

## Chapter I

### Introduction

#### Background of the Study

Mathematics is important in every step of life and in science, commerce and even in research for that mathematical knowledge is very essential. Mathematics is often called backbone of education and fundamental component of the literacy.

Different researches show that it is a gate way and critical filter to study for further study and employment. According to Social Constructivist, mathematics is a social and cultural product. Mathematical knowledge is fallible, like other branches of knowledge. Mathematics is a very important subject, it helps to develop logical thinking in one side and other side it helps students by opening the doors to many careers and courses of further study (Acharya,2072).

The term 'ethno mathematics' is used to express the relationship between culture and mathematics. D' Ambrosis (1985) defined that ethno mathematics as the mathematical practiced among cultural groups such as national tribal societies, labor groups, children of certain age bracket, professional classes and so on. There is world; different cultures have different castes, races. Their culture used own tradition as well as professional mathematics skills, concept, knowledge etc. Also in our country several castes, races are stayed. In our culture is made different not only castes, races, there are also different regions Terai, Hill, Himal etc. There people's survival system are different to each other. Their uniqueness living styles are using different mathematics to solving daily problem of life.

The word 'Pahari' is derived from 'Pahar' which means mountain. The word 'Pahari' is an adjective in Hindi, Urdu, or Panjabi and it literally means 'of the mountain' when used in linguistic contest it means 'language of the mountain

people' (K.C,2008). The Pahari live in the Kathmandu Valley, and are regarded as a low caste people by the local society. They previously owned land on a communal basis, but their rights to the land have been usurped by higher caste groups. Paharis have developed a class structure within their own caste. Those who eat beef have even become untouchables to other Paharis. The worship of clean deities is a special festival for those people. During the full moon period in November they sacrifice animals and chickens to the Earth God, whom they call the King of the Earth (Joshua Project,2019).

Paharis live in the high hills east, west, north and south of Kathmandu valley. The minority groups of Paharis are mainly found in the villages Khopasi, Saldhara and Simthali of kavrepalanchowk district. However, they consider Dailekh, Lalitpur, Makawanpur, Sindhupalchowk, Gorkha, Kaski, Sinshuli, Udayapur Districts. According to the census (2011), the total population of Pahari is about 13,615 with 6,670 males and 6,945 females of the country Nepal. According to the census 2011, the population of Pahari is about 177 with 88 males and 89 females in Eastern development region, 13,289 with 6,507 males and 6,782 females in Central development region, 25 with 15 males and 10 females in Western development region, 4 with 3 males and 1 female in Midwestern development region, 120 with 57 males and 73 females in Far western development region. Paharis have their own Pahari language which is quite akin to Tamang and Newar languages.

### **Statement of the Problem**

Nepal is a multi-cultural and multiethnic country. There are no equal access to education for all caste and ethnics by the cause of their interest, possibilities and geographical situation. Mathematics is very important discipline in daily human life and assists various educational fields in upgrading level such as humanities,

commerce, science and engineer etc. Moreover, the government of Nepal has preserved the provision for indigenous citizens to enter into the organs of government through public service commission. And for this, the candidate requires good knowledge in mathematics subject.

The researcher has taught about six months at selected school and experienced that achievement in mathematics subject of Pahari students at basic level was not satisfactory and ashamed. It was very poor then other students which have shown by the annual result in school, although in the name of Pahari students, several government and non-government organization launches lots of programs but have not changed satisfactory in their achievement in mathematics subject. Also, there is no studies have been conducted dealing with factors influencing mathematics achievement of Pahari students. So, researcher studied in this field. Therefore the study was focused in the following research questions:

- ) What are the factors that affect the mathematics achievement of Pahari students?
- ) How these factors affect the achievement in learning mathematics to Pahari students?
- ) What types of strategies have managed by school for low achiever students to improve achievement?

### **Objective of the Study**

The major objectives of this study are to identify the factors affecting the achievement of the Pahari students in mathematics at Kavre district and analyze them. To reach these objectives the specific objectives of this study were follows:

- ) To explore the major factor that affects the mathematics achievements of Pahari students.

- ) To dig out the strategies used by school to improve mathematics achievement for Pahari students.

### **Significance of the Study**

This research study tried to identify the Influencing factors in mathematics achievement of Pahari student. Its finding could be used to improve the mathematical achievement of Pahari students. It would provide the appropriate information about the difficulty of Pahari students in mathematics achievement. Every country wants to serve quality education to their public. It is believed that desire has not been fulfilled. Nepal has accepted the universal motto "Education for all" to try up the prevailing different castes and their religions, cultures and traditions. The Paharies are dominated in the level of society hierarchy. The significance of this study can be state as follows:

- ) Its finding would be supportive to improve the mathematical achievement of Pahari students.
- ) This study could provide the information about the educational, economic condition of Pahari community.
- ) This study helps the parents to create learning environment to their children.
- ) This study helps to teacher for good learning strategies.
- ) This study also opens the door for the further study about the problems in mathematics of Pahari students.
- ) This study helps for NGO, INGOs that handed educational pregame.

### **Delimitation of the Study**

This study has the following delimitations:

- ) This study was limited with find out the factors influencing mathematics achievement and explores the strategies used by school to improve the mathematics achievement of Pahari students.
- ) The study was limited to only one school in Shree Arunodaya Secondary School in Bhumlu rural municipality-2 of Kavre district.
- ) The study was conducted within three boys and three girls Pahari students of grade VIII only.
- ) The interview schedule, observation note and related documents were used to collect the data for this study.
- ) The research was based on case study design in qualitative research.

### **Operational Definition of Key Terms**

**Pahari.**The Pahari term is defined as the one of cast among the total 125 casts in Nepal who has categorized in highly marginalized group by government of Nepal. The worship of clean deities is a special festival for those people. They are mainly found in Kathmandu, Sindhupalchok and Kavrepalanchok district.

**Achievement.**The term achievement is defined as the total marks obtain in mathematics subject by the case students.

**Low.**In this study the term refers the total obtained marks on mathematics subject by respondent students which were lower than 20 out of 100 marks.

**Influencing factor.** Influencing factor means that the causative factors which impacts students' participants in learning mathematics.

## Chapter II

### Review of Related Literatures

In this section, I have described the literature related to these two types of review; empirical and theoretical. A literature review is an important source of the further research study. It helps to researcher better perspective and essential for guidance for the research plan. Some reviewed literatures related to my study are described below.

#### Empirical Review

Adhikari (2001), conducted a research on 'A comparative study of Achievement in Mathematics of Primary Level Students Related to Parent's Income'. This study was conducted with the sample size of eighty nine students of grade V and their parents of Kaski district. He used purposive sampling to collect data. The data were collected by interview schedule and observation form. The findings of this study showed that the achievement of high income group was higher than achievement of middle and low income group. But the achievement of middle group was not found significantly higher than that low income group. He found the mathematics achievement of grade V students was affected parents income.

K.C. (2008), studied on 'Basic Mathematical Concept and Processes of Pahari Community' which was studied in Pahari community at Sathigher Vagawati V.D.C. of Kavrepalanchowk district. The main objective of this study was to find a document the counting system and to find out the measurement system practiced in Pahari community. He has used qualitative research design in descriptive nature. He has selected 20 people from kavrepalanchok with purposive sampling for the study. He has used interview schedule, observation form and related published and unpublished documents to collect the data. The major findings of this study are the counting and

measurement system were locally developed in the past, when there was no need of standardizing measurement unit and no pressing need of the use of numerals, the numeration system of Pahari is base 10. It seems that the numeration system is same like as Hindu-Arabic numeration system. Pahari has no their own separate script. So, there is no any specific symbol to represent the particular number.

Yadab (2008), held a study about 'Cause of Low Achievement in Mathematics'. This study was conducted with the sample size of five Musahar students. The students were selected by random sampling process. Data collection tools such as: observation form, interview schedule and written test were applied to find out the result. Researcher concluded that language plays a vital role in mathematics learning due to lack of proper understanding of language that causes low achievement in mathematics subject. Motivation plays another role for learning mathematics but Musahar students don't get motivation from their parents as well as their teacher. Learning environment also plays vital role in better performance in mathematics learning but due to poverty they had not get proper environment at their home.

Shrestha (2011), studied on 'Causes of Low Achievement in Mathematics A case study of Chepang students at Grade IX in Gorkha District'. Her study was type of case study and qualitative in nature. She used stratified random sampling method. The data were collected by interview schedule and observation note. In this research she found the economic condition and education of respondent parents is not good. There was not good environment at their home as well as school for their study. And she concluded the major factors that causes of low achievement in mathematics are school and home environment, economic status, parent's occupation and education, school policy and physical facilities provided by school.

Pandey (2014), did research on 'Factors Affecting Mathematics Achievement of Majhi Student at Sunsari District'. This was the case study based on qualitative research. The main objectives of this research were to identify the factors that causes the low achievement of Majhi student. The researcher used interview schedule and observation form as tools for data collection. The researcher had founded that language is imposing difficulty of Majhi student in learning mathematics. Majhi communities were backward in economic, education, social, cultural condition and occupational site. Also they are dominated minorities group in society. Family background was very poor in education. So, there was not encouraged to Majhi students for the study and they have much workload. It was directly affected to Majhi students. As consequence they were weak in mathematics achievement.

Chaudhary (2014), conducted a research on the title 'Causes of Low Achievement of Dalit Students in Mathematics'. The purpose of the study was to identify the causes of low achievement of Musahar (Dalit) students in learning mathematics. This study was qualitative in nature. The researcher used the interview and observation form as tools to collect the data. The researcher selected the sample size of five Dalit students from grade V. The researcher founded that there is cultural discontinuity at school and home. There is discontinuity in language, lack of interpersonal relation between teacher and Dalit students, low economic status, gender discrimination, house workload, and highly dominated group are the vital factors affecting the achievement in mathematics of Dalit students.

Paudel (2015), did research on 'The Causes of Low Achievement in Mathematics' which was studied in grade eight students in Lamajung district. The main objectives of this research were to find out the cause of low achievement in mathematics of grade eight students and identify the strategies taken by school and



teacher to improving mathematics achievement. The researcher has used qualitative research which was descriptive in nature. He did case study with eight students to meet the objectives who have got low achievement in mathematics of ShuryaJyoti School. According his research, most of the parents were illiterate and so they did not encourage children to send school and instead of this encourage, their parents encouraged in working to earn money. There was no additional mathematical support class running, lack of practice book, school and classroom was not harmonious. There was various causes related family background, financial, teaching strategy, environment and management factors to get low achievement in mathematics subject.

Bhattarai (2016), studied on 'Causes of Low Achievement of Tharu Students in Mathematics.' This study was conducted with the sample size of four Tharu students. This was the case study and qualitative in nature. The researcher used purposive sampling to collect data. The main objective of this research were to find the personal factors, school related factors and home related factors that causes the low achievement of Tharu students in mathematics. The researcher used interview schedule and observation note as tools to collect the data. The researcher found that the personal factors that affect the achievement of Tharu students in mathematics are Tharu language, interest of learners, participation in learning activities and lack of practices. School related factors such as school environment, teacher classroom behavior, assessment technique and home related factors such as illiterate parents, their occupation and home environment are the main influencing factors that cause the low achievement of Tharu students in mathematics.

Budhathoki (2016), had conducted a research on 'Factors Influence Mathematics Achievement of Badi students'. This was the case study based on qualitative research design and descriptive in nature. The main purpose of this study

was to identify the factors that cause the low achievement of Badi students in mathematics. The researcher used interview schedule and observation form tools for data collection. The finding of this study was the poor economic condition, low parental education, motivation in household works than instructional works irregularity and non-participation of Badi student in classroom activities and less used to student centered methods and less used of teaching method were major influencing factors in mathematics achievement.

From above review, there have been many researches on achievement study of different ethnic group, factors affecting learning mathematics and causes that affect mathematic achievement. Researchers have used different tools such as interview schedule, observation form and observation note for collecting the data. From which the researcher has found that there are many factors such as parents' income, their education, culture, physical facilities provided by school, home environment, teaching learning process and motivation to the students, teacher behavior and interaction of learners are the main influencing factors in learning mathematics. Although K.C. conducted a research on 'Basic Mathematical Concept and Processes of Pahari Community', he has not studied about the factors that influence the mathematics achievement in Pahari students and hence I have done further research on this topic.

### **Theoretical Review**

There are various theories about learning mathematics and they are cognitive, behaviorist, humanist, social constructivism etc. out of them I have reviewed social constructivism theory.

### **Social constructivism**

Social constructivism is a theory of knowledge in sociology and communication theory that examines the knowledge and understandings of the world

that are developed jointly by individuals. Vygotsky's theory highlights the role of social and cultural interactions play in learning process. This theory states that knowledge is co-constructed and that individuals learn from one to other.

In Vygotsky's opinion the learner must be engaged in the learning process. Learning happens with the assistance of other people.

A fundamental aspect of Vygotsky's theory is the Zone of Proximal Development. This is a "range of tasks that are too difficult for an individual to master alone, but can be mastered with the assistance or guidance of adults or more-skilled peers. Another part of the theory is scaffolding which is giving the learner the right amount of assistance at the right time. If the learner can perform a task with some assistance, then he or she is closer to mastering it. This theory is relevant to healthy adolescent development because if students work in pairs, they are interacting with people and therefore can learn different academic ideas from one another. This theory shows that students learn from each other (Vygotsky, 1962).

According to Vygotsky, child is completely dependent on other people during the early stages as socio-cultural environment keeps on presenting the child with a variety of tasks and demands, engaging in his world. Especially those people could be the parent who instructs the child on what to do, how to do it, as well as what not to do, initiating the child's action. Parents, as representatives of the culture and the conduit through which the culture passes in to the child, actualize these instructions primarily through language (Woolfolk, 2004). According to Audrey Gray, the main characteristics of a constructivist classroom are: the learners are actively involved, the environment is democratic, the activities are interactive and student centered and the teacher facilitates a process of learning in which students are encouraged to be responsible (Acharya, 2072).

Vygotsky claims that in school also students are not copying the teachers' capabilities but transforming what teachers offer them during the processes of appropriation (Turuk, 2008). The major key points in Vygotsky's Theory are social interaction are critical, knowledge is co-constructed between two or more people, self-regulation is developed through internalization (developing an internal representation) of action and mental operations that occur in social interactions, human development occurs through the cultural transmission of tools (languages, symbols), language is the most critical tool, language develops from social speech, to private speech, to convert (inner) speech and the Zone of Proximal Development is the difference between what children can do on their own and what they can do with assistance from others. Interactions with adults and peers in the ZPD promote cognitive development.

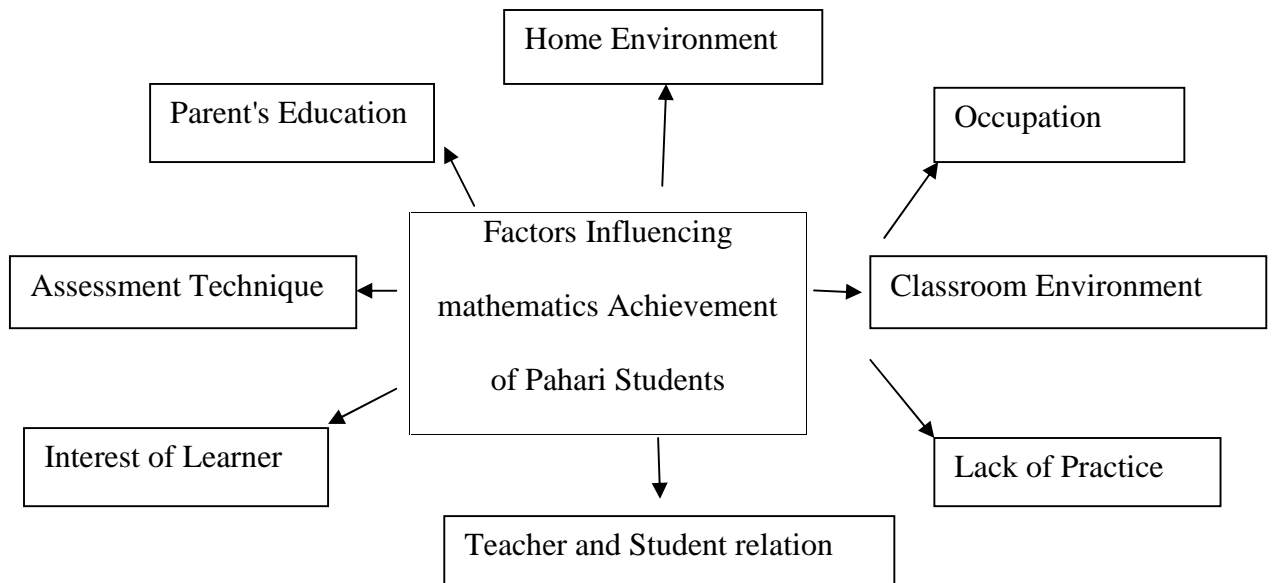
The theory emphasizes the importance of what the learner brings to any learning situation as an active meaning-maker and problem-solver (Trunk, 2008). It acknowledges the dynamic nature of the interplay between teachers, learners and tasks and provides a view of learning as arising from interactions with others. This theory assumes that learning arises not through interaction, but in interaction learners first succeed in performing a new task with the help of another person and then internalize this task so that they can perform it on their own.

This theory suggests that knowledge is first constructed in a social context and is then internalized and used by individuals. Social constructivists believe that the process of sharing individual perspectives called collaborative elaboration, results in learners constructing understanding together and this construction cannot be possible along within individuals. Social constructivism which assumes that cognitive growth first occurs on a social level and later on individual level emphasizes the role of ZPD

(Zone of Proximal Development). Thus, instructors who are facilitators in social constructivism first provided support and help for learners, the little this support is decreased and students learn independently. This is social constructivist classrooms, students are actively involved, the environment is democratic and interaction becomes crucial in learning.

**Conceptual Framework for the Study**

This research is a case study relate to the factors influencing mathematics achievement of Pahari students. It has already described related literature and theoretical perspective. So according to above reviewBhattarai(2016), the following model has constructed for the factors influencing mathematics achievement of Pahari students which has the conceptual framework for this case study.



There are several factors that influencing mathematics achievement of Paharistudents. Home is the first school and parents are the first teachers of the student so the home environment and parent's education play the vital role in learning mathematics. Parent's education and their behavior also effect in learning. Now is the age of education and economy. People cannot use their ideas if they have no

economy. Money matters in all areas it plays the vital role in gaining education.

Because of property, many students are being deprived from achieving the education.

Every man is guided by his will. What he becomes is the outcome of his interest.

Student's interest in the subject varies according to the situation. Students can get good marks in their interested subject. So the interest too plays the key role in learning

mathematics. The assessment system is also affecting the achievement of students.

Classroom environment, teacher student relation, and lack of practice are also the factors influencing mathematics achievement of Pahari students.

## **Chapter III**

### **Research Methods and Procedures**

In this chapter have deal with research design, methods procedures, study site, sample of the study, tools of data collection, data collection procedure, data analysis and interpretation.

#### **Design of the Study**

The design of this study is case study on the basis of qualitative research. Qualitative research design is a research method used extensively by scientists and researchers studying human behavior, opinions, themes and motivations. According to Creswell (2004), there are five different types of qualitative research, which are phenomenology, grounded theory, ethnography, narrative inquiry and case study. According to P.V. Young (1998), a comprehensive study of a social unit-be that unite person, a group, a social institution, a district or a community is called a case study. In this context, my research design is case study design because it helps to me for systematic and scientific study of factors influencing mathematics achievement of Pahari students.

#### **Study Site**

Pahari people are mainly found in the districts of Kavrepalanchowk, Sindhupalchowk, Sindhuli, Ramechhap. Among them Kavrepalanchowk District is also known as the local residence of Pahari people (K.C,2008). So my research was in Bhumlu rural municipality-2 of Kavrepalanchowk district.

#### **Selection of Respondents**

The researcher used purposive sampling for this study. There were 35 students in grade VIII of Arunodaya Secondary School Kavre. Among them 14 were Pahari students and all Pahari students were very low achievement in mathematics

subject. According to the annual result (2075), their achievement in mathematics subject was below 20 out of 100 marks except one student (Respondent A). The researcher selected three boys (including one high achiever in mathematics subject) and three girls for case students among 14 Pahari students from this class. So, it was the researcher's catchment area for the study.

### **Tools of Data Collection**

Research tool is most important part for data collection in the study. On the basis of data collection technique we can study and analyze every aspect of the study. To collect the data, the researcher has used following tools:

#### **Interview Schedule**

Interview is the process of data collection from face to face with interaction. Interview is a two way interaction between interviewer and interviewee in interviewer creates situations that can attract the attention of respondents for a enough period of time in asking questions and answering the questions which interviewee puts his/her understanding and meaning (Khanal, 2073).

On the basis of objective, the researcher had developed the interview schedule in semi-structured form for case students (APPENDIX-1), their parents (APPENDIX-2), previous math teacher (APPENDIX-3) and Head teacher (APPENDIX-4) from sample school. The researcher take in depth interview with six case Pahari students and take informal interview with rest of the Pahari students for the necessary data on the basis of sample. The researcher carried out the open ended interview.

#### **Observation Note**

The researcher prepared observation note from (APPENDIX-5) to find factors influencing mathematics achievement of Pahari students. The researcher observed the Pahari students' everyday activities in classroom and note down everyday activities on



the basic of their activities. Pahari students' regularity, their activities such as: performance of classroom, learning behavior, and classroom environment and finally noted down it.

### **Document Analysis**

Document concerned case students such as result sheet, attendance register, mathematics homework note and scholarship record from school were received for this study.

### **Data Collection Procedure**

The researcher was involved himself in the data collection. The research was based on case study design in qualitative research method. To meet the object, mark ledger, mathematics homework note and attendance record of Pahari students from selected school were collected. The researcher visited respondent students, their parents, previous mathematics teacher and head teacher individually for using interview schedule. The researcher asked the questions based on interview schedule and keep the written record on verbal data. The researcher used mobile recorder, pen and paper to keep record. The researcher observed directly teaching mathematics class in grade VIII for continue one month with observation note at selected school. The researcher collected data by natural inquiry and observation in natural setting under the pre-determined tools.

### **Data Analysis and Interpretation Procedures**

The quality of any research work depends upon the set of tools or method of data collection and techniques used to analyze the data. This analysis data was based on qualitative technique. Every recorded data were transcribed in the necessary form then developed different themes according to the nature of data as homogeneous and heterogeneous. The transcribed data was verified with the information recorded in

diary. Then I triangulate the found information from different perspective as transcribed data, theory, document analysis and observation note.

### **Ethical Consideration**

During this qualitative research, the researcher considered and respected the ethical aspects such as their freedom, secret, social, cultural, gender, and personal right. The researcher was explained the truth information about study to respondents, and gained consent from respondent. And the researcher was clearly exposed the conclusion of study. All the activities were done by transparently.

## **ChapterIV**

### **Analysis and Interpretation**

This study was related to the qualitative study. The main focus of this study was to identify the factors influencing mathematics achievement of Pahari students. This chapter deals with the analysis and interpretation of the collected data or information derived from the case study. The researcher had observed the case students behavior, activities and interacting with teachers, participation in school work and work at home. The student's home environment, his/her behavior was evaluated by the researcher with the help of interview schedule. The researcher had interviewed with the respondent students, their parents, previous math teachers and the head teacher. The researcher had also noted the case student's pre-result documents, their regularity and behavior from the school documents. The collected data were analyzed and explained under the following headings:

- ) Introduction of the sample school
- ) Introduction of the case students
- ) Observation of respondent students
- ) Factors influencing mathematics achievement of Pahari students.
- ) School effort for increasing the achievement of poor learners.

#### **Introduction of the Sample School**

Shree Arunodaya secondary school is situated in Bhumlu rural municipality-2 of Kavrepalanchok district. The location of the school is about 80 kilometers far from Kathmandu. The geographical structure is mountain and the climate of this place is good. This school is one of the oldest governmental schools in this area. This school was established on 2029 B.S.

The school area is spread over 11 Ropanis. Chettries, Tamangs, Magar, Dalits, Paharies are living in this area. According to the ward chair person, the Pahari population is second highest population around the school. The parents of the student in this school are mostly found in agricultural profession. Economically, some Pahari people in this community had difficulty for joining hand to mouth. There were some temporary truss buildings after damaged the old building by the earthquake 2072 BS to study for the students. So, there was not sufficient classroom and physical facilities for students. But there was going to finish three buildings with fourteen rooms by the help of Asian Development Bank (88%) and Nepal Government (12%).

### **Introduction of Case Students**

#### **Respondent A**

Rabin Pahari was 13 years old studying at grade VIII. He is brilliant student deserving the third position in his class. His home is located in Bhumlu rural municipality -2, Simthali, Kavre which was about half kilometer far from school. Rabin has been studying there from two years back before that he was studying at Kathmandu. There were seven members in his family including father, mother, grandfather, two sisters, brother and himself. His two sisters were studying at grade X. His interested subject is Math, Science, English and Computer. He wants to be a good math teacher in his future.

He was interested in playing football, volleyball, reading books and enjoying leisure time with friends by talking jokes. His both father and mother were illiterate. His family members worked in the fields. He always completes his homework and able to solve the mathematical problems immediately when the teacher has given in the class work. He makes fair math note copy. He always attends in the school with uniform. He also participated in extracurricular activities. He always gets mathematics

homework from teacher and he also wants to do it. Although his parents were illiterate, they always ask to him that he did homework or did not. He understands the math problems in the mathematics classroom and asks to the teacher if he does not understand. He wants to help to his parents in the household and field work after completes his homework.

### **Respondent B**

Krishna Pahari was 13 years old student of grade VIII. He is low achieved student in his class. He was born in Simthali - 2, Kavre. It takes thirty minutes to reach in school from his home. There were seven members in his family and they are father, mother, grandfather, two sisters, brother and himself. They are believed in Hindu religion. In comparison with other Pahari students, his family was very poor. His interested subject was Nepali and his aim in life is to be a good mason. His both parents are illiterate and poor. It was very hard to maintain this family economically. His father is farmer and mother worked in house as household. His two sisters and one brother were studying at grade X and I respectively in the same school. He reaches school in the time to obtain the school with uniform. He did not complete the math homework regularly. His family never asks to him that he has completed homework or not. He usually sits on the middle bench with weak students. He had no interest in mathematics.

### **Respondent C**

Milan Pahari was fourteen years old and studying at grade VIII. His class roll number was sixteen. He is also low achiever in mathematics subject. His house is located at Simthali-2, Kavre district which is one kilometers far from school. It takes one hour to go to the school. There were six members including father, mother, two brothers, two sisters and himself in his family and they all followed the Hindu religion.

His both father and mother were illiterate and engaged in farming. He is interested in playing football, volleyball and kapardi and his interested subject was also Nepali. Mathematics, Science and English were the subject he was not interested on. The mathematics subject is very hard subject for him but he did not want to miss the class. He wants to be a bus driver in his future life. He submits the mathematics homework, but rarely with complete because he couldnot solve all the mathematics problems and there was no one to guide his in study at home.

### **Respondent D**

SarmilaPahari was thirteen years old student and studying at grade VIII in Shree Arunodaya Ma. Vi. School Simthali-2, Kavre. Her home was located one kilometer far from school. There were seven members in her family and they were father, mother, two little brothers, one sister and herself. Her both mother and father were illiterate.

Her school was far from home. It is always takes one hour from school and always goes to school by foot with her friends. Because of distance she tries and not interested to go to school as well. Sarmila and her sister should do many housework such as farming work, grazing animals, bring water, cut grass and collecting woods, cooking food and sometimes she becomes late to go school by doing such household work. Her father and mother were illiterate. There was nobody at her home to guide to learn mathematics homework and she has not taken any mathematics tuition class either at school or village because there was not such type of facility. Her parents provide only night time to do homework for them. So she cannot take enough time to do and she drop out writing homework regularly.

Mathematics teacher gives homework regularly but she does not do homework regularly. Her writing skill of both Nepali and English, number and mathematical sign

were very poor. Her homework copy was very dirty and chaotic. Mathematics subject was hardest subject then other subject for her. She could not understand all the process of teaching mathematics in classroom. She did not ask to teacher even couldn't understand.

### **Respondent E**

Sunita Pahari was 13 years old student of grade VIII. She lives in Simthali- 2, Kavrepalanchok near the school. There were five members in her family where father, mother, two brothers and herself. Her father works in the fields. Similarly, her mother sometimes works in the fields and often busy as household worker. She helped her parents both in household work and outside the house. Her main work was to take care of little brother. She didn't have good family environment for the study. She did not practice mathematics homework as sufficiently, so mathematics may be the difficult subject in her study. She always sits with other poor students in the mathematics class and she does not do mathematics homework properly. She has little time for the study at her home. As result, she is very poor in mathematics. Moreover, she was not awareness about her good study because she had work load and have not enough time to do study at her home environment.

### **Respondent F**

Yamuna Pahari was fourteen years old student of grade VIII. Her roll number was eleven and her interested subject was Nepali. She had been studying in the Shree Arunodaya Ma. Vi. Simthali since grade I. Her house is one kilometer far from the school. There were eight members in her family. All members of her family followed the Hindu religion and spoke Nepali language.

Her main aim in life is to be a good singer of national standard but not a singer who goes to the door of others house because she thought that is dominated

way in the present time. Her father used to manage livelihood by going to the wage labor. Her mother was working as a house wife. Her both father and mother were illiterate. In extracurricular activities, she regularly participated in singing program and mostly won the prizes. She did not want to miss the class but sometimes she missed the class because of her household works. She entered in school at half past nine with school uniform. She used to present mathematics homework but rarely with complete homework because she could not solve all the problems and there was no one who guides her in study at home.

The researcher found that Pahari students have poor economic condition that they have struggling with handto mouth problem. So they cannot afford for their study. If respondent student have necessary educational instrument in the classroom, they could perform better than present situation. Therefore, economic condition was the main influencing factor in learning mathematics of Pahari students. In the mathematics classroom, some of the Pahari students were absent. The presented Pahari students were seen bored and they did not respond in the mathematics classwork. Only the little number of students was seen to be participated in the classwork. Most of the Pahari students had seated with poor learners and had no interest to learn mathematics in the classroom. When the teachers motivate to the poor learner student they had shown interest in learning mathematics. So, the researcher found that the interest of learners is also the factor that influencing mathematics achievement of Pahari students. There was discontinuity between upper caste students and Pahari students. From their activities it is concluded that all of the Pahari parents were illiterate and poor economic condition. If the parents were literate then obviously they motivate and co-operate their children for their study. So the



researcher noted that parent's education also effects the mathematics achievement of Pahari students.

### **Factors Influencing the Mathematics Achievement of Pahari Students**

Mathematics achievement is influenced by various factors of Pahari students. Here, the researcher categorized such influencing factors in three categories such as home related factors, students related factors and school related factors by the help of conceptual framework and theoretical understanding. Such influencing factors were as follows:

#### **Home Related Factors**

The home is the first school for learners. The students spend most of the time in their home. The children learn about many aspects from their parents. It has related factors these influence in mathematics achievement of Pahari students, which are as follows:

- ) Parent's education
- ) Parent's occupation
- ) Home environment

Parents are the first teacher. The children learn many things from their parents. If the parents are literate, moral and have good characters, their children are also follows the same behavior. If the parents are illiterate and have not positive behavior, their children may learn same behavior from parents. Only the teaching learning process is not sufficient for gradual development of students. They also need the way of handling and guiding the family members, culture, economic condition and environment. The parents teach the basic knowledge of life, practical aspects, skillful concepts, right vision, appropriate norms and values totheir children. Parents are home guide for their children education. They need to be educated for proper guide to

their children. According to interview with Pahari students, parents and teachers about family support toward students' study habit, the researcher gained the responses given below

*"Our parents are not able to help for doing our homework. They are illiterate."*

*- Students' view*

*"I am helpless. I have no education so I cannot help them for doing their homework."*

*- Parents' view*

*"Most of the Pahari parents are illiterate. They do not give the guidance to them for learning mathematics. Their children do not complete the homework regularly. Due to this reason they become weak specially in mathematics subject."*

*- Teacher's view*

From the above responses, the researcher found that the illiterate parents simply fulfill their duties by sending their children to school. There was no educated person at home to guide them to write homework of math subject, their family educational background was very weak. So, the parent's education is helpful for the improvement student's performance level. The social constructivist theory also state that children may be learning socially with family and therefore should be learning socially with teacher and peers and parents should be guiding their children towards learning using the Zone of Proximal Development. But the parents do not guide them in house and are becoming irresponsibility to provide educational environment at their home. So the parents' education is the factors influencing mathematics achievement of Pahari students.

The people living under the poverty are not expected group of private school. Though the fee is not necessary in government school, the necessary things for students like copy, pen, bags, geometry box, dress etc. are not provided by school. The poor parents cannot provide all these necessary things to their children and these factors affect in the learning achievement of the students.

The occupation of Pahari community is to work in the field for daily wages which are far from educational background. The occupation also plays pivotal role to educate the people. As a result the student of Pahari community achieved low score in mathematics. The teacher and students have following response about the occupation followed by Pahari parents.

*"The Pahari parents depend upon their traditional occupations such as field work, carpenter, mason, labor work etc. and they forced their children to do their same occupation. As a result their children spend their time on the traditional occupation so they cannot able to give time in mathematics learning."*

*-Head teacher's view*

*"Our family income depends upon agriculture and labor. We also do labor work sometimes and earn money, at that time we miss the class too. We do not have tuition class to improve mathematics."*

*- Students' view*

The above views indicate that due to the low economic condition of students' family they are forced to follow the same tradition to sustain their life. This view also indicates that the children of Pahari parents are interested towards family occupation rather than mathematics learning. Pahari people were economically very poor; they did not have enough income sources other than local labor work which was unable to promote children's educational support.

Home is considered as the first school to every child. The child learns many things such as how to behave with others, how to respect the elders, how to love others, how to cooperate others and how to behave with parents. It is true that the children's achievement in mathematics is highly affected by the home condition, parents' educational condition, socio-economic status of family, study opportunity at home, gender biasness in family. The roles and responsibilities, opportunities, practices time given by the family to the children in home also plays the vital role in mathematics achievement.

The home environment plays a significant role to get better achievement and effective learning in mathematics for the students. When the researcher asked to respondents about opportunity to learn mathematics, they said as follows:

*"Our parents do not force us to go to school. They do not give us enough time to do homework because we have to do household work."*

- Students' view

*"The children should help in household work because we need their hands at our work. Sometimes we ask them to stay at home to finish the work."*

- Parent's view

*"In our school, the students are from different cultural backgrounds, caste and socio-economic status. Mainly, students come from middle and low economic status. Pahari students do work rather than study at their home. Also, they are not participating in school activities."*

- Head teacher

The above views indicate that most of the Pahari student especially female students are being employed in the household work. The social constructivist theory states that the parent who instructs the child on what to do, how to do it, as well as

what not to do. But the Pahari parents do focus their children in household work rather focus in their study and so, Pahari students have been seen interested in the household work rather than study. And there is not sufficient time for learning mathematics at home of Pahari students. Finally, home environment is also an important factor influencing mathematics achievement of Pahari students.

### **Students Related Factors**

The researcher has pointed out three factors as students related factors which play major role for affecting on achievement of mathematics of Pahari students and they are as follows:

- ) Interest of learners
- ) Lack of practices
- ) Relation with teacher

Interest is the quality that attracts person's attention and makes person wants to learn more about something or to be involved in something. Interest always depends upon an individual. Some students are interested in sports like football, volleyball etc. and some are in studying, learning something, dance and music. The researcher asked that how is interesting towards mathematics subject for the students and found the opinions as follows:

*"Most of the Pahari students do not participate in class work and doing homework. They are not interested in mathematics. Due to lack of the time at their home to do practice homework, they are not intelligent as other students."*

*- Teacher's view*

*"Mathematics is very difficult subject, so we don't like mathematics."*

*- Student's view*

*"Our children are interested in playing football, singing and dancing rather than doing homework"*

*- Parents' view*

From the above responses, the researcher found that most of the Pahari students are not interested in mathematics learning. The social constructivist theory tells that knowledge is co-constructed, not transferred, let the pupils be interested and do tasks that lets them construct their own knowledge. But from the classroom observation, researcher found that the Pahari students feel each mathematical problem is hard as they are not interested in mathematics. Their participation was low in mathematics activities. It tells that Pahari students are weak in mathematics. They took more time to understand the mathematics problems. So, they are less interested and learn slow. Hence, the interest of learner is also the factor that influencing mathematics achievement of Pahari students.

Effective learning is the outcomes of combination between understanding and practice. Practice makes perfect in any work even learning mathematics for the students. Also the Chinese proverbs state that when I hear, I forget; when I see, I remember and when I do, I understand. If the students do more practice with understanding they will success in the examination. So, success depends upon their practices. The researcher found the following response about getting time and doing practice homework in home are as follows:

*"We don't practice mathematics homework because there is no one to guide to do practice mathematics homework at our home"*

*"There is no facility of tuition class neither in the village nor in the school so, we are weak in mathematics subject."*

*- Students' view*

*"Our children do not like to take time for practicing mathematics homework; they like to do household work and playing football on the rough road. Also we do not force to do practice homework because we are unable to learn them."*

*- Parents' view*

Above views tell that Pahari students take less time for practicing mathematics subject because there was nobody to guide to learn at their home. So, they did not focus on practice their homework. There was no group study or tuition at village andso, they want to play games and do household work rather than study. It seemed that there was not systematic rule and regulations in their home to change their behavior for practicing mathematics homework. So, lack of practice is also an important factor that influencing mathematics achievement of Pahari students.

Teachers are the fate maker of students and they are the guide of students' educational progress. So the teacher's behavior toward the students affects in every individual's learning. In the classroom practice, the relation should be co-operative and support for mathematics learning. The interaction between teacher and students, students with students refers the relation in the classroom. Students always become co-operative and teacher becomes a facilitator in the classroom practice.

The respondents have following opinion to the question why do the Pahari students get low position in mathematics.

*"Pahari students do not keep interest in mathematics they always absent in mathematics class and if they appear in the class they take back seat. Also they are afraid to ask about their problems in mathematics."*

*- Teacher's view*

*"We are afraid to ask questions to the teacher."*

*- Students' view*

The teacher and students relation is one of the relations which happen in school. Teacher and student relation should be respectful and cooperate to each other. Teacher should be cooperative and helpful to keep relation long lasting with the students. On the other hand the students should be faithful and keen interested to learn something from the teacher which keeps relation strength forever. The relation is a condition where both of them should keep their promises to be long lasting. Also the social constructivist theory states that the learning through interaction, students should involve actively and the environment should be democratic but from the observation, researcher found that above views show that there is not double interaction between teacher and Pahari students. If the students fear with the teacher, they do not ask questions even they do not understand and if there is no double interaction between the students and the teacher, there is no effective learning. Therefore, it is important to have a good relationship between the teacher and the students for effective learning.

### **School Related Factors**

The researcher has pointed out two major factors as school related factors which play vital role for affecting on achievement of mathematics of Pahari students.

They are described below:

- ) Classroom environment
- ) Assessment technique

Classroom environment includes the two aspects. One is physical environment; it refers to the location of the room, arrangement of desk, benches, chairs, position of whiteboard, facilities such as fan, ventilation, light etc. Another aspect is psychological; it refers to the relationship between students and teacher to each other's, interest of learner etc.



The researcher asked the question about the classroom management and its environment to the head teacher, teachers and students, they answered as follows:

*"Classroom management was very good before the earthquake of 2072. There has been problem with the classroom management after earthquake broke the wall and floor of the classroom."*

*-Head teacher's view*

*"Here is a lot of shouting because here is no wall between one classroom and another classroom."*

*"We get very hot in the summer and too cold in the winter season so, it doesn't take much attention to our studies."*

*-Students' view*

The researcher found that classroom environment of the selected school was not good. There was not fixed benches, chairs, whiteboard in the classroom. The desk and benches were kept with rapidly and was not sufficient for the students. The classroom and whiteboard was not neat and clean. The effect of the temperature and light was not suitable in the classroom. There was too hot in the summer season and too cold in the winter season. So it is concluded that the classroom management for the students and teacher was not good at this school after the earthquake-2072. That's way the students achievement in mathematics is going to be low.

The assessment system is also affecting the students' achievement. If the examination system is good in the school, then the school academic achievement will be also good. The researcher asked the question about the assessment system to the head teacher and students, the received answers by the researcher are following:

*"Our examination system depends upon the rural municipality. It takes the exam three times in a year. But other forms of tests like unit test depend upon the subject teachers."*

*-Head teacher's view*

*"Our teachers give homework regularly but, check after completed the lesson."*

*-Students' view*

From the above views, the researcher found that in this school, only the rural municipality holds the exam only three times in a year. Apart from that, there is no any system of holding the examination by the school. Although the teacher always gives homework to the students, they check only one day in a week. So in this school, the assessment system is not good for increasing the mathematics achievement level of the students.

### **School Efforts for Increasing the Achievement**

Different students have their different academic achievement. Some students' achievement is high and some students' achievement is very low. Thus, students with low achievements need to be supported by school and their achievements can be improved. The physical facilities provided by school also affecting the achievement level of students. Here, the Arunodaya Secondary School has insufficient classroom to teach the students. There is only one room which is for library, computer and science lab. But there is not math lab. Also, there are not sufficient desks, benches, chairs, tables, computers and mathematics instruments in this school. School need to pay attention in such matters for the improvement of low achiever in mathematics subject. The researcher asked that what efforts have been conducting for this school to improve the achievement level of student and getting answers as follows:

*"Here has been no effort to improve the mathematics achievement of the low achieved learner from the school sector but we have provided Pahari students money on the basis of their attendance."*

*"The school has not provided any additional tuition class for poor students but we have made plan. We have called for parents of students with low achievements and inform them about their children' achievement"*

*-Head teacher's view*

*"Whatever we learn, this is only in school time. We do not know in history of this school that there is any effort like tuition class for low achievers."*

*-Students' view*

From the above views the researcher found that there are no any activities for the improvement of the achievement of poor learner in mathematics. But the school has analyzed the result of the students who have become low achiever and their guardians are also informed. Arunodaya Secondary School is unable to conduct any type of tuition classes to improve the achievement level of the students. There was no special provision for special students from the side of school administration. Many students were in the class that couldn't conduct the group work. There is no examination system in this school like class test, unit test and monthly test for the students. But there is the examination system according to the rules of rural municipality.

## **Chapter V**

### **Summary, Findings, Conclusion and Recommendations**

This chapter includes the summary of the whole study. It also includes findings derived from the analysis and interpretation of previous chapter and finally recommends how these findings can be used in the academic field.

#### **Summary of the Study**

The objective of this study was to find out the factors influencing mathematics achievement of Pahari students and dig out the strategies used by school to improve mathematics achievement for Pahari students at basic level. Mathematics is very useful discipline in human life activities as both formally and informally. In present situation, human society cannot be far from mathematics concept, practice and knowledge but achievement in mathematics of Pahari students was very lower, it was shameful. In this case study nine empirical literatures have reviewed and Vigotsky's social constructivist theory has used for this study and developed conceptual frameworks under this theory and empirical literatures review. The researcher used case study design under the qualitative research method. In this study, Shree Arunodaya Secondary School at Bhumlu rural municipality-2 Simthali, Kavrepalanchok district was selected and six Pahari students at grade VIII for case students, their parents, previous math teacher and principal were selected as respondents by purposive sampling methods. Different types of tools were used such as documents concerned case students, interview schedule and observation note in this research. The researcher has collected verbal data in the natural setting used by those tools, the researcher has done directly field visit, face to face discussion and interviewed with respondents. From the collected all verbal data were analyzed and interpreted under the conceptual framework. During the research field work, ethical

aspects with respondents have truly done. The findings from the study are given below.

### **Findings**

This study was a case study to find the factors influencing mathematics achievement of Pahari students and dig out the strategies used by school to improve mathematics achievement for Pahari students at Bhumlu rural municipality-2 of Kavrepalanchok district. The major findings of the study were as follows:

- ) The Pahari parents were economically poor and their children are usually used as means of earning money for their simple livelihood. So the Pahari parent doesn't afford to provide good environment at home.
- ) Most of the Pahari parents were illiterate. So there was lack of awareness, they do not encourage their children to go to school.
- ) Pahari students were engaging everyday doing household work, they did not have enough time to do practice and write mathematics homework at their home.
- ) Most of the Pahari students had not shown their interest in mathematics subject. They feel it is very hard subject.
- ) The relations between math teacher and Pahari student were not found satisfactory.
- ) The assessment system in the school like class test, unit test, week test and monthly test has not organized by school.
- ) Extra mathematics classes for low achiever are not organized in this school.
- ) The physical facilities in the school were not found good.
- ) As a whole the classroom environment of the school was not good for teaching learning activities.

## **Conclusion**

Teaching learning process has become a great issue in different level of education. From primary to higher level of education different factors directly and indirectly affect the students' achievement in mathematics subject. The researcher found that most of the Pahari parents are illiterate and low economic status, they use their children as a means of earning support. So they didn't afford to provide good environment at home. There was no special provision for special students from the side of school administration and so, Pahari students do not get encouragement and motivation. There was dilute system of homework checking, analysis and remedial treatment on error of homework. There is not good classroom environment in school so Pahari students were in class that couldn't conduct group work and personal interaction in mathematics classroom. Thus, there were so many causes concerned home related, student related and school related factors that influencing mathematics achievement of Pahari students.

## **Recommendations for Educational Implication**

This was a case study related to factors influencing mathematics achievement of Pahari students at Bhumlu rural municipality-2 in Kavre district. From the above conclusion of this study, the recommendation to parents and school administration for improving the achievement of student are as following:

- ) There should be support to Pahari parents for their children mathematics tuition class in village because most of the parents are illiterate and Pahari students do group work.
- ) There should be special provision for Pahari students from the side of teacher and school administration. There should be regular homework checking, error

analysis and its remedial treatment, punishment, reward and significant feedback.

- ) There should be regular meeting, discussion and awareness program with parents.
- ) The school should manage the physical facilities to improve the quality of education.
- ) School should manage extra tuition class for low achiever students.
- ) Continuous assessment system should be implemented to improve students' achievement in mathematics.

### **Recommendations for Further Study**

The recommendations for further study are:

- ) This study was done only in Kavrepalanchok district as a case. For the generalization of the result of the study, similar study should be done in a wide scope with large sample.
- ) The factors influencing mathematics achievement of Pahari students have been included in this study. The researcher who wants to study on the Pahari community should identify the affecting factors and solution of failure in mathematics.
- ) The study can be done on the effect of parent's education in their mathematics achievement.

## References

- Acharya, B.R. (2072). *Foundation of mathematics education*. Kirtipur: DikshantPrakashan.
- Adhikari, S. (2001). *A comparative study of achievement in mathematics of primary level students related to parent's income*. Unpublished Master's Thesis, Department of Mathematics Education T.U. Kirtipur.
- Bhattarai, C. (2016). *Causes of low achievement of Tharu students in mathematics*: Unpublished Master's Thesis, Department of Mathematics Education T.U. Kirtipur.
- Budhathoki, K.S. (2016). *Factors influencing mathematics Achievement of Badi students*: Unpublished Master's Thesis, Department of Mathematics Education T.U. Kirtipur.
- Central Bureau of Statistics of Nepal. (2011). *National Population and Housing Census*. Kathmandu.
- Chaudhary, A.K. (2014). *Cause of low achievement of Dalit students in mathematics*: Unpublished Master's Thesis, Department of Mathematics Education T.U. Kirtipur.
- Creswell, W.J. (2004). *Research design: Qualitative, Quantitative, and mixed method approaches*. SAGE Publication.
- D'Ambrosio, U. (1985). *Ethnomathematics*. Netherlands: Rotterdam Sense
- Joshua Project. (2019). Ministry of Frontier Ventures. Retrieved from <05:30,17 may,2019>, from [http://joshuaproject.net/people\\_groups/19418/NP](http://joshuaproject.net/people_groups/19418/NP)
- K.C, U. (2008). *Basic mathematical concept and progress of Pahari community*: Unpublished Master's Thesis, Department of Mathematics Education T.U. Kirtipur.



- Khanal, P.(2073). *Research Methodology in Education*.Kirtipur: Sunlight Publication.
- Pandey, D.(2014). *Factors affecting mathematics achievement: A case study of Majhi students at Sunsari district*. Unpublished Master's Thesis, Department of Mathematics Education T.U. Kirtipur.
- Paudel, A.(2015). *The causes of low achievement in mathematics*: Unpublished Master's Thesis, Department of Mathematics Education T.U. Kirtipur.
- Shrestha, A.(2011). *Causes of low achievement in mathematics: A case study of Chepang students at grade IX in Gorkha district*. Unpublished Master's Thesis, Department of Mathematics Education T.U. Kirtipur.
- Turuk, M.(2008). *The relevance and implication of Vygotsky's socio-cultural theory in the second language classroom*. ARECLS,5,244-246.
- Upadhyaya, H.P.(2001).*Teaching Mathematics (2<sup>nd</sup> ed.)*. Kathmandu: RatnaPustakBhandar.
- Woolfolk, A.(2004). *Educational psychology (9<sup>th</sup> ed)*. India: Pearson Education.
- Yadav,V.K.(2008).*Causes of low achievement in mathematics*. Unpublished Master's Thesis, Department of Mathematics Education T.U. Kirtipur.
- Young, P.V.(1998).*Scientific social surveys and research(4<sup>th</sup> ed.)*. New Delhi: Prentice Hall of India.

## Appendix 1

### Talkative Schedule for Student's Interview

Name:

Date:

Class:

Roll No:

Address:

Gender:

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

#### **Interest of Learner's**

- ) What is your favorite subject at school? And which is not?
- ) Do you want to come to school regularly?
- ) Do you want to do homework regularly? Do you make math note copy?
- ) Have you got any scholarship from your school?
- ) Does the teacher do something if you don't do homework and classwork?

#### **Home Environment**

- ) Do you have enough time to do homework at your home?
- ) Do you help your parents at home? How? What do you do?
- ) Do you sometimes miss classes? How often? Why?

#### **Lack of Practice**

- ) Do the teachers give you some math homework? What kind of tasks? Do you do it regular?

#### **Teacher and Student Relation**

- ) Do you understand learning math in class? Do you ask to teacher if you do not understand?
- ) Do the teachers check if you do your regular?

#### **Parents' education**

- ) What is your parents' education?
- ) Do your parents check that you have homework or not and checked by teacher or not?
- ) Do your parents help for doing your homework?

**Parents' occupation**

- ) What is your parents' occupation?
- ) Do you have enough copy, geometry box, calculator, books and bag? Do your parents provide these things regular?

## Appendix 2

### Talkative Schedule for Parent's Interview

Name:

Date:

Qualification:

Age:

Address:

Gender:

Name of his/her child:

Address:

Sex:

- ) General information: name, age, occupation etc.
- ) How many children do you have? How old are they? Do all they go to school?
- ) Do your children help at your home? What do they do?
- ) Do they sometimes miss classes? Why?
- ) Do your children get math homework at school? Do they do it at home?
- ) What do they do after back from school and holiday?
- ) Do you check children have homework or not? And checked by teacher or not?
- ) Do you provide enough time to do it?
- ) Do you want your children to go to school? Why?
- ) Do you help them if they do not understand something? Or do you send your children math tuition class at village?
- ) Can you read and write? Can you help your children to write math homework?
- ) Do you give children money for Tiffin food every day?

### Appendix 3

#### Talkative Schedule for Pre-Math Teacher's Interview

Name: \_\_\_\_\_ Date: \_\_\_\_\_  
 Qualification: \_\_\_\_\_ sex: \_\_\_\_\_  
 Experience: \_\_\_\_\_ Age: \_\_\_\_\_  
 Address: \_\_\_\_\_

The interview with pre-math teacher was taken on the basis of following questions.

- ) General information: name, age, position.
- ) How long have you been teaching as a teacher?
- ) Did you know the Pahari students in your class? Did they pass the math subject in each exam?
- ) Did they come to class regularly? Do they do homework regularly?
- ) Did they bring math books, exercise copy, geometry box, pen/pencil and related materials regular?
- ) What did you do when they did not come to school for few days and did not complete their homework? If so what?
- ) Did you ask questions to Pahari students while teaching in class? And did they ask if they did not understand?
- ) Did they showing interest in learning mathematics?

## Appendix 4

### Talkative Schedule for Head teacher's Interview

Name:

Date:

Qualification:

Sex:

Experience:

Age:

Address:

The interview with the head teacher was taken on the basis of following questions.

- ) How long have you been working as a head teacher at this school? And which subject do you teach?
- ) Is there Pahari parents involved as a member of school management committee?
- ) Do you or school have conducted special course for poor students? What?
- ) Do Pahari students getting scholarship from school? What kind of?
- ) Have prepare any special strategies for Pahari students?
- ) Have you design any motivational program for Pahari students?
- ) Are Pahari students taking active participation in the program?
- ) Does school provide any extra mathematics classes for low performers?

## Appendix 5

### Observation Note

Name of School:      Date:

Class:                      Year:

Total No of Students:                      Time:

Period:                      Subject:

Researcher was conducted observation of Pahari students on the basic of following main topic:

- ) Regularity of Pahari students in mathematics class.
- ) Learning behavior of Pahari students.
- ) Participation of Pahari students in teaching learning process.
- ) Mathematics teaching and learning environment at school.
- ) Encouragement and motivation towards Pahari students.
- ) Physical facilities and available teaching materials.