

## Chapter

### INTRODUCTION

Mathematics which was dynamic in nature as discipline and essential part of human life, is etymologically derived from an ancient Greek word Mathematic taken from "Mathanein" which means "to learn". It has been developed through the human endeavors in different area has come to the height of development and will still be in the process of development forever.

It is come to hear that mathematics is very hard, complicated, irritating, time consuming and boring subject, but I'm fully beyond of that assumption. In my opinion, mathematics is neither hard, nor complicated subject. It is simplest and clearest way of thinking, means of calculation, and means of increasing logical ability of learner.

Mathematics has been accepted as an important component of formal education from ancient period to the present day. History shows that ancient people developed mathematics practically being obliged to solve day by day problem. Later on advanced from the mathematical structure, rules formulas, theories has been developed and used on solving social problems through empirical observation and experiences. Now a day, every human discipline is interpreted in mathematical models. Therefore, there is a definite need of mathematics to everybody's daily life and also for the base for further studies. About the place of mathematics even in the ancient period Traverse and other (1977) states as: "Ever since the school of an ancient Greeks over 2000 years go, mathematics has been a key subject in the curriculum. The four liberal arts the quadrivium consists of Arithmetic, Geometry, Astronomy and music were basically mathematics studies."

The term "Achievement is defined in Oxford Advance Dictionary as 'the things done, successful especially with effort and skill. Achievement is the tool for evaluating the students which help to determine the quality of the student in their related areas. The popular and reliable evaluating tools for students is examination. There are different type of examinations to scale student achievement in the different level. The level of student are determined by evaluation applying different tools of achievement. The tools of achievement are examination such as oral, written, practical etc. They can be the reliable means for the determination of achievement of student.

There are several factors that are responsible for the achievement in mathematics of the student. Those factors may be teacher education, teacher. Personality, home environment instructional materials, individual difference, peer group, parent's attitudes and socio-economic status etc. The achievement of child depends not only part played by teacher but also the parent's awareness, student interest, previous knowledge teacher training revising curriculum textbook, developing resource materials improving supervision system, improving physical etc. have been made to uplift the achievement and performance level of student.

To conclude, school achievement is not just an academic question, it is equally a political economic, cultural and social question. Therefore understanding about a multidimensional approach, which is precisely what the researcher have done in the study of causing of low achievement in mathematics at Grade VIII.

On the context of the Nepal, it is need to study the causes of low achievement in mathematics at grade VIII. Thus this study is proposed to determine the causes of low achievement in mathematics at grade VIII at Lamjung district. The average achievement in maths at grade VIII in Lamjung district is 39.85 percent. The school

achievement of regular students in compulsory mathematics in different year presented below:

**Table No. 1**

**Past three years of average achievement in math at grade eight in case school**

<b>Year</b>	<b>Achievement</b>
2068	37.45%
2069	38.50%
2070	40.50%

Source: Mark Ledger, 2070

The above table shows that huge number of students are failed in mathematics in each year in our country. The fail students number is very large comparing to other subject. This result also poster that failure percentage in mathematics is very high. That is the wasted input of our nation towards education. It is the product of our liberal grading system and lack of continuous evaluations system from basic level. So, we should conscious about this problem. From this problem various district are also affected. So, the researcher could chose a one case school of Lamjung district. This lies in the southern part of this district. The name of the case school is Surya Joyti Secondary school which is located in Jeeta VDC ward no. 9, Nibuwatari, most of students are failed in mathematics in this case school on DLE.

**Statement of the Problem**

Mathematics is a significant subject in human life. Although mathematics is emphasized like language most of the students fail as difficult subject and majority of students lower achievement in mathematics because of this problem. The great deal of

time, money, effort and manpower of the nation has been wasted. So, the educationists and professionals are facing the challenge with the low achievement in mathematics and it seems that it is affected by various factors like home and school environment physical facilities, attitude towards peer groups, teaching learning process equipment etc. we can't achieve the expected goal without improving appropriately the management of above mentioned factors to facilitate student learning.

The problem of this study were mainly concerned with the causes of lower achievement in mathematics at lower secondary level of public school. The following were the research questions of this study.

- What may be the probable causes of low achievement in mathematics at grade VIII?
- How can we improve the student's achievement in mathematics at grade VIII?

### **Objectives of the Study**

The following were the objective of the study.

- To find out the causes of low achievement of grade VIII students in mathematics.
- To identify the strategies taken by school and teacher to improving mathematics achievement.

### **Signification of the Study**

Mathematics is one the most important subject of school education. It has been taught for all students are compulsory subject of the level.

There have been several studies on mathematics achievement since few years and that have contributed to view of poor mathematics achievement. But there were few researches based on "causes of low achievement in mathematics".

The study has some of significance as follows:

- The study would important to survey how the learning environment affects in the achievement in educational sector.
- This study intended to find the causes of low achievement in mathematics which may be valuable for teachers, curriculum designer and other stake-holder related to education.
- The study would useful for the various NGO, INGO and related committee.
- The study would help the government to improve the student's mathematics achievement.

### **Delimitation of the Study**

- Due to time and resource constrains this study has the following limitations.
- The study was conducted to grade VIII students of Surya Jyoti Secondary School.
- This study is applicable is jeeta VDC only and not equally applicable for other parts of Nepal.

## **Definition of Related Terms**

Some of terms used in this study are defined as follows:

### **Achievement**

The term of achievement is defined as a score obtained by the students in the mathematics examination of grade VIII in 2070 at Surya Jyoti Secondary School, Lamjung

### **Motivation**

Motivation is related to active in classroom teacher's strategies fantastic, romanticism and use different activities.

### **Physical facilities**

Physical facilities in this study refers will furnished classroom, manageable library, availability of reference books.

### **Prior knowledge**

Previous knowledge in related topic or in subject.

### **Public School**

All schools which is conducted by government of Nepal.

## Chapter II

### REVIEW OF RELATED LITERATURE AND THEORETICAL FRAMEWORK

Review of related literature is an exacting task, calling for a deep insight and clear prospective of the overall field. The main purpose of review of related literature is to find out what works have been done the area of the research problem under study and what has not been done in the field of the research study being undertaken. The review of related literature helps to make the concepts clear for the study and also directed to analyzed and interpret the data. There are some study related to achievement of mathematics is review for this study. Few related literature are given below:

#### **Empirical Literature**

Hughes (1999) studied on the most important conclusions from qualitative research on factors related to achievement in school are that (a) teachers are critical resources; (b) the composition of the student body matters; (c) school make a difference, and (d) physical facilities, class size, curriculum, instructional strategies and other resources influences student learning indirectly through their effect on the behavior of teacher and students.

In an effect to identify the cause for low achievement in mathematics, Some research (Attwood, et al. 2001) have suggested that achievement in mathematics in lower secondary schools is influenced by a number of variables. there variable include learner's abilities, attitude and perceptions, family and socio-economic status, parent and peer influences, school related variable such as poor learning environment,

learning cultures, past racial discrimination and low expectations by principle and teachers.

Rahman (2003) did his Ph.d. research work on "*A study of achievement in mathematics of eight grade students of different ethnic group of Nepal*" from institute of advanced studies in education, University of Luck now, India with the aims to compare the mathematics achievement of grade eight students if different ethnic groups. Tamang, Magar, Tharu and Sarki, find out the difference in achievement of different ethnic group in different subject areas arithmetic, algebra and geometry. He did get other objectives to find out the different in achievement if different ethnic group in different domain, knowledge, skills, comprehension and application . A survey methods was adopted the sample was selected by stratified random sampling techniques and means, S.D, t-test, f- test, parsons coefficient of correlation were used to conclude.

Pantha (2006) conducted a research on "*Parents occupation and their children's achievement in mathematics*". The result of his research showed that the student's level of achievement differs according to their parent's occupation among four different occupational groups. It was found that children of job holders have high achievement level in mathematics after the job holder, businessman, farmer and other children have high achievement level accordingly. The result also showed that the students who got high facilities have high achievement level in mathematics.

Janwali (2007) studied on the topic "causes that affect mathematics achievement of girls students" and determine the correction between affecting factors and mathematical achievement. The researcher adopted the survey method in this study. the sample of the study was determined by convenience sampling from

Rupandehi district. Researcher selected 25 sample students from different school of this district situated in rural from different school of this district situated in rural and urban area researcher visited each of the sample school. In this study one set of questionnaire was developed and three point Likert scale for the convinces of the respondent were developed for the collection of needed information which was used for students. Two schools we're selected from Kathmandu valley to implement procedure to testing reliability and validity. The collected data from the informants were analyzed and interpreted to identify the effort of school related factors and out of the school factors which effect the mathematics achievement of girls students to determine the correlation between affecting factors and mathematics achievement . Hence the conclusion of the research work was effective classroom teaching such as planning environment, less use of instructional materials, appropriateness to teaching participation on discussion, activity have strongly positive effect on mathematics achievement of girls students . It included that the effective classroom teaching is very essential for increasing the mathematics achievement of girls students . So it is should be improved the teacher behavior and family background are also have some positive effect . So that the teachers and parents be have equally responsible for the girls students learning activities in school at create good environment at home for learning and improve the mathematics achievement of girl student .

Bajracharya (2010) is her study "Factors affecting student related variables and mathematics achievement" concluded that the finding of the study, out of fine student related independent variables, standardized coefficients are used to compare the contribution of independent variables where as unstandardized coefficients are used for constructing a regression equation.

Bhatta (2010) studied causes of failure in mathematics in the SLC examination in an ineffective school of Sindhupalchok with the objective to identify the causes of failure in SLC examination from an effective school in Sindhupalchok district and find out the effect of causing variables and low performance students in effective school of Sindhupalchok district. This research was descriptive and quantitative in nature. So the researcher has used qualitative and quantitative data only the failure students from ineffective school were selected as sample of this study according to gender and previous academic background among them 25 exempted candidates to students were selected for sampling method to collect primary and secondary data for this case study the interview, class observation form and school document were used for the validation of the pilot survey was carried out. The data were analyzed and interpreted on the basis of different theories and by using purpose model of students learning. The theories were the theory of intelligence theory of fear, theory of school effective and theory of education productivity. Hence the result of this research was teaching learning process was become a great issue in different level of education. This research has shown that prior knowledge active participation practices and interest etc. From the side of students is essential for the better achievement. Similarly the subject teacher should have strategic teaching technique. Students and teacher both have devotion and labor towards mathematics learning and teaching strategy technique like motivation seemed less in teachers that increase failure.

Our students related variables gender, age, prior achievement and attendance. Significantly predicted which dependent variables and achievement score. But peer group interaction did not significantly predict in this study.

## **Theoretical Framework**

In the section, the researcher introduced the theoretical discussion which is relevant for the interpretation of the finding of the study.

There are various learning theories related to children's learning and development. Some of them are classical conditioning, operant conditioning, trial and error, social learning, social development, constructivism, cognitive learning, socio-cultural, multiple intelligence and so on.

There are so many theories which can be used to understand the learning. The theoretical discussion is needed for the interactive finding of the study. Many theories about 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 of resolve the problem. To analysis and find the suitable solution in the area of low achievement in mathematics; construction becomes one the possible theory to solve the problem on the topic of "causes of Low achievement in mathematics student". Every student learns 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.

### **Constructivism**

Constructivism is related to educational theory to deal with the problem of mathematics. It helps to find out the problem of low achievement in mathematics. It is the theory based on observation and scientific study to deal the problem of learning. It assert on forming the understanding and knowledge of the word through experience things. When we encourage something our mind perceives the things and reconcile

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 encourage the student to involve themselves activity and used technique of learner centered, group work discussion, learning by doing, use outside tools to be more practical and gain high achievement I mathematics rather than classroom it focus on real to be life learning environment, social interaction and use of complex ideas share with outside of classroom easily. Constructivism transforms the students from passive receipting o information to active participation in teaching process. Constructivism based on their axioms that are as follows Learners gain 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 their teams action, reflection and scaffolding to describe three board aspects off constructivism, psychological aspect, philosophical aspect and sociological aspect. Piaget stresses on the key word "action " through which he advocated 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 Glaserfeld who advocate as social constructivism leaded by vygotsky who states that knowledge is socially constructed.

Thus we see that there are many variables which affect the result of the in mathematics from the review of some international literature. the variable is aren't fixed which influences of the achievement of student in mathematics.

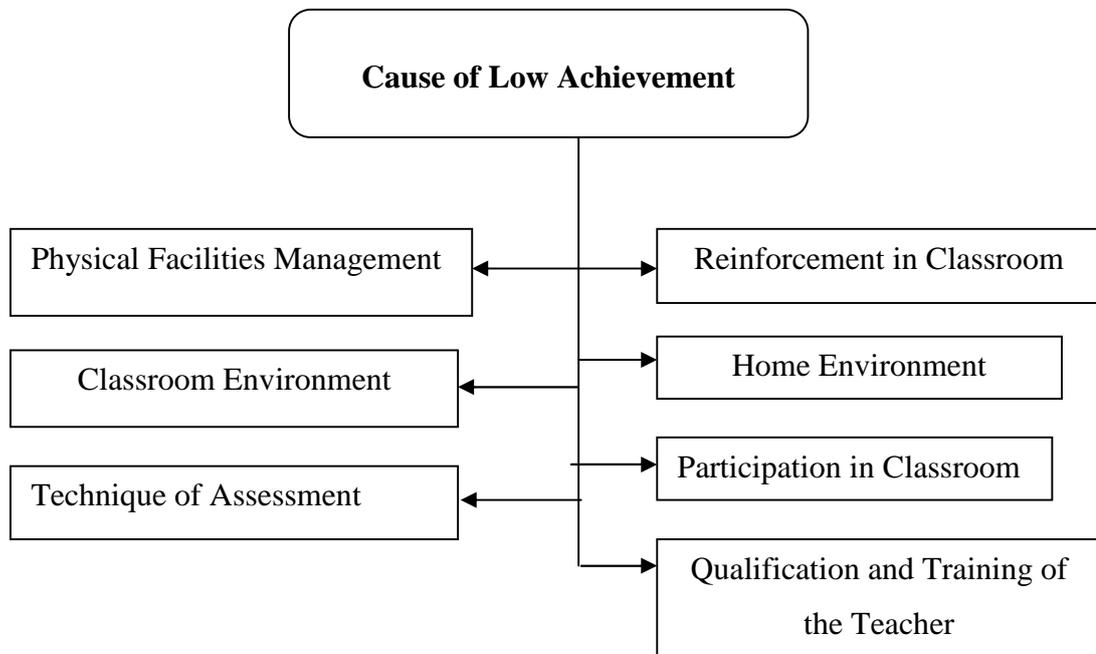
Barites and Akdemir (2009) identified the following variable which directly effect the mathematics achievement of the student such as socio economic status, parent's education, Instructional factor, instructional strategies and method, teacher school context and facilities individual factors arithmetic ability, motivation and concentration. But other researcher focuses on other variables. So these variables aren't fixed which affects the result of the student in mathematics.

**Conceptual Understanding of this Study**

This study related to the causes of low achievement mathematics at grade viii student. This study was mainly based on the already explained theory of social constructivism of mathematics learning and vygotsky's advocate as socially constructed knowledge and more collaboration for mathematics learning.

Fig : 1.1

**Model of Conceptual Framework**



This framework was purposed on the basis of this study " Causes Of Low Achievement In Mathematics" was refined the framework of the thesis conducted by Bastola (2005), A thesis submitted to Department of Mathematics Education.

Achievement is always affected by different various such as school factors, student factors, teacher's factors parent's related factors as this study intended to explain and element working for mathematics achievement on the basic of above review off theoretical literature and empirical studies the researcher has construction the above conceptual framework to carry out the research work.

## **Chapter III**

### **METHODS AND PROCEDURES**

Research methodology is a science, which determines how to complete the research systematically. This chapter deals with procedures carried out for the study. It describes the design of the study, population of the study, selection of case school, selection of respondents, tools of data collection, data collection procedure, analysis and interpretation of data.

#### **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 the researcher to reach the goal of research to collect data, Interpret and analyze it. This is a case study on of low achievement of student in mathematics at grade VIII. This is qualitative as well as descriptive in nature.

#### **Selection of School**

Our country, Nepal is a homeland of about 30 million people with a beautiful blend of 125 ethnic group and 123 different languages cultural diversity has created inequality in different field . School are diverse societies in which school in a multilingual and multi-cultural in which students differ culturally, economically, socially, from each other. The researcher is mathematics has point out mathematical achievement in students throughout the nation. Similarly many students from public school also have such low grade achievement in mathematics here in lamjung district . The researcher had selected Surya Jyoti School as case school among public

schools because the school has problem of student failure in mathematics and it can be easily seen through the result of district level examination.

### **Selection of Respondents**

The respondent of the case study were low achiever students in mathematics and the corresponding teacher as well as head teacher of the case school. Only eight of low achiever students from case school was selected according to different family background and performance in mathematics of cases chosen were the basis of purposive sampling methods.

### **Tools of Data Collection**

To collect the primary and secondary data for this study the following tools will be used.

#### **School Documents**

Teacher profiles, record of students, mark ledger, attendance, additional supports provided to students and other related documents were studied.

#### **Class Observation Form**

The direct observation forms used to collect the information about the teacher student interaction, teaching -learning activities, and classroom management with note keeping technique .

#### **Interview Guidelines**

Semi-structured interview guidelines were be prepared. This guideline was used to take interview from students, head teacher, math teacher and parents. Which was prepared on the basis of theoretical literature related to this study and objectives.

#### **Reliability and Validity of the tools**

Cross math was adopted to maintain the reliability and validity if the result of the case studies. The researcher had also tried to ensure the internal validity by observing the same phenomenon repeatedly by clarifying has biases and by the help of expert and supervisor

### **Data Collection Procedure**

The researcher collect the data and information by using interview schedule and classroom observation form to collect qualitative data. The school records was studied such as mark ledger of school students' teachers profile physical facilities and other relevant documents. The classroom was observed being participation with math teacher and students of grade for 30 days. The research recorded the behavior and activities of both teacher and students during teaching learning activates.

Head teacher, math teacher and sampled students as well as their parents were interviewed. All answers was noted during the course of interview, focus point of interview on mathematics achievement of students, schools facilities, vision of school towards low achieve students, policies that were adopted by school by for low achieved students and so on was conducted.

### **Data Analysis and Interpretation**

This was qualitative research hence the major part of data analysis was based on descriptive analysis. The information is were collected from the observation and interview by questioning present status of school facilities, students teacher activities, closure of lesson, used methodology and materials in classroom teaching .Then the researcher explained the data and their perspectives according to the respondents responses. The collected information from class observation, interview and school's document first categorized according to the category of the respondents and then different themes taken. These themes considered as similar code versions according to the respondents and explained in their perspectives. Cross match were adopted to maintain the trust of the study. The researcher also tried to ensure the internal validity by observing the same data on the basis of theoretical frame work developed by the researcher in previous section .

## **Chapter IV**

### **ANALYSIS AND INTERPRETATION OF DATA**

This chapter deals with the analysis and interpretation of the collected information. The researcher minutely studies the school's documents such as teacher profiles, mark ledgers, attendance as well as the records of the sampled students. Also, the researcher had observed mathematics class of grade VIII being participant with math teacher regularly for some days during teaching learning activities. Then, the classroom observation note was prepared on the basis of the class observation. Every activities and behaviors of the students and teacher were carefully observed and note. The direct interview was taken to the students, math teacher, head teacher and parents. The responses of the respondents during face to face interview were carefully noted. There was no limitation for respondents for responses. They were able to express freely whatever they have in their mind. The data were analyzed with the help of collected information from observation interview and school record.

#### **Introduction to the Case School**

Lamjung district lies in the western developmental region of Nepal and has known as one of the educational place in the region. The climate and geographical structure of this place is good. Shree Surya Jyoti Secondary School is one of the oldest educational institutions of Jeeta VDC. it is located at ward no. 9 of Jeeta VDC. This school was established on 2032 B.S. The school is situated near the Bank of the Risti River.

Our country is multi-lingual as multi-religious in nature so cultural diversities could be observed in every part of the nation. The surrounding places of the schools

are also has such types of diversities. Usually, people migrated from different hilly area are the local residence of place. Beside this, people from different parts of the nation could be found easily and the indigenous group. the Brahman, Gurung is also found in majority here. The Brahman, Chhetri, Magar, Dalit etc. are also the local of this area. The parent's of the students were mostly found in agricultural profession very few were engaged in jobs, business, abroad work, solders as well as labor. Economically, some peoples in the communities were rich and some of them had difficulty even for hand and moth. Initially, at the time of establishment, there was a temporary buildings, was no enough physical facilities but the school now has 6 separate buildings with enough physical provision and a large playground with average 300 students. There are many other secondary schools in this area including this one. But I have selected Surya Jyoti Secondary School because it has low performance in mathematics than other. The researcher had selected Shree Surya Jyoti Secondary School as a case School among public Schools because the School has problems of Students low achievement in Mathematics, it can be easily seen through the result of District level examination . Since few years ago which is presented below.

Fig : 1.2

Past six years of result at grade eight in case school

Years	No.of Students appeared in exam	No. of passed students	No. of failed students	No. of failed in mathematics
2066	32	13	19	11
2067	37	16	21	9
2068	35	11	24	13
2069	29	18	11	7
2070	25	13	12	8
2071	20	12	8	4

From the above table we can analyzed that in 2068 B. S 18 students out of 29 students which was the highest passed number in the result. In 2070 B.S only 13 students out of 25 students were success in that examination. The above table shows that there is undesirable result of mathematics students. There were 32 students, in average during last five years out of which thirty three percent students were failed in mathematics.

### **Physical and Instructional Facilities of the School**

Physical and instructional facilities are also the important factor which directly link with teaching learning environment of school. It plays a vital role in improvement of student's achievement.

Analyzing the data there wasn't enough materials in this school. Also there haven't teacher guide for better performance of students. Physical comfort and environment of school consider as essential part of however, there is no conclusive

evidence. In the related instructional literature on the relationship between school resource and student performance (CERID study on school performance).

Thus, the role of Physical and instructional facilities plays a significant role in the better performance of school. So without managing good physical and instructional facility in school we can't improve the student progress. Therefore it is also the responsible factor for causes of low achievement in mathematics.

The physical facilities of schools play a vital role in the sound environment and quality Education. That helps to increase the achievement of students. The classroom is considered as a heart and the school as the educational system. The school is located within the area of around one Bighaa. The school's buildings were not surrounded by walls. 6 separate buildings with 20 rooms were large, painted as well as ventilated well. Among 20 rooms, 15 rooms were for teaching purpose and 5 were for official works. There was a library but few books related to mathematics reading were not sufficient for students. The school also had a small science lab and a store room. The school had about 300 students and 17 teaching and 2 non-teaching staffs. The school had no any provision for hostel and coaching class for SLC appearing students at school, toilet, drinking water and small playground facilities were inside the school's compound.

The response of head teacher about school condition were:

*"The school hasn't sufficient teaching materials for mathematics, science laborator ,Computer and Library but the school is planning to manage those required materials for better education.*

*(Head Teacher)*

*"Our school has a library which is small in size so we cannot get sufficient reading materials other than newspaper"(Student)*

*"The School has no any reference books related to mathematics. Only textbook is read. It has no provision of enough library room. I encourage them to study references books from different places".(Math teacher)*

*"Now a days school ahs good physical facilities including buildings, furniture, toilet, drinking water etc".(Student)*

*"The school has no any source for physical and Education promotion. The per child fund, relief fund is the main source of educational promotion. The fund provided by the INGO is the basis of physical promotion".(Head teacher)*

*"We are attempting to promote the physical facilities and for this we are making plan".(Member of School Management Committee)*

*From the above facts it was concluded that lack of physical facility, mathematical instructional materials and infrastructure has affected the mathematics achievements of the students.*

*As social constructivism states that individual creates meaning through their interaction with each other and with the environment they live in. So the physical facility and infrastructure definitely affected the mathematics achievement. When the parents were asked "How does parent income affect their children's education?" Their responses were as follows:*

*"The source of income is hardly sufficient to meet their demand. So the children cannot get good education". (Parent)*

*"We cannot afford for the education. The income is merely enough for fooding and clothing". (Parent)*

*"It is difficult to pay for their education". (Parent)*

*"Income is sufficient enough to meet the ends and I have been paying for their education also". ( parents)*

From the above responses we can say that there was only one of the parents enough money to spend for their children's education and its was found that the family was able to pay for books and tuition fee of the children. The rest of the respondents didn't have a good income so they were not able to spend enough for their children's education which ultimately affected the performance level of the children

### **Classroom Environment**

The classroom environment includes the two important aspects. The first is physical environments; it includes the location of room, arrangement of desk, benches, chairs, position of whiteboard, facilities such as fan, cupboard, ventilation etc. Another is psychological; it refers to the relationship of students and teachers to each other.

As the researcher went into the classroom with math teacher, every student said good-morning sir. Then every student took their seats. The desk and benches were kept in two rows and sufficient for students. The classroom was clean and well swept. It was well ventilated but there were no fans. The whiteboard was clean and in front of students. There were only 28 students and 8 were absent on the day.

The researcher asked the question about the classroom management and its environment to the Head teacher, math teacher, students and their respective parents.

The received versions by the researcher are following:

*"There is good management in each classroom. In our school, the students are from different cultural backgrounds, caste and socio-economic status. Mainly, students from middle and low socio-economic status are studying here."* (Head teacher)

*"In grade eight, the students with different cognitive level could be found easily. Many of the students always fail in mathematics."* (Math teacher)

*"Our class is in good facilities. Many of friends are getting under poverty, so there are not necessary materials with them and some noise in the class."*

(Students)

The researcher found that there were different categories of families from the same village and its surrounding villages. They were maintained good environment among them and helpful to each others for learning new ideas. Also the management of the classroom was sufficient for the learners.

In this school, the physical environment was satisfactory. the student were from different ethnic and cultural with varied cognitive level as well a low achievement in mathematics.

### **Teaching learning Activities**

At the beginning of the lesson the teacher always communicated or explained the required topic but usually did not check for the understanding of the students. The

teacher frequently showed high level of interest in the lesson and reviewed as well as relating new learning to the previous learning.

### **Beginning of the class**

Usually, the teacher tried to start the lesson by connecting the students with their previous class. The teacher explained required topic of the lesson but not its objectives before introducing the lesson.

### **Teaching Materials**

Teaching materials is best instrument in the period of teaching learning activities. The subject teacher can be easily explained about the teaching lesson by using the effective teaching materials. Beside textbook not any other teaching materials were used during teaching learning activities.

### **Teaching Strategies**

It plays a great role in the achievement of students. It includes all the functions that are used inside classroom to achieve the goal of lesson. Usually, the teacher used teacher-directed structured practice with students. He did not use any relevant teaching materials during teaching learning activities. He was trying to participate students in discussion but only limited number of students were participating on discussion. The teacher was always using questioning techniques to every student to find out the level of understanding of students. He was trying to encourage low performer students in discussion and engagement on tasks. Problem solving method was the main type of instructional teaching used in the classroom.

Social construction that motivation is the key component for learning which makes classroom more interesting and encouraging. Teacher should become a facilitator in the classroom and should provide positive reinforcement. The positive reinforcement is always emphasizing in good learning. But the case school hasn't adopted this approach in classroom teaching of mathematics. Thus it is concluded that teaching learning process of school in the major aspect for betterment of student achievement teacher should pay attention to improve the condition of teaching and learning environment otherwise students progress tends to zero. Thus traditional classroom environment during teaching learning activities also a responsible factors for low achievement in mathematics.

### **Role of cooperative Method**

Researches in the field of education show that students can perform better if they are engaged in cooperative task. Students can learn better with their peer groups. While teaching, the teacher did not make any environment for students to take part in group discussion. He was trying to engage students individually.

The researcher had observed the classroom also found that usually, the teacher tried to start the lesson by connecting the students with their previous class. The teacher explained required topic of the lesson but not its objectives before the introducing the lesson. After that teacher wrote the definition or statements and formula on white board and then he solved the problems by using formula deductively. Students copy as it is. The subject teacher can be easily explained about the teaching lesson by the effective teaching materials. Beside the text book, white board and marker not any teaching materials were used during teaching learning activities .

Thus from all evidences students achievement is affected by teaching materials and methods used by teacher. Therefore teaching materials and methods has major effect on students achievement in mathematics at lower secondary level.

### **Technique of Assessment**

Teaching is considered as both science and art. A well trained teacher only can use different instructional techniques in the classroom to address for all cognitive level students. Before going to classroom, systematic plan is necessary to achieve the goal. The plan about objectives of lesson, activities to be performed at classroom, techniques of student's engagement in cooperative tasks and assessment techniques to be applied in and outside classroom are of great importance.

### **Classroom Assessment**

Assessment of students in to classroom had usually been implemented and measured using limited forms of tasks generally referred as "pencil and paper testing" emphasizing logical process of calculation, deduction and organization skills. Also, the teacher had adopted the questioning techniques during assessment of students.

The researcher asked the question about the assessment system homework to the Head teacher, math teacher, students and their respective parents. The received versions by the researcher are following:

*"The school conducts examinations three times a year to assess and measure the achievement of students. But other forms of tests like unit test depend upon the subject teachers."*

(Head Teacher)

*"I plans to make unit tests regularly."*

(Math Teacher)

*"Teacher gives homework daily but checks after completed the chapter.*

*( Students)*

*"If we do not complete the homework then the beats us but never checks in the classroom."*

*( Students)*

*"We always complete math homework because we are afraid with math teacher."*

*( Students)*

*"The teacher checks homework after a long time so we cannot correct it which is wrong." (Student)*

The researcher found that the mathematics subject teacher had not taken the unit test continuously. He was taking unit test for two times at a year. Now, he plans to take unit test every chapter. Also, he did not check the homework and class work in completing at the time. But he is more wrathful behavior. So, the students had been completed the homework who are intelligent and who are normal or poor completed the one day after.

The expressions of head teacher, math teacher and students show that there is a lack of continuous assessment system in school. There is a continuous lack of reinforcement and encouragement. The teacher only punishes so the students has negative attitude toward the mathematics teacher.

*"We provide student progress card to the parents at the end of the year but interested parents can see their student's progress with consulting the class teacher at any time".*

*(Head Teacher)*

*"The class teacher announces the marks obtained in examinations after one week of the examination."*

*(Students)*

*"Very few of the parents meet me and consult about their child's mathematics learning."* (Math Teacher)

*"When we visit the school, we use to go to the office and consult with the head teacher about our children's performances and after that we meet to the subject teacher."* (Parents)

*"I always encourage the parents to care more at home."* (Head Teacher)

*"The teacher gives us useful information about how to encourage of the children at home."* (Parents)

Few of parents came at the school to consult about their children and those who came continuously consulted head teacher, class teacher and subject teacher about their children. The head teacher and the subject teacher encouraged the parents and their children to improve the study.

From the above information, it was found that the school prepares the student's entire progress card on time but there was a communication gaps between parents and school. Most of the parents do not regularly consult teachers about their children's progress. Thus, it could be said that the school should maintain a proper communication with parents.

When the parents opinion was asked on the effect of their education on the education of their children, the following responses were obtained.

*"I can guide the children in simple problems and the rest they do themselves".* (Parents)

*"I am illiterate and the children are left to themselves for their home work".* (Parents)

*"I help them a bit when they ask me and sometime help them correct their mistakes".* (Parents)

*"I am helpless, I have no education so I can't help".* (Parents)

From the above responses we see that the literate parents help their children but the illiterate ones simply fulfill their duties by sending their children to school. Finally we can say that the parents education can be an added asset to improve the students performance level.

The researcher asked the question about the achievement of students to the head teacher, math teacher, students and their respective parents. The received versions by the researcher are following:

*"The achievement of students in mathematics is very low".* (Math Teacher)

*"The mathematics achievement of our school's students is not satisfactory."*  
(Head teacher)

*"It is the continuity of the previous years."* (Head Teacher)

*"We usually fail in mathematics because it is hard."* ( Students)

*"I got an accident last year, after then I failed."* ( Students)

*"We usually get confuse in exam, so fail the exam".* ( Students)

*"It is not a big matter because we usually fail in mathematics."* (Students)

The achievement of students in the mathematic is very low because the students was felt heard and difficulty subject, also the teacher didn't teach every

chapter in effective way and not used the teaching materials properly. But little increased in the achievement of mathematics compare to previous years.

Above responses show that the school has problem of low achievement in mathematics. Most of the students fail in mathematics.

Schools policies play great role in the improvement of school progress. A critical study of all aspects such as administration, commodity relations, student's performances, staff's relations etc. and development of operational policies can reduce all the problems that may be observed at school. The following are some of the representative responses of head teacher, math teacher, parents and students.

*"We have started semi-hostel facilities at minimum cost for SLC appearing students from this year aiming to 100 percent success with the help of teachers. Recently, we have managed one extra math teacher and started extra classes for grade ten."*

(Head teacher)

*"We were sent our children at school for extra classes in time."*

(Parents)

*"We were co-operated each other and I have started to teach from geometry portion".*

(Math Teacher)

*"We were planned to take internal test at least twice a month".*

(Math teacher)

*"I was planned to manage one class especially for low achieved student."*

(Head teacher)

*"The school was provided extra class in the morning at minimum cost but the number of students was same as class so the school should manage us in at least two sections measuring the level of student".*

(Students)

*"Finance was the not contributing factor, but now we are going to collect and will be invested in the promotion of physical and educational infrastructure."*

(Management Committee member)

Especially, the school provided the extra math teacher for the extra support to the mathematics now. So the students are feeling to pass the SLC exam. For this, the parents are sending their children in time at the school and financial support to this activity by the member of school management committee.

The above views indicate that a lot of improvements have done from this year and the processes of improvements are still continuing. The result of reforms cannot be no more analyzed due to the beginning of the implementation, but the vision of school were clearly defined among teachers, parents, students and communities.

Interest of learner influences the teaching learning strategy and achievement strategy and achievement of students. When man is being growth and develop, the area of interest are being increasing. Interest depend upon the individual some are interested in game, some area in study , music, arts, literature etc. If the student is interested in mathematics then s/he gives enough time to the study mathematics and ultimately gets good achievement in this subject . If the take as a hard subject they can not solved the problems and they do not take the more time for the subject .

### **Participation in Classroom**

Participation means engagement of student and teacher in the teaching learning activities to achieve the goals of the contents it is most influencing factor for influencing students result in mathematics. If there is not any participation between

student and teacher we can't expect better result of the student. There should be active participation between student and teacher for effective teaching learning activity.

The second important aspects of student failure is student participation in classroom. The extent to which students are asked to homework has a positive associated with school performance implying that the higher amount of homework is the greater achievement in SLC only 25% of the students are exposed to homework in their school and this percentage is much lower for public student. Homework is the regular characteristics in lower secondary level student with better performance while homework is rare event in this school. Student participation in classroom is the important variable for the success and failure of student in mathematics. All the students were from remote area and they had to work hard at home. Only 20% of the students are active participation in classroom teaching. The response of the student and teacher are mentioned as below.

*"I don't like to discuss about mathematical problem in classroom because I am very weak in mathematics. I do not have enough time in my home for mathematics practice. I should do various work in my home such as carrying water, cutting grass etc."*

(Failure Girl Student)

*"I like to discuss mathematical problem in teacher with teacher and friends. It is very interested and developed the confident in mathematics".*

(Low Achiever boy Student)

*"Most students are poor in mathematics. They are not studious and labors. Every time they are engaged in playing and cite talk, they don't correct even a simple mathematical problem".* (Math Teacher) For the question "How is the learners attitude towards mathematics" education ?" The following response was obtained.

*"They study at home regularly by them say that math is hard subject."*

(Parents)

*"Maths is very difficult subject so, they say we do not understand".*

(Parents)

*"They say we fail in mathematics lack of good teacher".*

(Parents)

*"They say we have no extra-classes for mathematics so, we feel hard".*

(Parents)

*"They say we have no interest in mathematics".*

(Parents)

It is concluded that most of the students felt mathematics as a hard subject and one of the major factors of failing is mathematics. Lack of extra-classes, lack of motivation, lack of good math-teacher reduces the achievement in mathematics. The following responses were obtained when research asked math teacher about the interest area of the students.

*"They are more interested on games like football, volleyball etc".*

(Teacher)

*"Along with games, they are found interested in watching the T.V. serial also."*

(Teacher)

On the basis of teachers observation on the interest of the students, it is concluded that these children are more interested on the entertainment activities rather than academic. They want to show their physical strength by playing games. But they show little interest in their study.

"How does the peer group affect in their education?" The answer to this question was as follows.

*"They choose optional subjects under the influence of their friends".*

(Teacher)

*"The students in a group choose the same subject as optional".* (Teacher)

*"The influence of "Peer group" plays a vital role in choosing the optional subjects".*

(Teacher)

All the respondent teachers agree that children are influence by the decision of their peer groups especially in choosing optional subject in grade X. they choose the same subject as their peers choose. How is your attitude towards mathematics education". The responses are

*"I have no interest in maths".*

(Students)

*Mathematics is very hard so I don't study*

(Students)

*Teacher don't teach us with pre-requisite knowledge so we feel mathematics is a hard subject.*

(Students)

*Mathematics is very hard subject than others.*

(Students)

*We have no tuition class, coaching class, so to it has made still a hard subject.*

(Students)

The above responses shows that the role of the students was passive and class was totally delimited by the teacher. Social contribution demands that the learners should play an active role in the learning process. It also emphasis on more student centered approach in classroom but the case school hasn't adopted this approach classroom teaching.

## Episode I

*Grade VIII was selected for observation time period was ten a.m. After the researcher entered the class ,the student stood up and said "Good morning sir"*

*The researcher told them to sit down. It was notices that the school environment was respectable to the teacher. There were 25 students in a class. The desks, benches were not sufficient for them .The white board was not on the proper place on the other hand the teacher started teaching mathematics without even warm up the reviewed the previous lesson, wrote the some problems from the text book and solved the problems on the black board which was not clean and could not seen by the back benches.*

*usually teacher opened the text book and asked the homework but only 25% students raised Their hands. Then he collected the homework and writes the topic which as "unitary method" from class eight and explained the basic rule and property of unitary method after writing on blackboard. Teacher wrote one problem related to time and work Example 20 workers working six hours a day can complete a piece of work in 30 days. In how many days will 30 workers do it, working 8 hours a day and explained step by step. All students were engaged on copying the blackboard and asked the question to the students, do you understand? if no he repeated the above process again and gave another problem to the students for individual practice. Teacher just moves among the student and observed their activities and did not any direction for this problems. He just looked the mistake d of the students on their copy. If he did get mistake only 20% correct the problem and no one asked the question, he again came to the blackboard and did the problem by the above process . Lastly teacher existed from classroom to tell that solve the problem of exercise with carrying the homework of students.*

Therefore teacher should applied student centered approach for effective teaching learning activity and betterment result. There is also a lack of active participation between student-student and student-teacher. So, active participation should be

compulsory for effective performance of student. Hence participation in the classroom is also the important influencing factor for student better performance.

The modern notion that knowledge can be constructed and reconstructed by the students themselves in course of learning was not found applied in classroom practice. There should be the process in the classroom that can promote students learning activities that can generate knowledge, skill and attitudes by themselves. Social constructivism demands that the teacher should work as a facilitator in the classroom but not transmitter of knowledge. It also emphasizes on more students centered approach in classroom. But the case school hasn't adopted this approach in classroom teaching. Hence, student's participation in the class room plays a great role in student's achievement. Only few students are doing homework and class work. So, it is also the causes of low achievement in mathematics.

### **Closure of Lesson**

The teachers had usually closed the lesson by not summarizing the lesson and not extra providing relevant practice questions to students.

The traditional classroom environment in mathematics has been strongly oriented towards a syllabus-based delivery, using teacher control, textbook resources and pencil and paper assessments in decontextualized tasks with mathematical knowledge frequently portrayed as disconnected. Students have not been able to spend sufficient time on earlier levels to allow conceptual comprehension. The acquisition of prior knowledge, a major determinant of capability, willingness and ease in classroom learning (Yates and Chandler, 1996) can then become inadequate while topic coverage in the form of rapidly sequenced instruction and topic changes has proven to be too much for proper understanding for many students. As a consequence,

providing the same learning content to all students in uniform ways has caused some students to be left behind because of the complexity.

From the classroom observations, the researcher concluded that the traditional classroom environment during teaching learning activities is one of the causes of low achievement in mathematics.

According to Carnine (1994) in traditional teaching method, teachers are expected to cover many topics, but most of the topics take a lot of time to teach thoroughly. The pace of syllabus coverage has been a prime concern of traditional mathematics instruction in many cases resulting in diminished opportunities for some student's achievement because of negative effects of the learning factors of prior knowledge and time to learn.

When the mathematics teachers gave the class work then he moved here and there because they could not solve it seemed there was not full attention in his study by the mathematics teachers. We have a Nepalese slogan: " Sarkair kam kahile jalam gham. "Effective teaching methods is also a most important factor to achieve the goal . Hence the period of mathematics was ended without solving his problems .

### **Qualification and Training of the Teacher**

These studies intend to find the causes of low achievement student in mathematics. Here many students are being failed in mathematics. Did not need knowledge of particular subject matter but also need to have pedagogical knowledge and knowledge of student. Teacher competency in these are closely linked to student thinking, understanding and learning in math education.

There is no doubt that student achievement in mathematics education requires to have a firm understanding of the subject domain and the epistemology that guides math education.

Recurrent teacher training has been adopted as a major strategy for enhancing the quality of student achievement. It is assumed that increased opportunity for professional development through recurrent training would lead to improve professionalism dedication and motivation which will positively contribute to student learning. There could be many factors causing a regular relationship training and student performance.

The views of mathematics teacher about teacher competency in mathematics education were:

*"School hasn't provided any refresher training for our knowledge and betterment of our teaching even though I am trained teacher. School doesn't have sufficient teaching materials and reference book, training and qualification are most important in development of teacher competency."*

The above responses of teacher indicated that there is a lack of teacher competency in math education. There isn't any refreshing and need base training. So the case school should improve this problem for betterment result. The views of head teacher about qualification and training of the teacher as mentioned below.

*"We aren't able to provide refreshing training for the teacher and to collect sufficient materials because of lack of economic sources; we have not any permanent economic source".*

The above views of head teacher claims that various problems related to qualification and teacher training because of lack of economic condition. There is also lack of reference book and materials because of economic condition. Hence we can't expect better result without improving the economic condition of the school.

Hence from the above views of math teacher and head teacher we claim that various problems are created because of poor economic condition of the school. So, this problem should be improved timely for betterment. Therefore low economic condition of the school is also responsible factor for causes of low achievement student in mathematics.

### Episode 2

*"It is In the observed class in the mathematics teaching One day the math teacher enters the classroom as the other days with the daily used materials. he wrote the topic 'indices' from class eight of algebra and explain the basic rule and property of indices by step to step after wrote in the black board but many students were engaged on cite talking in back side. Teacher wrote one problem  $\frac{3^n + 3^{n+1}}{3^{n+3} - 3^{n+1}}$  and solve by step to step in the blackboard and he gave one problem  $\frac{3^{n+2} + 5 \times 3^n}{3^n \times 5 - 3^{n-1}}$  for individual practice and moving around the students but only few students corrected the problems and some students were making noise. He again came to the blackboard and did the problem by the above process. Lastly, teacher exited from classroom giving some problem of exercise.*

Similarly researcher other three episodes of classroom observation and found that their is no change in teachers activities. Above observation shows that there is no any motivation and reinforcement in the class room teaching. Teacher was not using student centre approach for effective learning. This shows that there is no sufficient teacher competency in math education.

Geliert (1999) reported that "in mathematics education" research it seems to be undisputed that the teacher's philosophy of mathematics needs to have skills and knowledge to apply their philosophy of teaching and instruction decision.

Hence teacher is the facilitator of the teaching learning activity. There was a poor condition for training in math teacher. So, it is also the main causes of low achievement in math.

The above response shows that the classroom is teacher dominated and students oriented class was totally deductive. The cooperation between teachers and students couldn't be established. Social construction theory emphasis on the teacher should work as a facilitator in the classroom but not transmitter of knowledge, teacher, should help the learner to get to his or her own understanding of the content, teacher should provides guidelines and creates the environment for the learner to arrive at his or her own conclusions. But in case school it couldn't found.

### **Reinforcement in Classroom**

Reinforcement is tools which encourage students to learning and increase the rate of learning. There are two types of reinforcement such as positive and negative reinforcement. Reward, encouragement and money etc. are the positive reinforcement. It is observed that the teacher encourage sometime to the students by emphasizing academic task with class work. Teacher also provides feedback by guiding the students along the objectives of the lesson.

Some responses of the student and teacher about reinforcement were:

*"I reinforced the students by saying something interesting and providing curiosities cooperation etc"* (Mathematics Teacher)

*"School sometime provide us reward like copy, pen diary etc. When, we get the best position in the class in field of the school evaluation."* (Student)

*"Teacher never encourages us by providing the guidance about learning for our golden future. He didn't focus that we should labor hard for better position in math"* (Student)

The above views foster that teacher never provides the feedback for better position of students. Various kinds of reward is also provided for holistic development of students in any field of evaluation system. This is the progressive behavior of the school for better position of students. So, above opportunity provided by the school did not sufficient to encourage the students in learning process.

Social construction explain that motivation is the key component for learning which makes classroom more interesting and encouraging. Teacher should become a facilitator in the classroom and should provide positive reinforcement. The positive reinforcement is always emphasizing in good learning. Hence the modern concept of learning is that positive reinforcement is more effective then negative reinforces.

Thus, there is encouragement and motivation in mathematics learning, Various extra activities and feedback do the work of reinforcement in mathematics learning. So, this is also the responsible causes of low achievement in mathematics but the condition of the reinforcement is satisfactory in this school.

It is concluded that mostly students are from poor economic background. That hampers to raise the level of performance in mathematics.

Also on class observation, researcher found that math teacher never smiled at the classroom, never told any jokes. When one of the absent student asked about the

previous class problems then teacher replied it is taught yesterday, why did you absent? so ask with your friends. on the class observation time researcher asked to the students . "Why you are not questioning to the teacher about subject matter? " They replied we were suffering from fear of the teacher, he is strict person.

Thus from above evidences researcher concluded that students were suffering from teachers behavior and they can't express their expression, feeling, problems which directly linked with students achievement and so teacher's behavior has major effect on students achievement on mathematics at lower secondary school.

### **Home Environment**

The one aspect which affects the learning of students is the work they have to do in their home. It is not a new case to do simple work in home in our context. But if student doesn't get be time to study on home because of the overload of homework, it hampers in the study.

*"My father and mother both go to work out in the field and that time I have to also contribute my family by working in the field, sometime as carrying goods. So i don't get time to study at home."* (Students)

*"The children do help in the household work because we need their hand at our work. Sometime we ask them to stay at home to finish the word."* (Parents)

*"Parents are illiterate and they are not aware of the children's study."* (Teacher)

*"Learners economic background forces them to be engaged on parent's supports."* (Teacher)

From the above fact it was found that most of the students don't get sufficient time at home to do homework due to household workload. Mathematics is tuft and more time should be given for mathematics. Doing mathematics the students didn't get sufficient time at home. Most of the student's home environment was not conducive for learning. The family and economic situation was weak and environment was not appropriate while they stayed at home, they passed their time in house hold work. Most of the student's didn't get opportunity of study at home and so they were likely to be weak in mathematics. The following response was obtained when asked "How does social tradition affect the children achievements".

*"The society has the conventional belief that education for low caste is of little use".* (Parents)

*"It is better for the children to learn the traditional occupation followed by their forefather instead of wasting time in obtaining education."* (Parents)

*"Our duty and the future duty of the children is to serve their master".* (Parents)

*"Educating children especially daughters of no use since they have to do the household works after marriage".* (Parents)

*The response on the question "How does social belief affect his/her children".*

*"The people having more income see us in a dominated manner".* (Parents)

*"We are discriminated and people always tend to dominate us in social affairs.*

*"They dominate us, discriminate us and undermine our tribes".* (Parents)

From the above response there is psychological domination facing in their daily life which prevents them from building up their confidence which ultimately affects their performance level in Maths. "How does Socio-economic status affect the learning of the students". *Because of weak economic status they can't afford.*

(Teachers)

*Majority of the students are from poor family so, they are reeling throughout the academic year.*

(Teacher)

*It is very hard to buy book, uniforms and to pay school fee.*

(Teacher)

*They go to work to earn money hat hampers their study.*

(Teachers)

*"More crisis leads them to leave the school".*

(Teacher)

It is concluded that most of the parents were form poor family. It in very hard to progress in their study. to meet their demands, they have to go to work that makes irregular in the school. So it hampers their perforce level in mathematics. "How is the parents' influences in your study" The Reponses were

*"My father has studies under 10 class, so i don't get any academic support."*

(Students)

*"My father is illiterate."*

(Students)

*"My parent's send me at work to earn money".*

(Students)

*"My father helps me in solving simple mathematics problem."*

(Students)

It is concluded that most of the parents are uneducated an they have no any education that hinders the performance in mathematics.

The student responses about the effect of economic status in learning are:

*"I have not good economic status because no one in job holder in my family."*

(Students)

*"It is very hard to afford for education."* (Students)

*"We have to go to work to earn money for food, clothing and education."*

(Students)

*"It is very hard to pay fees and for other particulars."* (Students)

*"We can't afford for coaching fees, tuition fees conducted at zero time."*

(Students)

Above response shows that girl haven't enough time to do exercise of mathematics at home and repeat the chapter which are teach in class. E.L Thorndike emphasis on the law of exercise, recall , recognition, relearning and reconstruction but home environment of students is not good for do exercise recall recognition, relearning, reconstruction, They haven't enough time to do practice at home because of household problems.

In short the research declares that the major causes of low achievement in mathematics are irregularity of students, student's participation in classroom lack of economic condition reinforcement in classroom teaching learning environment, supervision and assessment physical and instructional facility of school and school polices for low achieve students which directly affect the result of the student in mathematics.

## Chapter v

### SUMMARY, FINDINGS CONCLUSION AND RECOMMENDATIONS

This chapter deals with the summary of the research, major findings of the research and conclusion and recommends for further study. The first section levels the summary, the next sections lists the major findings and conclusion derived on the basis of research analysis and finally presents recommendation for further study.

#### Summary

A range of source shows that school mathematics failure is a problem not only in Nepal but also in the worlds. Low achievement in mathematics are creating difficulties in teaching learning activities at school. Providing individual right to education and managing classroom with different cognitive level to bring out common educational outcome is a matter of problems to the school administrators. They are also challenging to the curriculum designers. The achievement of a student is not only affected by a single variable and there is not single answer for the question "Why do many student fail in Mathematics?"

This case study has been done to find the causes of low achievement in mathematics. The researcher had selected Shree Surya Jyoti Ma. Vi. Jeeta. School on the basis of the achievement in mathematics. As the researcher is also a local residence of this area and the school was facing problem of low achievement in mathematics so the researcher had selected this school for case study. After constructing the tools of data collection such as observation form, interview, schedule, the research participated at school and studied relevant documents related to sample students to find the causes of low achievement in mathematics. How student learns

mathematics is concerned with their opportunities to learn and the discussion he/she take part in. The level to which student learn mathematic depends of their engagement and experiences in classroom activities. As we know each child has innate potential sets of abilities so he/she needs opportunities to display that individual potential. thus, the creation of safe learning environment is necessary for students. In this research, the research has analyzed the school's physical and psychological environment, school policies, teaching learning strategies, assessment techniques, facilities at home, home environment, relationship among teachers, students, parents and communities as well as individual factors to find out the causes of low achievement in mathematics.

### **Findings**

The following points were observed while conducting this study which is the major findings of the research.

- ) Financial conditions were not strong enough to send their children at school and can't afford them in their further education. Most of the parents are illiterate and their children are usually used as means of earning money for their simple livelihood.
- ) The students were taught with poor learning cultures. Such as the teacher did not start the lesson by connecting the previous lesson, did not motivate the students, did not check the understanding level of the students and teacher directed practice etc.
- ) The students had shown negative attitude towards the mathematics learning such as, it is very hard subject, Mathematics has no meaning in our life. This subject in tedious so, I do not study regularly etc.

- ) Parents influence their children sending them at work to earn money leaving the school. Most of the parents were illiterate. They do not encourage their children to go to school.
- ) There weren't extra classes for low achiever in mathematics learning and lack of practice book for practice.
- ) School policy and school team haven't concerned about mathematics learning.
- ) School environment and classroom management never encouraged the student. Teachers have provided the feedback which acts as the work of reinforcement.
- ) Terminal exams are the assessment used by school to measure the student progress on academic task. Math teacher wasn't using other continuous techniques.
- ) There is not good tradition of making the parents aware about the mathematics examination result. But Parents get information of students progress in mathematics.

## **Conclusion**

Classroom practices and the curriculum are closely linked. Achievement of students is always affected by different variables such as school's learning environment, facilities at home and so on. Because of concern about low levels of mathematical attainment, new recommendations for classroom practices have emerged over the last decade that have aimed at allowing students to understand mathematics concepts, rather than memories facts. This focus on the learner's role in mathematics understanding began with the attempted to incorporate new skills of thinking and working in mathematics. These reforms aimed to shift from traditional

role practices towards communication of mathematical concepts, collecting information and solving problems from competitive learning to cooperation, from isolated concepts towards situated or towards situated or connected learning and application.

Teacher's beliefs about the nature and purposes of mathematics and how students learn have a powerful effect on the practice of teaching. Although the school seems to have sufficient physical infrastructure and qualified teachers but the teacher seems to be unable to maintaining individual differences and promote show learners in teaching learning activities. Classroom practice was the main cause of low achievement in mathematics at school. New policies of school seems to have better educational attainment if the total school family cooperate each other and support from own area.

### **Recommendation**

From the above findings and conclusion, the researchers would like to suggest some recommendations for the improvement of mathematics achievements of the school.

In the context of Nepal, many students fail in mathematics and the trend is still in continue. Usually from public schools are higher in number then other. Although qualified, trained and experiences teachers are working at public schools. Continuous assessment system, implementation of operational mechanism and its continuous analysis, a change from syllabus focus to students outcomes as well as a move from teacher at school.

This was a case study of a school so the results cannot be generalized in all situations. It is due to lack of time and resources. Thus, similar researches should be done in large schools district wise.

The result and conclusions of this study generated some other questions which needs to be verified one of them is presented here.

- ) What sort of policies and mechanisms should the school be adopted to promote mathematics achievement?
- ) Other recommendations for further study can be presented as:
  - ) A similar study can be done for other classes and other subjects.
  - ) School may be applied practical based activities which can promote their previous learning.
  - ) This study is limited and it can be done for overall district wise.
  - ) Child centre teaching method and other new techniques should be emphasizing.
  - ) the school should manage the physical facilities to improve the quality of education.
  - ) Teacher should provide the mathematical concept according to their pre-knowledge.
  - ) Teacher should apply the recent techniques and innovator of mathematics.
  - ) School should manage extra-class for low achiever students.
  - ) Non-testing devices of evaluation should be use in student evaluation from national level.

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## Appendix-A

### Classroom Observation Note

The classroom observation form prepared on the basis of following indicators being participant with mathematics teacher during teaching learning activities.

Date:

Teachers Name :

Grade :

School Name :

Time :

Address:

No. of Students :

Topic :

Reports of Classroom Observation Form

#### **Physical facilities management**

- Classroom size
- Cleanliness
- Light and ventilation
- Availability of furniture
- Set planning of students
- Arrangement of white board, Graph board, Bulletin board
- Mathematics laboratory
- School environment

#### **Teaching strategies**

- Beginning of the class
- Creates and maintain a physical setting that promotes learning
- Setting the stage for learning
- Classroom communication
- Review and relates new learning to previous learning

- Managing classroom diversity

### **Acquisition of learning**

- Combines auditory explanation with visual references and students involvement
- Check's student's understanding of objectives
- Uses motivational technique to maintain interest and involvement of students
- Provide guided for practices

### **Instructional Method**

- Teacher initiated method
- Student initiated method
- students teacher interaction

### **Technique of assessment**

- Assigning class work
- Class work checking
- Homework assigning
- Checks for individual understanding
- Utilizes questioning techniques

### **Closure of lesson**

- Relates lesson to objectives
- Student involvement is learning
- Checks the understanding of students
- Provide assignment/home work/ project work relevant to the learning that has been practiced with guidance
- Social environment around the school
- Co- curricular activities
- Others

## **Appendix-B**

### **Guidelines for Interview Schedule with Students**

Name:                      Age:                      Sex:

School Name:

The interview schedule with students was taken on the basis of following main topic.

- Home Environment of the Students: Task, Help, facility, parents, family
- Opportunity to learn to home
- Teaching learning activities starting situation, methods, response, management, question, evaluation system, summarize
- School environment of class room management
- Instructional materials
- Nature of materials, effectiveness etc.
- Relation between teacher and students
- Class behavior towards students
- Opportunity provided by school group work given in classroom.
- Case of the low mathematics achievement.
- Source of economy

## Appendix - C

### Guidelines for Interview schedule with Mathematics Teachers

Name : Qualification

Age : Sex :

Teaching experience : Training :

School Name :

The interview with mathematics teacher had taken on the basis of following main topic.

- Home environment  
Parent's status, qualification of parents, help of parents, financial supports.
- Classroom management  
Space, black board, physical facilities, number of students, school environment
- Relationship with guardians
- Teaching learning activities

Method, encouragement for students, relative question, materials, learning environment.

- Instructional materials
- Supervision of class
- Course of low achievement
- School environment of learning
- Relationship with staff and students
- Strategy of low achiever student
- Application of homework and class work.

## Appendix-D

### Guidelines for Interview schedule with Parents

Name : Age :  
Sex : VDC/Municipality  
Qualification: Word No. :  
Occupation: Religion :  
Annual income (Approximately):

The interview with parents had taken on the basis following topics.

- Parent behaviors towards child at home.
  - Views towards socio-econom
  - View towards school's facilities and policies.
  - View about cost of education.
  - School and home environment in learning for students.
  - Reading opportunity at home
  - View about the improvement of their children achievement.
  - Views towards child's educational achievement.
  - Relation among school staffs.
1. Do you encourage your children to study at home or to do house work?
  2. Which occupation of parent help to improve students' learning performance?  
Why?
  3. What kinds of problem have you got in school for your children?

4. Do you agree that parents economic status of family influences students achievement? Why?
5. Do you agree the parents' education influences students achievement level?
6. Are you satisfy from your children achievement level in mathematics? If not, what are the main reasons?
7. Any further suggestions regarding the improvement of students' achievement level?

## **Appendix-E**

### **Guidelines for interview with head teachers**

Name :

Religion :

Sex :

Experienced of head teacher :

Qualification :

Age :

This interview with head teacher was taken on the basis of the following main topic :

- View towards mathematics achievement
- View towards socio-economic background
- View towards low achievement of students
- School's facilities
- Relation between staff and students
- Policies for low achievement students
- Relationship with guardians.
- Classroom management
- Role of school management committee.
- Evaluation of students learning difficulties and progress.

## Appendix-F

### Physical facilities

S.N.	Description	Quantity	Remarks
1	Play ground	8 ropane	Boys girl and staff
2	Toilets	4	General
3	Drinking water	2	No
4	Library	1	Concrete
5	Math lab		
6	Building	6	
7	Room	20	
8	Desk and bench	250	
9	Chair table	45	Simple

### Instructional Materials

S.N	Description	Quantity	Remark
1	White board	25	
2	Text book	350	
3	Reference	100	All subject
4	Practice book	50	Not all subject
5	Teacher guide and curriculum	55	Not all subject
6	Different board	10	
7	Other chart	75	

**APPENDIX -G**

**DEMOGRAPHY OF THE CASE SCHOOL**

S.N	Name of teacher	Qualification	Adress	Training	Remarks
1.	Balhadra Rimal	B.A/B.Ed(social)	Jeeta-6 Lamjung	Trained	Head teacher school level
2.	Sitaram Majakoti	M.Ed (Eng)	Neta -5 lamjung	Trained	Secondary level
3.	Hridaya Raj Ghimire	M.Ed (math)	jeeta-6 lamjung	untrained	secondary level
4.	Ishowri Prasad Neupane	B.Sc (sci)	jeeta-6 lamjung	untrained	secondary level
5.	Chandra kala Timelsena	B.A (eng)	Tandrang Taksar-9 lamjung	untrained	lower secondary level
6.	Yegya Prasad Mishra	B.Ed (pop)	jeeta -9 lamjung	trained	lower secondary level
7.	Harischandra khanal	M.Ed (eng)	Tendrang Taksar – 9 lamjung	Trained	lower secondary level
8.	Basanti Shrestha	B.Ed (math)	Suryapal – 9 lamjung	untrained	lower secondary level
9.	Ramchandra Bhusal	I.A(Nep)	Jeeta – 9 lamjung	untrained	primary level
10.	Gauri Neupane	B.Ed(Nep)	Tendrang Taksar – 9 lamjung	trained	primary level
11.	Trilochen Bhusal	I.com (math)	Jeeta – 9 lamjung	untrained	primary level
12.	Mina Mishra	I.Ed (Eng)	Risti -3 Tanhun	trained	primary level
13.	Sharmila Dawadi	I.Ed(Eng)	Tandrang Taksar lamjung	Trained	primary
14.	Samjhan Poudel	I.Ed (math)	Jeeta – 9 lamjung	UnTrained	Primary
15.	Saraswati poudel	I.Ed (nep)	Jeeta -9 lamjugn	Untrained	Primary
16.	Satay Devi Ghimire	I.Ed (nep)	Jeeta -9 lamjugn	Trained	Primary