Students ask creative questions.	

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APPENDIX I

Questions for Interview with the Selected Students

- J How old are you?
- J Where do you live?
- J How many members are in your family? What is your religion?
- J What is your interested subject? What are your hobbies?
- J What is your aim in your life?
- J Do you feel free to make your academic decisions?
- J Do your parents provide supervision and guidance on your study?
- J How much time do you study at home? Do you practice mathematics regularly?
- J Are you satisfied with the physical facilities available at your home?
- J Do you use extra materials for mathematics study?
- J Are you often become disturbed with your family problem?
- J Are you motivated from your school environment?
- J How often you visit to your friends and teachers for your mathematics study?
- J Are you satisfied with the teaching method used by your mathematics teacher?

APPENDIX II

Questions for Interview with the Mathematics Teacher

-) Is your student regular in school?
-) Are you satisfied with the class work and home work of your student?
-) What teaching materials do you use while teaching mathematics?
-) Do your students feel free to ask questions in your classroom?
-) Do you check homework regularly and provide immediate feedback to the students?
-) Whether the students are extrovert and comfortable with the group work?
-) What is your assessment of the different learning styles of your students?
-) How your teaching style is modified for different students with different learning styles?
-) Do you think student's home environment and personal factors are more responsible than school environment for low achievement in mathematics?
-) How your teaching methods and efforts are different for the low achiever students in mathematics?

APPENDIX III

Questions for Interview with the Parents

-) What is your academic achievement?
-) What do you do for your living?
-) How much do you earn from your occupation?
-) Do your children take self decision on their mathematics study?
-) Is your child self motivated to learn?
-) How much do you guide to your child?
-) Do you think your child is goal oriented?
-) Is your child regular in school?
-) How much time do you contribute to your children's study?
-) What is the past performance of your children?
-) Are your children involved in household works and your business/occupation?

APPENDIX IV

Questions for Interview with the Head Teacher

-) What is the overall achievement level of your school?
-) What are the special efforts to improve student achievement in mathematics?
-) Do you think your students are well encouraged?
-) Are learning habits of the students changed with age and class up gradation?
-) Does your school have sufficient physical facilities and teaching materials?
-) How much do you work on improving teaching methods of your teachers?
-) Do you arrange programs with the parents for improving student's achievement level in mathematics?

APPENDIX V
Classroom Observation Form

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

Observation Contents

S. No.	Observation	Comments
3	Teacher uses enough illustrations.	
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15	Students take active participation in the class.	
16	Students seem to be enthusiastic to learn mathematics.	
17	Enough physical facilities are available in the classroom.	
18	Teacher tries to make students feel that mathematics is not the difficult subject.	
19	Students ask creative questions.	