

**EXPLORING FACTORS AFFECTING LOW ACHIEVEMENT IN  
MATHEMATICS OF THARU STUDENTS**

**A  
THESIS  
BY  
SITA SAPKOTA**

**IN PARTIAL FULFILLMENT OF THE REQUIREMENT FOR THE DEGREE  
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## Letter of Approval

A

Thesis

By

Sita Sapkota

The thesis entitled “**Exploring Factors Affecting Low Achievement in Mathematics of Tharu Students**” has been approved for the partial fulfillment of the Requirements for the degree of Master of Education.

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## LETTER OF CERTIFICATE

This is to certify that Mrs. Sita Sapkota, a student of academic year 2062/63 with exam roll no. 22, campus roll no. 1293/062, thesis no. 1026 and T.U. Registration no. 2265-2001 has completed this thesis under my supervision during the period prescribed by the rule and regulation of Tribhuvan University. The thesis entitled “**Exploring Factors Affecting Low Achievement in Mathematics of Tharu Students**” embodies the result of her investigation conducted during the period of at the Department of Mathematics Education, University Campus, Tribhuvan University, Kirtipur, Kathmandu. I recommend and forward that this thesis be submitted for the evaluation for awarding the degree of Master of Mathematics Education.

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## **ABSTRACT**

This is the study on exploring factors affecting low achievement in mathematics of Tharu student. It aimed to explore home related, school related and students related factors that affect low achievement in mathematics of Tharu students. This study was based on case study research design. The analysis and interpretation of data was descriptive in nature. The population for the study was considered to be all the Tharu students of who have been studying mathematics in grade VII of Bardiya district. Out of those students only four students, two boys and two girls studying at Nepal Rastriya Higher Secondary School Godiyana, Bhimmapur school were selected by following purposive non-random sampling procedure for this study.

School documents, interview and observation form were the main tool of data collection. The data were collected through the review of school document, direct consultation with students, teachers and parents and class observation of the sampled students. The collected data were organized, analyzed and interpreted by using qualitative means. Item analysis was used to analyze and interpreted the data.

The study came up of with the findings that parents education, parents occupation, home environment, duration of study at home, help of elders, family economy and family support for study were the home related factors affecting low achievement in mathematics. Similarly, learning environment, qualification of teacher, teaching method, instructional materials, motivation, provision of additional classes, classroom participation and practice were school related factors affecting low achievement in mathematics. In the same way prior knowledge of students, regularity in class, interest in study, peer group support, age and their devotion to study were the major students related factors affecting low achievement in mathematics of Tharu students.

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## **LIST OF ABBREVIATION**

Dr.	Doctor
HSS	Higher Secondary School
i.e.	That is
INGO	International Non Governmental Organization
NEC	National Education Commission
NGO	Non Governmental Organization
Prof.	Professor
SLC	School Leaving Certificate
T.U.	Tribhuvan University
VDC	Village Development Committee
%	Percentage



## Chapter I

### INTRODUCTION

#### Background of the Study

Mathematics is an important subject in the learning process of the students. It is very practical and behavioral subject which equips the learners with life required knowledge and skills. However the achievement of its is not satisfactory are the achievement is measurement by the evaluation. Evaluation plays a significant role in the field of education. More by evaluation, we not only mean the measurement of achievement of students in the academic area but also the improvement of teaching method, curriculum and evaluation itself. Evaluation has an important role in the teaching-learning process. The effectiveness of instruction is usually determined by measuring achievements against the objective undertaken. It covers activities included in grading examination, certifying and so on. Generally, the performance evaluation of students is made on the basis of test. The test is basically designed to measure knowledge, understanding and skill of students in a specified. Subject or group of subject. The knowledge of student in a particular subject is known as achievement which is determined by scores in our evaluation system.

The low achievement of lower secondary level students in mathematics raised question in the mind of many concerned people (policy maker, administrators, teachers, parents and students) about the national goals and objectives of the nation's and mathematics instruction at the lower secondary level. There are also interested in knowing the affecting factors responsible for low performance. Now, the high level of failure and low level of achievement in mathematics are matter of national concern in Nepal. According to NEC (1992) Nepal has made a large investment in education but

the outcomes are not satisfactory. It also points out that guardians, send their words to school at great cost to themselves, they are not getting what they have sought, namely good education. Thus, it is very important to study the factors that affecting the low mathematics achievement of students so that particular guidelines can be formulated that will lead to the national effort to improve mathematical instruction.

The mathematics teacher and students have many problems in teaching learning process in mathematics. The high failure rate and low level of achievement in mathematics are matters of national concern in Nepal. Past decade's result in lower secondary level show that most of the students were failed in the mathematics but it was not known which factors were affecting for that. The result of the study was indicated the most affecting factors for low achievement in mathematic in lower secondary school.

Researchers generally agree that achievement in mathematics is an outcome of complain interplay among numerous personal and environmental factors thus, in order to understand student's mathematics achievement. Sound knowledge of what and how personal and environmental factors effects students achievements will assist educational parents with the task of formulating appropriate strategies, techniques and polices bring more effective mathematical instructions in the country.

### **Reasons for Selecting the Tharu Community for the Study**

The Tharu are recognized as an official nationality by the government of Nepal. In the past, they never went abroad fro employment which isolated them from other community and they themselves developed an unique culture. Their ability to decorate rice container and outer wall of house by using clay, mud, dung and grass is amazing.

Every individual has different interests. I grew up hearing so lot of interesting things like the Tharus are immune to Malaria, they consider themselves as the people of forest, their marriages were often arranged during the pregnancies of two women and etc. these are the influencing factor for me to choose the Tharu community for the purpose of study. Besides these, following are few reasons to prefer the Tharu students for my study purpose.

- They are one of the identity of Western Terai
- They are one among the under-prevalged community of Nepal
- They have their unique culture
- They are known to be the most honest people who never lies
- The Tharus are known for their hard work
- The Tharu youngsters are trying to include themselves in the mainstream of development.

In Nepal, mathematics has been taught as one of the compulsory subjects in lower secondary education since the beginning of modern school education. Present lower secondary level mathematics has three components which are arithmetic, algebra and geometry. These three components of mathematics are taught separately. There in a major role of mathematics to make students failure in the school examination which can be proved by the following data. This data are related only a school, i.e. Nepal Rastriya Higher Secondary School Godiyana Bhimmapur of Bhimpur VDC in Bardiya district and this data shows that average score of Tharu students in mathematics than other subjects is very low.

## **Introduction to Tharu Community**

The Tharu are one of the Nepal's most ancient indigenous ethno linguistic groups. It is said at the meaning of Thary "Bhumiputra". The Tharu is backwarded tribe in minority (Janajati) and ancient in habitants (Aadibasi).

The Tharu belongs to the Janajati, Aadibasi group r the confederation that includes Chaudhary, Gachhadar, Rajbansi, Kusmiya, Ultahawa, Dhahit, etc. Tharu is a hard working people of Nepal. Most of Tharu live in mid and far western regions. The main district where Tharu are living in Banke, Bardiya, Dang, Kailali and Kanchanpur. Tharu family is divided into three groups i.e. Rana Tharu, Dangaha Tharu and Desaure Tharu. They have own different language and culture. The traditional Thary religion predating Hinduism. Major festivals are Maghi, Jarmastami (Krishnaastami), Ituar (Sunday after Haritalika day). Their main occupation is agriculture. They product main crops i.e. rice wheat, corn, cotton, sugracan, latic etc. some Tharu have been recruited into military service with a Nepal Army, APF, Nepal Police and PLA force.

## **Statement of Problem**

In the modern age, mathematics is essential for human life. The need of mathematics is apparent for everyday life is well as for higher studies in the field of science and technology. Mathematics achievement is major factory of every student to his/ her career. In the modern world, all the science and technology depends on mathematical knowledge.

Nepal is one of multi- communal and multi ethnical country. There is no equal access by the cause of their interest. There is no equal access to education for all the

cast and ethnic possibilities and geographical situations. The Tharu students are weak in mathematics and most of them feel difficult to understand it. The following are the research questions in the study.

- What are the home related factors that affect the achievement of Tharu students in mathematics and how do they affect?
- What are the school related factors that affect the achievement of Tharu students in mathematics and how do they affect?
- What are the students related factors that affect the achievement of Tharu students in mathematics and how do they affect?

### **Significance of the Study**

"Education for all" is only for saying. It is not being applicable in reality on the ground. Educational access is more or less available in the surrounding of village but most of the indigenous people are not still enlightened to education which is the main problem of present education system.

The children of Tharu community are seen few in higher education. They are famous for farming. Tharu is a main inhabitant of the Banke, Bardiya, Dang, Kailali and Kanchanpur district. Their participation in higher education in mathematics is very low. Also in school mathematics they are found weak. So, this study would be helpful to find the cause of factor affecting low achievement in mathematics of Tharu students in Bhimapur VDC Bardiya district.

The following will be the main significance of this study:

This study will help to improve teaching method adopted by mathematics teacher while teaching students including Tharu.

- This study will be very important to identify how the learning environment affects in the achievement of Tharu students in education sector.

- This study will help the teachers, administrators and parents to create better learning environment to their children.
- This study will provide information to the teachers regarding to low or high achievement in mathematics and will help to create appropriate teaching learning environment in their classroom.
- The study will be useful for the various NGO, INGO and related committee.

### **Objective of the Study**

This study was intended fulfill the following objectives:

- To explore the home related, school related and student related factors that determine mathematics achievement of Tharu students.
- To analyze the influencing factors that determine the low achievement in mathematics of Tharu student.

### **Delimitation of the Study**

The study focused on only the factors affecting achievements in mathematics at class VIII of Nepal Rastriya H.S.S Godiyana, Bhimmapur in Bardiya Districts Which will have following delimitations.

- The study was conducted to only one public school at class VIII of N. R.H. S. school Godiyana, Bhimmapur VDC Bardiya District.
- The study focused on only for the subject of mathematics
- This study was based on the data obtained from only one school of Bhimmapur VDC and it is not equally applicable for other parts of Nepal.
- This study was conducted in only one school of rural area of Bardiya District.

## **Operational definition of the Related Terms**

### **Public School**

Government school which runs along by the help of local people

### **Tharu Students**

The Students whose partents are Tharu and are under the every activities, cultural behavior, norm etc. of Tharu society adopted.

### **Achievement**

The knowledge of students in particular subject affecting factors.

### **Other Students**

Braman, Chhatri, Thakuri, Magar, Limbu, dalit etc. caste

### **Home Related Factors**

Time for practice, materials, works at home, help from parent's in learning mathematics and language etc.

### **Students Related Factors**

Consult to the friends/teachers, time for practice, regularity in mathematics class. Negative attitude towards the mathematics learning etc.

### **School Related Factors**

Extra class for low achievement students, relationship between math teacher and Tharu students, environment of school, teacher biasness and mathematic lab and library.

### **Case**

The object for studying in research or the students taken for the investigations are the case.

## **Chapter II**

### **REVIEW OF RELATED LITERATURE AND THEORETICAL FRAMEWORK**

Review of literature is one of the most important aspects of any research because it helps the researcher to have in depth knowledge about his/ her subject matter. In other words, a literature review is the process of locating, obtaining, reading and evaluating the research literature in the area of research. The main purpose of review of related literature is to develop some expertise in ones area to see what view contributions can be made and to receive some idea for developing a research design.

Literature review is the detail analysis of the previous studies related to the present study. It helps to find out that what things have been presented in the past studies and what have not been mentioned. It also links the past and presented studies. It helps to guide to present study ion the more attention.

#### **Review of Empirical Literature**

This section presents the review of books Journals reports of the various researchers and other published sources. The major books, Journals reports have been reviewed which are as follows:

Hughes (1999) studied about the factors related to mathematics achievement. From his study different factors to be investigated in a qualitative research are presented. One of the most important conclusions form qualitative research on factors related to achievement in school are that:

Teachers are critical resources the composition of the student's body matters. Schools make a difference physical facility, class size, curriculum, instructional strategies and



other resources influence students learning indirectly through their effect in the behavior of teachers and students.

In a effect to identity the causes for low achievement in mathematics, some researcher (Attwood, 2001, Brodile, 2004, Mae, 1997, Moyana, 1996, Murray, 1997 et.al) have suggested that achievement in mathematics in secondary school 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.

Maskey (2001), made a study entitled, "A comparative of Mathematics achievements of Primary School Students under difference classes sized." This study was made to investigate the effects of the class size in the achievement of the students in Mathematics at the third grade level of primary school in Birgung town panchayat area. The instrument adopted in this study was an achievement test paper. The procedure used in the collection of data was the recording of the scores of each students after administering an achievements test in Mathematics of the end of the session of all the schools included in the samples into three categories, large class having 40 or more students medium class having 15 to 39 and small class having 14 or fewer students. Under these categories two schools came under large class size, three school came under medium class size. And four school came under lower class size.

Sherman and wither (2003) did a research on "mathematic Anxiety and mathematics Achievement." This study was a longitudinal investigation of the relationship between mathematics anxiety and mathematics achievement. The purpose

of the this study was to attempt to establish that mathematical anxiety dose cause a deterioration of mathematical achievement.

For the present investigation, a polot study was undertaken of both the mathematics achievement test and mathematics anxiety test, A cluster analysis of the results of the latter separated out those questions which addressed test anxiety as opposed to mathematics anxiety and items of that kind were removed from the tests used in the main study. Observation of a cohort of students were made twice a year over a prior of five years as they progressed form year 6 to 10. The students were selected from three schools in suburban Adelaide, in south Australia. The choice of school was dictated by the need to follow the same students over the five years, so that all three schools needed to have both a primary and secondary component. Consequently, three no – government school were choice, as at the time, only government schools in south Austraila with both primary and secondary components were rural area schools and it was determined that the logistics of the study would not have been feasible with such schools. At each administration of the tests the whole relevant year at each of the schools was tasted, with numbers ranking from 156 in the first testing to 289 for the first year 8 tests. As mentioned above, one of the school had completed year 10 before the schedule a time of the tests. So that the students there were unavailable. This Testing was not included in the analysis. All nine testing sessions were completed by 66 of the original 156 students. While a numbers of other conclusions were drawn from the data gathered from all the other students tested, it was only from their 66 that the major conclusion of the study were drawn. The conclusion was poor mathematics achievements causes mathematics anxiety.

Budhathoki (2004) conducted a research on "A comparative study on student's achievement in mathematics at lower secondary level in different ethnic group." The

prime theme of this study is to explore the mathematics achievement of Brahmin, Chhetri and Magar students at secondary grade in Rukum district and make comparative study of this achievement. The population of this study is assumed as the students studying at grade VIII. Out of 74 schools 10 schools were taken as sample which is 25% of the universe in the district. 32, students of Brahmin, Chhetri and Magar students (71 Brahmin, 143 Chhetri and 115 Magar) were chosen as sample of this study. The major findings of this study are: the mean percentage of mathematics achievement of Brahmin, Chhetri and Magar students were found to be 31.76%, 20.27% and 26.27% respectively. Brahmin students achieved significantly higher than Chhetri and Magar students in district level examinations 2061. Chhetri students mean achievement was found to be higher than those of Magar students.

Bhagat (2007) did a research on " A study on mathematics achievement of primary level students of Rai and Tharu casts in Udayapur district." The researcher selected nine public schools and the purposive sampling method was followed in the selection of Sample. He selected 216 students (108 from Rai and 108 from Tharu students). The main objective of this study was to find out the difference in mathematics achievement of Rai and Tharu students. For this, t-test with two tailed was used to test the research hypothesis at 0.05 level of significance. His conclusion was the achievement of Tharu students is higher than Rai students.

Pandey (2007) conducted a research on topic "Factor influencing mathematics achievement (A case study of ineffective secondary school Kailali district)." This case study was done in one of the secondary school of Kailali district. Only 20 students each from effective and ineffective schools were chosen as sample, personal and environmental factors such as gender, age prior knowledge, attendance motivation, study at home, parental support, quality of teachers, class size, student-teacher

interaction, physical and environmental condition and school leadership were in consideration. The major findings of this study were that students achievement was mostly affected by both their personal and environmental factors. Gender discrimination was one of the key factors that caused the girls achieve low marks and boy high. Home environment, school environment, teacher's quality, students self-motivation has made students. Achievement high in mathematics less knowledge an instructional strategy less teaching experience and lack of teaching materials have led students mathematics achievement towards low percentage. Another physical factor like school surrounding environment was seen as an influencing factor. Teacher laziness and school's leadership have close link to students performance and achievement.

B.K. (2010) did research in title "Causes of low achievement in mathematics of grade X students (A case study)." This was a case study based on qualitative research design and descriptive in nature. Main objectives of this study was to find out the causes of low achievement in mathematics of grade X. School documents, observation notes and interview guidelines are used the tools of this study. All the students of Kailali district of grade X are the population of this study. Among all school of Kailaki district, Saraswoti Ma.Vi. Darganli is selected and from this school at grade X, 6 boys and 6 girls are selected for the sample of this study. The collected information from class observation, interviews and school's records was first categorized and them different themes was given, there will be considered as a code and similar code versions of the respondents will be collected together and will be explained in their perspective. Cross match will be adopted to maintain the validity and reliability of the results of this study. The research will also try to ensure the

internal validity by observing the same phenomenon repeatedly. Data analysis and interpretation will be done on the basis theoretical develop by the researcher.

The researcher found in his study that the financial condition, parents education poor learning cultures, irregularly checking have work by teacher, negative attitude of mathematics for learning (i.e. it is a very hard subject math have no meaning in our life etc) poor physical condition of school i.e. no proper drinking water, no enough teaching material, no qualified and trained teacher lack of library, lack of class room management etc. are the major causes low achievement of mathematics of grade X in Kailali district.

Karki (2011) A Study entitled " Factors Causing low achiment in mathematics at secondary level ( A case study in Ineffective schools in surkhet District" The design of this study was case study was case study was case of evaluative type and descriptive in nature.

The main objective of this study was to find the current mathematics achievement in ineffective school in Surkhet District. To find out the causing factors of the low achievement in mathematics in ineffective school in Surkhet District. The students in those schools have low achievement especially in mathematics (schools which have less than 15% result in S.L.C exam since five years) secondary school form Surkhet district which was a sample of this study. Students, mathematics teachers, Head-teacher were the respondents of the study. Only 20 students from each ineffective and effective school, were chosen as sample of this study according to gender and previous academic background. Students were taken by using systematic random sampling method, Interview schedule observation form, school survey form and schools document were the tools of this study. He collected data and information by using semi-structured interview class observation form and school survey form. On

this basis of the form he observed mathematics class in grade X of the schools and recorded the behavior in the class room on his observation form. This interview were taken with students, teachers and head teacher. Focus points of interview were on motivation study at home parental supports, teachers teaching strategy. Students teaching interaction and school leadership. Data were analyzed multiple perspectives such as gender home and school environment, physical facilities of school, teachers experiences, classroom presentation and demonstration of the teacher students relationship and so on. For analyzed the data used mean score and standard deviation. He found that gender, motivation, prior knowledge, attendance, age and study at home were found as the personal factors that affective achievement and parental support, quality of teacher, class size student teacher interaction, physical and environmental condition and school leadership were found as the environment factors.

Karki (2012) did a research on titled "factors affecting mathematics achievement of Janjati students of Sankhuwasabha district." That was a quantitative descriptive research. The main objectives were to find out the achievement level of Janajati students in mathematics. The populations were taken all the students of grade VIII of Sankhuwasabha district by satisfied random sampling method. The method of sampling that involves the division of a population into smaller group known as strata. Stratification is the process of dividing method members of the population into homogeneous sub groups before sampling. The sample of this study was included 60 students from grade VIII where 30 Janajati and 30 taken from Brahman Chhetri randomly. Achievement test, questionnaire and interviews (for mathematics and head-teacher) were used for the tools of this study to collect the data.

The collected data through the achievement were tabulated, analyzed and interpreted with the help of t- test. The teacher analysed the collected data by

calculating the mean percentage and standard deviation of the scores of the sample students. The t-test with two tailed test was used to test the research hypothesis at 0.05 level of significance. The collected data through the questionnaire were tabulated and analyzed with the help of percentage and  $\chi^2$  value at 0.05 level of significance, where  $\chi^2$  tests were used to test the level of significance from despondences of 60 students to the given statements as a whole in the resting scales. Also, the collected data through the interview were analyzed and interpreted in a descriptive form. The researcher found the following findings in the study.

The researcher found in his study that the mean difference of two groups was 2.27. It seems that the achievement of Brahman and Chhetri students were higher than the achievement of Janajati students. The calculated t- value 2.39 lies outside the critical region +1.96 in two tailed test at 0.05 level of significance. This indicates that there is a significance difference between the mean and achievement of Janajati students and Brahman/Chhetri students in mathematics.

Study room at home plays vital role in achievement in mathematics. Guide by parents, brother or sister make easy to study mathematics. Sufficient time for practicing, creative advice and encouragement give to the child helps in increase achievement in mathematics. Culture and mother tongue are not affect achievement in math at secondary level. Prior knowledge, more time to practice mathematics parents regularity, consult to the friends or teacher to learn missed classed, time to time practices of previously learned subject matter in mathematics etc. effect directly or indirectly in achievement in mathematics.

Reading the findings of the study based on schools' related factor, the interaction with teacher, environment of school, black/white board, desk and benches, location of teacher biasness, teacher attitude, regularly copy checking by teacher, train

teacher, experiences of teacher, extra activities in school, teachers take care to the students etc. are affect students directly or indirectly in achievement in mathematics.

Kandel (2012), conduct a research on "Factor influencing the achievement of students in mathematics at Tamang community (A case study in Nuwakot district)." It was done in two lower secondary school of Newakot district only five from each school were chosen as a sample. It aimed to find out the causes of low achievement in students in mathematics at Tamang community. In the study personal, cultural, home related, school related, students related factors were taken in consideration. From the study it was found that Tamang students of faced more difficulties in school learning participation due to large gap between their language, culture and tradition of study. The Tamang students hesitated to interact with other children in the school as well in the community due to the socio cultural reason they are still humiliated by *Bhote* and uncivilized *Janajiti*. Similarly, the Tamang children in home were found to learn by observing and engaging in the works of their father, mother and alders but they do not get opportunity in the school aspect listening, which is the dominating during the day at school. Similarly, Tamang children were found more or less concerned with school problems and the problem of caste like minority. They had poor performance in the school because their culture is less congruent and in compatible with the culture of school.

### **Conceptual Framework**

This is a case related of the factor affecting of achievement of Tharu students in mathematics. The following conceptual framework was constructed for the low achievement of Tharu students on mathematics.



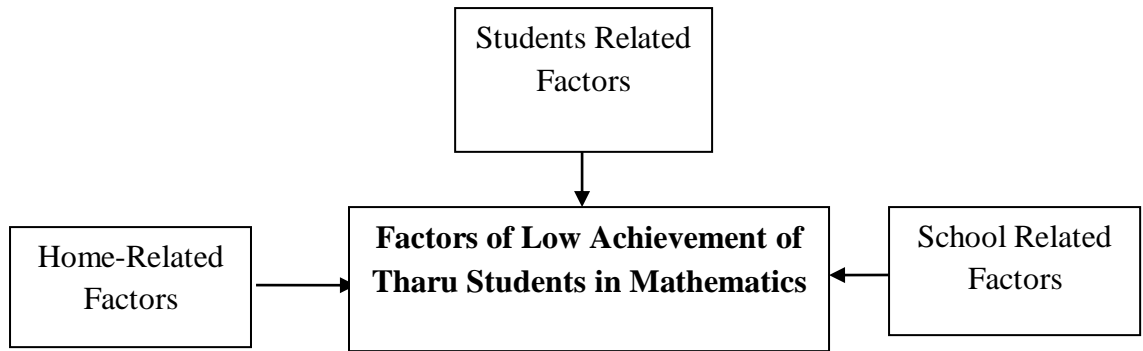


Fig: Framework for factor of low achievement in mathematics of Tharu students

This research has included the effect of home related, school related and students related factors to the low achievement of Tharu students in mathematics. This framework is based on the theory of factors affecting in the learning achievement developed by Hughes (1999). This theory clearly presents that learner achievement in any area or content of learning. Hughes has presented the school, home and learner specific factors as the affective factors. So, this theory is taken into consideration in this study.

## **Chapter III**

### **METHODS AND PROCEDURES**

Research methodology presents the logistics of the study because it determines how the research becomes complete. Research method is a science which determines how the research procedure form is being function as to end. The systematic method is the main part of the study which includes about the various logical procedure that the researcher intends to follow while carrying out the research. Hence, in this section the researcher deals about design of the study, population of the study, the sample of the study and the tools used to collect the data, reliability and validity of tools. It also explains the method of analyzing data and interpretation of the result.

#### **Design of Study**

The design of the study was the case study design. The case of students in their mathematics learning studied in detail. The data collected in the students were descriptive in nature. The qualitative description of the information was made so as to arrive in the conclusion of the study.

#### **Population of the Study**

In order to carry out this study all the students of grade VII of Bardiya district were the population of this study. Out of this these population the researcher selected Shree Restriya Higher Secondary School of Bhimmapur VDC in Bardiya district and the four Tharu students as the sample population for the study.

## **Sample of the Study**

Out of the schools of Bardiya district only one public school named Nepal Rastriya Higher Secondary School Godiyana, Bhimmapur School was selected is the sample school in this study. Similarly out of Tharu students studying in that school only four Tharu students were selected as the sample for case study.

## **Selection of Respondents**

The respondents of the case study were the Tharu students. Their mathematics teacher and parents of selected students were taken as the respondents in the study. Only four students including 2 boys and 2 girls were selected as the key respondents. To identify the affective factors, the parents of focused children were also selected for the interview. Similarly, the mathematics teacher was the another respondent. In the same the head teacher of the school was also the respondents for interview. The students were selected purposively but parents were selected randomly.

## **Tools/Instruments of Study**

There were several ways of gathering data. The following instruments were used to collect the data in this study.

- Review of school documents
- Report of the classroom observation
- Interview

## **Interview**

Interview is another effective and popular technique of collecting primary data. It is a well established, practicable and reliable method of data collection.

According to Kerlinger (1986), "The interview is face to face interpersonal action of situation in which one person, the interviewer asks a person being interviewed, the respondent responded to him and it is done by the questions designed to obtain answer pertinent to the purpose of the research problem." In this study, the researcher used semi-structured interview because these tend to be factually oriented, aimed at specific information and relatively brief it is also suitable to get accurate and complete information from all respondents.

After reviewing the school documents and observing the actual class, the researcher interviewed with mathematics teacher, parents of Tharu students, head teacher and with those selected Tharu students. The main aim of interview was to get more valid and reliable information about the factors affecting in Tharu students achievements in mathematics. The details of interview schedule is mentioned in appendix A, B, C and

### **School Documents**

School documents of selected school were one of the major tools to find the Tharu students achievement in mathematics used in this study. The researcher studied the school profile, records of Tharu students in school, mark ledger of both terminal as well as final examination, their attendance and some other additional supports provided to the students.

### **Classroom Observation**

Another important instrument for data collection used in the study was classroom observation. It is used in this study because a more direct way of gathering information is to observe the events as they occur. Thus, observation is the process of recognizing and noticing people, object and occurrences rather than asking

information. Direct observation has advantage of putting researcher into first hand contact with reality. The research based on observation involves observing and recording behavior of subjects. There are various method of collecting observational data. In this study, the researcher used structured observation form for collecting the data because it produces highly reliable result. For classroom observation a form related to the begging of the class, classroom management, relation between teacher and Tharu students, friendly behavior towards the Tharu students with their friends, participation of Tharu students in teaching learning process was developed and exploited in the observation. The classroom observation form included eight different indicators that show the teacher and students activities in classroom intervention. The observation form is mentioned in appendix E respectively.

### **Data Collection Procedure**

The school's record was studied such mark ledger of student's, teacher's profile, physical facilities and other relevant documents. The classroom were also be observed being participation with math teacher and students of grade VIII of 7 days. The researcher recorded the behavior and activities of both teacher and students during teaching leaning activities.

Head teacher, math teacher and sampled students as well as their parents were interviewed. All answer were noted during the cause of interview, focus point of interview was based upon the achievement vision of school towards low achieve in mathematics and about the students.

### **Data Analysis Procedure**

The collected information from class observation interviews and school's records was first categorized and then different themes were developed. The

collected data were explained in terms of school, students and home related factors. The researcher also tried to ensure the internal validity by observing the same phenomenon repeatedly. Data analysis and interpretation was done on the basis of qualitative or descriptive approach of presentation.

## **Chapter IV**

### **ANALYSIS OF THE DATA AND INTERPRETATION OF RESULTS**

This chapter is about the systematic analysis of data and the interpretation of results derived from the analysis. The data were collected from the school documents, classroom observation and the interview with math teacher, head teacher, Tharu students and their parents. The collected data were tabulated and analyzed according to the objectives of the study. Different but interrelated themes were developed at first and the data were thematically analyzed and interpreted. The analysis has been made under the following main headings.

- Introduction of sample school and participation of Tharu community in school.
- Introduction of case students.
- Exploring home related factors for mathematics achievement.
- Exploring school related factors mathematics achievement.
- Exploring students related factors mathematics achievement.

#### **Introduction of Sampled School**

Shree Nepal Rastriya Higher Secondary school is located as Godiyana-03, Bhimnapur VDC of Bardiya district. It was established in 2016 B.S. It is the oldest school Bhimnapur VDC. The school started with 14 students. The school was moved up to class X in 2055 B.S. The school stands with in a premise of 1 Bigaha of land. According to the head teacher of his school, it was established 1<sup>st</sup> Magh 2016 B.S. with the great efforts of local people without getting any fund from the government. After one year the school building was constructed with the help of

villagers financial and labor donation. The school society is formed by different caste Tharu, Bhraman, Chhetri, Magar and Kumal etc. So the students from different case have been studying in this school.

The people of different cast live around the school area. However Tharu ethnic group are in majority and Brahmin, Chhetri and Magar are in minority. So, the students from different caste and different group studied in this school with great number of Tharu. The documents of the school show that 60% of the students are from Tharu community and 40% of the students are from other communities. There are about 85 houses of Tharu in ward-3 of Bhimmapur VDC were this school is situated. The Tharu parents did not send their all children to the school because they were economically poor. Most of the parents of the school were involved in farming and labor in different sector. So they paid the students fee from the same sources described above Nepal Rastriya Higher Secondary School is the main education institution for the Tharu community. In school management committee, out of nine members there were five members from tharu community. The school management committee held the meeting time to time and they continuously visit the school. The people of local community are uneducated and poor. They cannot support the school economically and the government is not able to pay attention towards the school. Thus the school does not have proper infraction and well equipped environment to provide quality education. Out of 18 teachers, 4 of them were are from Tharu community. There are about 60% of total students from Tharu community. So, we can find the presence of Tharu community more in the school activities. The following table shows the participation of Tharu students and teacher in the selected school.



**Table No. 1**

**Tharu Students and Teacher in School Profile**

<b>S. N.</b>	<b>Number of Tharu Students</b>	<b>Class</b>	<b>Number of Tharu Teacher</b>	<b>Level of Teaching</b>
1	26	ECV	2	Primary
2	29	One	1	Lower secondary
3	24	Two	1	Secondary
4	22	Three	-	
5	23	Four	-	
6	19	Five	-	
7	21	Six	-	
8	22	Seven	-	
9	20	Eight	-	
10	17	Nine	-	
11	17	Ten	-	
12	14	Eleven	-	
13	15	Twelve	-	
Total			4	

Source: School Profile, 2070

The above table shows the number of Tharu students. Tharu students were great in number in class one than in other classes. Similarly, they are few in number in class eleven than any other grade. The number of Tharu teacher were four in number however name of them was found as mathematics teacher.

Regarding the participation of Tharu community the head teacher of school opined as:

*"The students in this school are specially from Tharu community and the parents of the students are not interested and aware in education of their children. To make*

*them responsible towards school, management committee should be formed from Tharu community. We usually inform the parents about their children study in addition, we have organized different awareness program regarding their education."*

(Headmaster's View)

From the study, the researcher found the students of Tharu community were more in number than other community. The parents of Tharu students were mostly involved in the different activities of the school like management committee, teacher parents association, educational program and physical aspect of the school.

### **Introduction of Case Respondents**

Respondent I is a female student studying in grade VIII in Nepal Rastriya Higher Secondary School. Her records in school show she is average in all subjects and carries first position in her grade but relatively poor in mathematics. She belongs from poor class family. In her family there are five members, father, mother and two brothers. Her father and mother work as farmer. They have enough land to cultivate crops for their living. Her brothers are elder than her. They both are in foreign employment. Their house is made of mud and wood. It is small to live freely. It seems they have staying happily in their family and no exceptionally big problems are there. She is an average child since their childhood. In her village people take her as a role model student. She behaves with other people well. She is laborious and hard working. She seems shy and a little bit introvert. She says about her "I think people should respect each other. Many people may have different problems. Family members should help and love each other. With the resources we have we should make our life beautiful. There must be continuous effort." From the above saying it can be said that she has positive thinking and is loyal to individual relations. Her mother says "She is my

right hand. She helps me in all house works. I am very much satisfied with her study. She has making our prestige higher in our society."

Respondent II is a male student studying in grade VIII of Nepal Rastriya Higher Secondary School. His school records show he is an average student. However, he has proved him good in mathematics subject. He is from educated family. His family consists 4 members including father, mother and one elder sister. All members of his family are literate. His father is SLC pass and his mother has primary education. His sister is studying in bachelor degree in management. His parents have managed good physical facilities. They have a beautiful house made of rod and concrete. All family members can use separate rooms. His father is a teacher in another school. His mother operates a shop of daily consumable items. They earn good money. His parents are fulfilling most of his demands. They have earned good social recognition in their society.

Respondent III is a male student studying in Nepal Rastriya Higher Secondary School. He is poor in mathematics subject. Even, his is good at other subjects. He is medium level students in his classroom.

He is from a marginal class family. His father was died when he was five. His mother cared him from his childhood with his younger sister. Being only 3 members in the family they struggled very much. He has a very small cottage type house. Even his clothes were seemed old and torn. During our observation the researcher did not find any facilities in his house needed for a student. He only possessed a roof. He studies in his bed. The people in the society respect his mother. Being single parent since long time she has grown his children with enough care and they are making their mother happy with great achievements in their study.

He is a laborious student. He seems sincere. In this young age his sensitivity and mature behavior impresses others. In his family he does most of the farming works. His mother helps him in his farming work. He is active in the village welfare club. The club is established with the objective of increasing awareness on the social issues of education, health, child labor, etc. He was excellent in his study since the childhood. He never got first position in his class but his school records showed his consistent academic achievement.

His mother says "I am very much satisfied with his study. He is an orphan. His father died when he was 5. He takes care me and his sister. I could not give him any facilities. He never asks me about the things he wants. His friends enjoy good facilities and free time. However, because of him we have able to live."

Respondent IV is from also Tharu family. She is poor in mathematics subject. Her academic background is not good. She secures low marks in most of the subjects. Her father works in farm. She has 8 family members including her. Her family is a joint family. Her family members are of traditional type. In her home they speak own language - Tharu language. Her tone is mixed when she speaks Nepali language. Her father has fulfilled their basic facilities. Her family is counted among the rich family in her village.

She rarely helps her family members in their household works. Bring a joint family she has got enough love from her family members. She is extrovert in nature. She can ask anything from anybody if needed.

Her mother says "She is not concerned with many things. She studies if she wants. She has got good results yet. However, her study is not regular at home.

Keeping in view of her study we have not involved her in any family related responsibilities." She enjoys travelling. Her hobby is to listen songs.

While studying the case of Tharu students the researcher studied the records of their activities and mark ledger and school attendance which are given below:

### **Exploring Home Related Factor for Low Achievement in Mathematics**

There were several factors influencing mathematics achievement of students from Tharu community with the help of related literature, observation, interview with students, their parents, teacher, themselves and observation and related documents of school. After the study different factor were found as home related factors influencing low achievement in mathematics students of Tharu community. The analysis and interpretation of home related factors are given below:

Parent's higher education, situation of study room and family member's guidance have been prioritized by the respondents. Higher education of senior members in family helps to create the study environment and confidence on the student's behavior. Students have focused on study room also. The third important home related factor is "Guide by other members of family. In this context, the head teacher of Shree Nepal Rastriya Higher Secondary School said "*Most students get stressed because of lack of good physical environment in home, so, they cannot focus on their home as well as school*".

Math teacher of Shree Nepal Rastriya Higher Secondary School pointed the importance of study room at home as "*Study room at home is most important for the students as home related factors, only school effort cannot enhance the student's achievement as expected.*" Most of the math teachers were agreed on this statement. However, the students have focused on parent's higher education.

The teachers who were teaching them were aware of student's study environment at home. They said that only a few students are getting suitable study room.

Head teachers and math teachers agreed that pupils of educated parents would be curious to learn mathematics quicker than that of pupils of non educated parents. They also focused on the parent's guide for better performance of the students.

Similarly, parent's creative advice & encouragement, parent's time contribution to their children's mathematics study and parent's care & concern have got second priority. Student's think that these three home related factors have moderate effect on their mathematics study.

Need of parent's creative advice and encouragement has been emphasized by the students covered by the study. Students felt the need to them the creative advice and encouragement of their parents on their study. Parents support and time for practice of mathematics also seen to be important on the achievement of mathematics. It is considered that in general scenario parents should take care of the study process and progress of their children.

*"Most parents show concern on their children's mathematics study. However, they do not know or do not able to know how to support their children's mathematics study"*

(Head Teacher View)

*"Parent's encouragement is most important thing. Most Tharu students feel neglected in their home and school. However, we never discriminate in the process of learning. This is because of home stress which affects in school environment also."*

(Mathematics Teacher View)

Although he makes emphasis on parent's encouragement, students prefer feel that it has moderate effect on their mathematics learning. The parent's involvement in any form in their children's mathematics study seems to be fruitful.

On the other hand sufficiency of home time for practicing math, festival effect on mathematics study, more emphasis on math than other subjects and mother tongue effect are selected by the sampled Tharu students as less affecting factors.

The statement "you should have sufficient time for practicing mathematics exercises at home" is responded by more than half of students agreed on this saying. This may be seen as some people are now doing other works like job, business for their livelihood and they have left the traditional agro based works. It has resulted the lack of time to exercise mathematics at home. On the matter of festival effect on mathematics study most students have rejected the effect of festivals being less time for study. Need of regularity in practice has also being given some importance. In Nepali education context mathematics subject is given more emphasis and paid more attention considering the subject relatively to tougher than other subjects. The general Nepali student's thinking has been supported by this study also.

*"Students have sufficient time in home to practice mathematics. In grade 8 students must not practice much at their home as we are doing in our class sufficient practice. In festival time student's presence in class becomes low. At that time they should practice sufficiently at their home."* (Mathematics Teacher View)

*"Student's practice in their home is not sufficient. Parents should provide stress free home environment for their children. We teachers can not focus on only one subject. It is school's responsibility to make students learn all the subjects equal."* (Head Teacher View)

In the view of Head teacher and mathematics teachers, regular practicing mathematics at home helps to increase performance level of students. Some parents said that culture, feast and festivals may not influence achievement in mathematics.

### **Exploring Student Related Factors for Low Achievement in Mathematics**

In this part the researcher analyzed the data collected which are related to students and which are likely to affect their low achievement in mathematics. The factors included are related to the nature of students, their interests, background, maturity, etc.

Regarding the different students related factors most students focused on the need of consultation about problems with teachers or friends. Students have been agreed on the need to consult the math problems with teachers or friends to increase achievement in math. Students have felt that more attention is needed to make good achievement in mathematics subject than other subject. The base of mathematics is poor of most students covered by the study. The issue has been considered very important. Students felt need of more time contribution on mathematics study to achieve good results. Likewise, students have focused on the habit of doing homework regular.

The head teacher of Shree Nepal Rastriya Higher Secondary School focuses on the need to remove the fearness felt by the students in mathematics learning.

*"Most students have fear of mathematics subject, and also they rarely consult with their math teacher. We are trying to make easy environment for them. However, the situation has not been grown up to our expectation."* (Head Teacher View)



The math teacher of same school, is more concerned with the need to do homework by the students.

*"Some students do not do homework; parents should make them do math homework. We teach them in school but it is not sufficient. Apart from school time their achievement is up to the family and society."* (Mathematics Teacher View)

He said that a student who consults to the friends or teacher in mathematics subject matter can get high mark. And, they agreed that if the students spend more time to practice mathematics, obviously mathematics achievement would be increase and result would be better.

Similarly, the need of student's hard labor in mathematics practice, help of prior knowledge in mathematics achievement, role of age and need of consultation with friend for missed mathematics class are also found the factors affecting student related factors. students were in favor of need of hard labor in mathematics knowing its applicability in all the sectors. The prior knowledge of students, their background has also been supported the student's mathematics achievement. Students felt that they have good prior knowledge of mathematics and it has supported their further math study. Students were agreed on the impact of age factor on the mathematics achievement. Revision of previously completed exercise time to time has also got importance. Students have agreed on the need of revision. It seems that culture of time to time revision of previously completed chapters has not been developed among the students. In this context, head teacher of Shree Nepal Rastriya Higher Secondary School says:

*"Student's knowledge base and performance in previous classes are very impactful in mathematics achievement. Most of the students in our school are average. Some are*

*good also. We have seen that age also matters; sufficiently aged students can catch mathematics ideas better.*" (Head Teacher View)

One of the parent of Tharu students says :

*"Our student's need hard labor to practice previously completed mathematics chapters. Most of the students cannot get higher marks because of lack of revision of those chapters."* (Parents View)

In the same way the need of consultation with friends for missed classes, extra time learning with teacher and maintenance of regularity in mathematics were found as affecting factors. Head teacher of Shree Nepal Rastriya Higher Secondary School says :

*"Students should be regular in class, otherwise they cannot learn the targeted matters; some Tharu students are not regular in class because of their family reasons."* (Head Teacher View)

Math teacher of Shree Nepal Rastriya Higher Secondary School focuses on the consultation with the friends and teachers saying

*"Some students do try to consult with their friends but not the most. Very few students try to reach us apart from school time. School should manage such time for better learning of students".* (Mathematics Teachers View)

While conducting the study on the factors which are related to the students the education base of the students was found to be unsatisfactory. Most students had the fear with the math subject; they had low achievement level on previous classes. Almost half of the sample students were irregular in the school and in completing their home work. Some students found to be good in math and other subjects also.

Students had the inferiority feeling compared to other students of different castes. Consulting with teachers and the friends was not the common. The lack of education base and study with confidence were found to be the crucial factors which have negative impact on the achievement level of Tharu students.

### **Exploring School Related Factors for Low Achievement in Mathematics**

The researcher had conducted the study on the effect of school related factors on the mathematics achievement taking the responses from the students, teacher, head teacher and parents.

From the study, the data support that teacher's experience & qualification, interactive class, regular checking of homework, equal focus of teachers to all students, special attention to Tharu students and arrangement of extra classes for math study are found as school related factor. The head teacher of Shree Nepal Rastriya Higher Secondary School says

*"We have qualified and educated teachers for all subjects. However, I agree, the classes may not have been interactive. We provide homework and check copies regularly. We focus all the students and try to provide equal opportunity."* (Head Teacher View)

Math teacher of school also agreed that they have not given special focus on Tharu students in spite of Tharu student's achievement in mathematics being lower than other students.

Similarly, teacher's unbiased teaching, uninterrupted mathematics class, sufficient library, use of teaching materials, good facility of instructional materials and training of mathematics teachers are also the factor related to school.

In this case, head teacher of Shree Nepal Rastriya Higher Secondary School says

*"I don't think our teachers are bias. We may have less sources and insufficient library. DEO provides adequate training to the math teachers."* (Head Teacher View)

Math teacher focuses on the teaching materials saying

*"We have not been provided teaching and instructional materials, so, students can feel that our classroom is less interactive."* (Mathematics Teachers View)

In the same manner, appropriate teacher student ratio, appropriate size of blackboard, continue student assessment system, extra activities related to mathematics, school's peaceful environment and good facility of desk and bench have been sorted as other school related factors as per selected student's view. In this concern, head teacher of Shree Nepal Rastriya Higher Secondary School says:

*"Our teacher student ratio is high; however, all physical facilities are available here. Facilities may not be of high quality but I think sufficient."* (Head Teacher View)

The school related factors are common for all the students. So, there we cannot find different impact on different students by the school related factors except the biasness shown by the teachers and school administration to the particular community students. While studying about tharu students such biasness were not found.

The researcher interviewed with teacher to collect related information. To maintain the interview reliability and validity, researcher repeated the same question and searches the consistency of answer. They had provided sufficient information based on interview guideline. All teachers had positive attitude towards those factors that affect achievement in mathematics which are explained above. Math teacher and head teacher accepted home related factors, student related factors and school related factors that affect mathematics achievements. Hence, teaching learning strategy

should be followed on these factors to increase mathematics achievement. The responses received through the interview with head teachers, math teachers, parents and students give a clear explanation of those factors.

All those teacher related, students related and school related factors that determine mathematics achievement of Tharu students are given in the episode 1, 2 and 3 respectively below.

### **Episode First**

In the first class observation the teacher went in to the classroom along with the researcher. All the students stood up and said good morning. Then the teacher told them to sit down. This showed that the students were well disciplined and the schools have taught them to respect the teacher. There were 22 students. In the class the desk and bench were sufficient in the class. The teacher wrote the problem explaining step by step asking them at least he did the problem in the white board. Then, told them to do the exercise at home. Next day they came without homework. The teacher checked the homework of students and started his class. He solved two exercises and asked the students to do other exercises taking help from the example that he presented. After the class, the researcher asked about the students whether they were affected from home related, school related and they themselves related factors. The students responded that they did not have good family environment, their parents do not have higher education, they did not have study room at home, they did not get proper guidance by teacher, they had to busy in family work, they did less practice at home as the factors effecting their achievement in mathematics.

The above table is about the report of classroom observation of Tharu students. It presents the actual activities in mathematics class of the selected school. From the above episode, it was found that the teachers did not involve the students in the classroom exercise. On the other hand students were also not actively involved in classroom practice and they seemed poor in mathematics. The teacher was following no specific techniques to teach mathematics than that of usual. Students were found to be affected from all, home related, school related and students related factors. They told they did not have time to practice, they did not have proper guidance and they did not have good environment to practice mathematics at home.

### **Episode Second**

The researcher entered in the class of mathematics with observation checklist to observe the factors affecting mathematics achievement of Tharu students. In the class all student were present in the classroom they were quiet in the classroom. The teacher was lecturing on the mathematics. The teacher asked the students what they know about mathematics. The student responded without any hesitation after then he defined the topic that he was going to teach. He taught cyclic system to the students. Then teacher wrote a problem from the exercise book and solved it explaining step by step. Most of the students performed the class work correctly. In the last he gave homework from the exercise book. After his class, the researcher asked the students about their learning and the problems that they had. He found that students low involvement in classroom discussion, unequal attention of teacher, poor background, low attendance, poor classroom participation, etc. as the problems of theirs in the mathematics.

The above table is the record of classroom observation of the students. This table presents the teacher and students activities in the mathematics class. From report of observation it was found that the classroom practice of mathematics was average. Teacher used lecture techniques. Tharu students hesitated to speak with teacher they were not able to solve the problem in the classroom. There was low involvement of the students and teacher paid unequal attention to the students. Teacher did not use any specific materials to practice them in the exercise. They were also found to be affected from the various factors which are related to home, school and they themselves respectively.

### **Episode Third**

In the next day, the researcher also entered in the classroom to observe the class of mathematics of the selected students. There were 23 students out of 26 in the class. Physical environment of classroom was good. When the teacher started to teach mathematics, he reviewed the previous lesson of simplify then wrote a problem form textbook and solved the problem in the blackboard by explaining it step by step. The teacher started to teach the factorization. He started the class connecting previous lesson. Then he wrote a problem on the white board and solved it explaining. Then he gave a same kind of problem to the student to do without guiding. He solved the given question after completion by the students in the class in the board explaining each step. The students were lazy, they were not attentive, they did not do write answer of the question given less discursive, passive and non motivated. Similarly, they were not properly treated by the teacher.

The above table shows the classroom activities in practice of teaching mathematic in the selected school. From this table, it was found that the students did not complete their homework, they were lazy and teacher only provided problem without any guidance to them. Students were not able solve the exercise given in the book. They also did not asked the teacher how to solve those rather they were silent. This shows that they were also affected from the factors which are related to school, teacher and they themselves.



## **Chapter V**

### **SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATION**

This chapter deals with the summary, findings and conclusion of the study which is drawn from the analysis and interpretation of the data and findings of the study. After reviewing the concrete conclusion of the study. Some recommendations are provided to different levels such as policy, practice and factor research in this chapter. So, this chapter is the concluding part of this research which outlines the summary, major findings, conclusion and recommendations.

#### **Summary**

This study is about the exploring factor affecting low achievement in mathematics of Tharu students. It is carried out to explore home related, school related and students related factors that affect low achievement in mathematics of Tharu students.

To carry out the study, case study research design was followed. The Rastriy Higher Secondary School of Bardiya district was selected purposively and four students of Tharu ethnic group (two boys and two girls) were selected for case study following systematic random sampling method by following lottery system. The research collected and studied school documents as school profile, record of students, mark ledger, attendance and additional supports provided to the students. Similarly, she observed the five different mathematics classroom of the students and took an interview with mathematics teacher, head teacher, Tharu students and with their parents to collect the data in this study. The collected data were analyzed and interpreted descriptively. The themes were developed for the interpretation data based

upon the objectives of the study. The data were presented in the form of table and points necessarily. The interview and classroom observation based were analyzed in more descriptive way. From the study it was found that parents education, parents occupation, home environment, practice at home, help of elders, etc. as the factors related to home. Similarly, schools environment, teachers qualifications, teaching method, instructional materials, motivation, extra class, counseling, etc. as the school related factors. In the same way prior knowledge of students, their regularity in class, their interest in study, participation in classroom discussion, questions to the students, etc. are as the students related factors influencing the low achievement in mathematics of Tharu students.

### **Findings of the Study**

This study entitled factors affecting achievement of Tharu students . It aimed at exploring the present condition of mathematics achievement of Tharu students. and factors affecting mathematics achievement of them . The researcher had collected the rigid data through three different tools as the review of school documents, interview schedules and classroom observation. After data collection she analyzed and interpreted the data descriptively because most of the collected data were quantitative in nature. From the thorough analysis and interpretation of the data, the researcher came up of with the finding s of the study which are given below:

- Parent's higher education, creative advice and encouragement have vital effect on student's mathematics achievement.
- Study room at home has important role in mathematics learning.
- Guidance by parents, brother or sister makes easy to the learning process and contributes to the better achievement level of students.

- Consultation with friends and teachers leads to better achievement level in mathematics learning.
- Comparatively more labor than the other subjects and regular in doing homework plays the vital role in great achievement level of mathematics students.
- Habit of completing homework contributes to mathematics achievement.
- Mathematics as a favorite subject influences the achievement in mathematics.
- The qualification, experience, training of teachers and their unbiased treatment to all the students has great influence in achievement.
- Interactive learning environment and peaceful environment in school plays vital role in student's mathematics achievement.
- Continuous assessment system, regularly copy checking by the teachers play vital role in achievement in mathematics.
- Teachers should be centered to all students equally during mathematics teaching to enhance mathematics achievement.
- Special attention to Tharu students can enhance the mathematics achievement of Tharu students.

Similarly, from the study, the Tharu students were found very poor in their mathematics achievement. In comparison to the students of other ethnic community, the Tharu student's achievement score was below the standard of required score. After the study of school profile, mark ledger affordance schedule and others, Tharu students were found to be poor in mathematics, frequently failed in the examination, absent for many days, high in number and not mole conscious towards their learning. From the class room observation, Tharu students were found less creative, passive, demotivated stressed, absent, negligent, less participated in class work, non

discursive, less integrative and low performer in mathematics. However they were found disciplined, patient friendly innocent and co-operative in the class. Equally motivational, environmental, exposure based, social based, etc factors were found as the factor affecting mathematics achievement in the classroom. From the interview with selected teachers, students and parents, the low level achievement, poor classroom participation, low rate of attendance, lack of practice at home and class feeling of difficulty in mathematics, few opportunities for practice, lack of resources and supporting maternal, non academic family background , poverty, high work load, cultural imposition self study, devastation, etc were found the factors that determined mathematics achievement of Tharu students.

## **Conclusion**

After the study, the researcher found some striking ideas about the factors affecting mathematics achievement of the Tharu students. The findings of the study show that there are a great number of factors that influence the Tharu students low achievement in mathematics subject. Among the three major factors as home related, school related and students related as discussed above, the students related factors were found more affecting one. The low participation of Tharu students in classroom discussion, negligence of doing homework, poor classroom performance, absence for so many days in the school, fear of doing mistakes, feeling themselves as more poor in mathematics, unwillingness to interact or learn in group, hesitation to ask/consult with teachers, etc are concluded as the inflecting factors that determine Tharu students low achievement in mathematics.

The researcher has also found that the home related factors like time for practice, availability of materials, work load in home, help from the serious and the

school related factors like teacher's guidance and support, regularity in class, time for practice, negative attitude towards learning mathematics were also crucial behind their poor achievement in mathematics. From these findings, it can be said that the Tharu students were being affected by a number of factors, however those factors can be minimized with the collaboration of teacher, students and parents. In order to change the attitude of learning mathematics and to uplift their achievement level on it, students, teacher and parents should manage the appropriate environment of learning mathematics by considering above mentioned factors in their forefront.

### **Recommendations**

It is true to say that qualified and professionally dedicated teachers, curious and devoted students and conscious parents one the back bone of education system of the country. Similarly, in the field of mathematics teaching and learning, all teachers students and parents are follow responsible for the good achievement in mathematics. The concept of teaching and mathematics is not simply a job rather it's a profession, skill, knowledge and capacity to solve the problems of livelihood. By nature, mathematics is relatively technical, difficult and ambiguous discipline in comparisson to other subjects. The students who home good IQ do good in mathematics.

The researcher in our countries conducted so far regarding mathematics achievement show that most of the students studying in public school are very much poor in mathematics. The average score of them in mathematics is found below the level of required standard. Out of such conditions, the indigenous students, back warded and marginalized are severely poor than the students of other social and ethnic communities. Tharu students are one of the socially, economically and academically back warded group of students and their achievement in mathematics is not sound due to the influence of various affecting factors. They are not very much interested and

intelligent in learning mathematics as well. So, to motivate them in learning in mathematics and to get good achievement level, the Tharu students should be provided essential materials. Sufficient time, good environment, positive cancelling, encouragement additional classroom support. Similarly, they must be provided sound institutional support, and co-operation. The continuous research trend should be established/provisionalized to study the seasons behind low performance in mathematics, factors affecting and the ways to increase high achievement level as well. The findings of this study mainly implied that the current state of mathematics achievement of Tharu students is not satisfactory than it is required, thatu students have been affected by various problems and these problems are in need of being addressed. So, from the policy, practice and research level, the necessary attempts should be made on them to mobilize the achievement level of them. So, we can provide some of the recommendations in policy, practice and research level on the basis of the findings of the study in following sub headings:

### **Policy Related Recommendations**

The educational product of a country depends on the educational policy implemented by the government of the country. Similarly, teaching and learning is also highly influenced by policies formed by the nation and facilities provided to teacher and students. To make students highly motivated and competent in learning mathematics, the good policies should be formed from the national level to local level which helps to enrich the educational standard of the country. In this regard, the following points are recommended for effective policy:

- Teachers and students should be provided essential materials for teaching and learning materials and teaching and learning skills and activities from the policy levels.

- Good policy should be made to serve high achievement rate in mathematics.
- The indigenous and marginalized students group like Tharu should be empowered by all available means.
- There should be ease availability of books, of books, journals, articles, training, tuition and coaching classes, etc for students at school from which they can learn more.
- The learning environment should be managed contextually.
- The government should employ the strategic planning and program to increase the student achievement rate and it should employ good policies for supervision and organizational support them.
- The context aspects should be made ease, effetely and effecting so they could feel more energetic and be responsible in teaching and learning mathematics.

### **Practice Related Recommendation**

Learning mathematics is not an easy task. It is more complex than learning any other subjects to the students as well. So, the teachers should be more knowledge practical, studious and curious on their subject and to the problems of their students. Similarly the students should be laborious, attentive, conscious and active. To talk about the practice level, the first and foremost recommendation is that there should be far arable environment for learning at schools and too me. Teacher should develop the sense of dedication and learner should develop the devotion towards their learning. Some of the practice related recommendations are as follows:

- The Tharu students should be treated effectively. As they are poor in mathematics, they should be provided additional treatment and time for practicing mathematics.

- The parents must be conscious to the learning achievement of their students and should provide good learning environment to the students.
- Teacher should be well trained to teach mathematics and they should adopt child-centered methods.
- Good counseling and support from the school family, parents and community should be given to avoid the feeling of despair in learning mathematics.
- Tharu students should pay more attention on mathematics exercise, they should participate in classroom discussion, should take extra classes, reduce week and increase the habit of doing homework, be attend in school and so on.

### **Further Research Related Recommendations**

Regarding the recommendations for further research, it is important that a large scale qualitative research should be carried out by involving maximum number of Tharu students. It is so because one of the key limitations of this study was the sample size and it was not enough to find out the possible reasons from the varied number of respondents. Some recommend action related to further researcher are given below:

- It is thought to be more relevant to carry out large scale study on the topics like the attentive factors that determine learners mathematics achievement, reasons of failure in mathematics, problems of learning mathematics and so on.
- Further research should be based on emotional, psychological, physical and educational factors of low achievement of the learners. To improve the Tharu students learning achievement, similar studies should be executed in other areas and levels as well.



## References

- Banastola, C. (2007). *Factors affecting on achievement of Dalit students in mathematics; a case study in Kaski district*. Master's Thesis, T.U., Kirtipur.
- Bhagat, J.K. (2007). *A study on mathematics achievement of primary level students of Rai and Tharu Class in Udaypur Disrict*. Master's thesis, T.U., Kirtipur.
- Budhathoki, S. (2006). *A comparative study on students achieve in mathematic of lower secondary level in different ethnic group*. An Unpublished Master's Thesis, T.U. Kirtipur.
- CERID, (1980). *Achievement study of lower secondary school children. Kathmandu :* CERID, T.U., Kirtipur.
- Curriculum Development Centre (1993)*, Curriculum Development Centre (p. 70).
- Delfar, R. (2006). *Mathematics achievements of the students: An issue in teaching*. An unpublished master's thesis, University of Toranto. U.K.
- Dhakal, B.P. (2007). *A research on teacher belief toward discipline and their classroom practice*. An unpublished Master's Thesis, T.U. Kirtipur.
- Hughes, T.L. (1999). *Variable in mathematics achievement*. An unpublished master's thesis, University of Toranto. U.K.
- Karki, U. (2011). *Factor influencing the achievement of students in mathematics at Tamang community*. Master thesis FOE, T.U.
- Karki, M. (2012). *Factors affecting mathematics achievement of Janajati students of Sankhuwasabha district*. Master's Thesis, FOE, T.U.
- Karlingers, S.T. (1986). *Research methodology*. Cambridge: CUP.

- Khatri, G.R. (2011). *A Study of Mathematics Achievement of Grade-V Students of Brahman and Gurung Students in Syanja Distruct*, Master's Thesis, FOE, T.U.
- Maskey, S.L. (2001). *A comparative study of mathematics achievement of primary school students under different class size*. Master's Thesis, FOE, T.U.
- National Education System Plan (1971-1976)*. Ministry of Education, Government of Nepal: (P. 15).
- Pandey, R.P. (2007). *Factor influencing mathematics achievement (A case studies of ineffective secondary school of Kailali district)*. An Unpublished Master's Thesis, T.U. Kirtipur.
- Sherman, T.S. & Wither, G.A. (2003). *Mathematics anxiety and mathematics achievement*. An unpublished master's thesis, in the University of Okland. Norway.

## **Appendix A**

### **Questions for Interview with the Mathematics Teacher**

1. What is your view of the achievement of Tharu students in learning mathematics?
2. What are the problems to be faced while teaching mathematics to Tharu students?
3. Do you encourage and motivate Tharu students in learning mathematics?  
How?
4. What sort of relationship is there in the class between you and Tharu students?
5. What is the learning habit of Tharu students in learning mathematics?
6. What are the causes of low achievement of Tharu students in mathematics?
7. Are you satisfied with the current level of achievement of Tharu students in mathematics?
8. Do you take extra class for low performers in mathematics?
9. What is your view towards Tharu student's attitude in mathematics?
10. What can be done to increase the achievement rate of Tharu students in mathematics?
11. What are the individual factors affecting low achievement in mathematics?
12. What are the school related factors affecting low achievement in mathematics?
13. What are the home related factors affecting low achievement in mathematics?

## **Appendix B**

### **Questionnaire for Interview with Head Teacher**

1. What kind of facilities are provided by you to the students in learning mathematics?
2. How you adopted any specific attempt to the low achieved Tharu students in your school?
3. Are you satisfied to the achievement Tharu students?
4. Do you think you have good relationship with guardians of your students?
5. What is your view toward the low achievement students?
6. What is your plan for improving the achievement rate of your students?
7. How is your relationship with staffs and students?
8. Do you facilitate mathematics teacher and students to do better in mathematics subject?
9. What are the individual factors affecting low achievement in mathematics?
10. What are the school related factors affecting low achievement in mathematics?
11. What are the home related factors affecting low achievement in mathematics?

## Appendix C

### Questions for interview with selected Tharu students

1. What do you think learning mathematics is etyer difficult for yes? How?
2. What is your teacher's behavior towards you?
3. Do you have more opportunity to learn mathematics at home?
4. Do you get equal opportunity to learn mathematics in your school?
5. Have you got sufficient support from your family in learning?
6. How much time do you spend for doing homework and class work?
7. How often do you ask questions and guidelines to your teachers in learning mathematics?
8. What kind of methods does your teacher use? What is your method of doing mathematics problems?
9. Are you being affected by language problem, social problem and cultural problem?
10. Does you teacher co-operate you in mathematics? How you taken any tuition class of it?
11. Are you satisfied with the school environment for learning?
12. What are the individual factors affecting low achievement in mathematics?
13. What are the school related factors affecting low achievement in mathematics?
14. What are the home related factors affecting low achievement in mathematics?

## **Appendix D**

### **Questions for Interview with the parents of Tharu Students**

1. Have you enrolled your children in school?
2. How much amount you have invested for their education?
3. What is your expectation from your students and their school?
4. Do you frequently visit the school and ask about your students learning progress?
5. How much time and facilities you have provided to your children in learning and for mathematics subject?
6. What are the obstacles faced by Tharu students in school in your opinion?
7. Do you ask them to take tuition, coaching and extra class to improve their achievement in mathematics?
8. What is your attitude towards school environment, family environment and students effort in learning mathematics?
9. In your opinion what can be the individual factors, school related factors and home related factors affecting low achievement in mathematics?

## Appendix - E

### Classroom Observation Checklist

This observation form is used to observe the factors affecting Tharu students mathematics achievement. It is based on the observation of following indicators.

S.N.	Statement	State of the Indicators		
		Good	Average	Poor
1	Classroom management in teaching mathematic			
2	Beginning of the class			
3	Relation between teacher and Tharu students			
4	Friends behaviours towards Tharu students			
5	Participation of Tharu students in teaching learning process			
6	Motivation of Tharu students in mathematic			
7	Classroom exercise in mathematics			
8	Classroom practice of teacher to Tharu students			
9	Question answer between teacher and Tharu students			
10	Feedback, support and comments from the teacher to Tharu students			

## **Appendix F**

### **Name of the Students Selected from Case Study**

Hariwan Chaudhary

Brijesh Kumar Rana Tharu

Rita Thru

Pinki Kumari Chaudhary