

## Chapter I

### INTRODUCTION

#### Background of the Study

Education is the foundation of human civilization. So, it has become possible to bring up this stage from barbaric stage. Education, in its sense, aims to transfer the ideas, skills, attitude, experience and knowledge of people in the community.

Education plays a significant role for the overall development of the citizens and country. With the education and education system, so many disciplines have vital role (Singh,2068).

Nepal is a multicultural, Multiethnic, Multi religious and multidimensional nation according to the constitution of Nepal. The cultural, religious, and ethnic background of the people affects their learning capacity. Similarly, mathematics learning differs due to culture, society, school, and home environment curriculum etc. Therefore mathematics achievement differs among different ethnic groups. Similarly in the context of Nepal lower caste community of student of Tarai region, due to weak socio-economic status and lack of educational awareness, may have poor achievement in education in general and in mathematics in particular while the higher caste community who are well educated has better achievement than other.

There are many cultures in the Dalit community, for example: Das do not step into Kami's house. If by chance someone does so, the entering person has to go through the ritual of sparking water purifying the body. Dalits is singing and dancing caste is considered as the lower among Paman, Mahara, Das, Kami, Damai, Sarki and other. There are many superstitious evil habits among the Dalit community. Eating dead animals and drinking alcohol are against eating and alcoholism (Census,2011).

Nepal is the land of diverse caste and ethnicity. There are many caste Newar, Rai, Bhatarai, Tharu, Magar, Yadav, Singh etc. residing all over the country and in comparison with them the untouchable caste like Paman, Kami, Mahara, Pod, are in minority. In comparison with the majority upper caste these lower caste have little knowledge and poor, uneducated and are below line of the poverty. Dalit is one of the castes among the lower caste because of the unique occupation. They adopt from the ancient time, they have their own characteristic. From the ancient they lived their lives by singing and dancing in the jatra and village.

"Even five fingers of a hand are not equal; how can an individual be equal to others?" with these words, does a Nepali legitimize social inequality by drawing upon a folk formula to explain it? Contrary to this legitimization of inequality, he or she also argues that to the God all human beings are equal. This is expressed the lived tension of being socially equal or unequal, a tension which is manifested in many different forms. Nepal's religious and cultural values, that some are born high caste and some low caste and socio-economic values that some are born with a silver spoon in their mouth and others with a hand to mouth problem for minimal sustenance, maintains and reproduces the tension of being equal or being unequal. The caste system in Nepal was conceived and nurtured by religious and cultural values, and in most caste a grade system blended with the caste hierarchy. In both the advantaged and disadvantaged caste, there is a word Karma (action or fate) to legitimize this inequality. The affluent high caste the same word Karma now implying socially and religiously unacceptable actions translates in to fat echoing poverty, negativity, passivity, and eventually untouchability" (Koirala, 1996).

Thus, the definitions of the Nepali word 'Dalit' show that it can be used synonymously for disadvantage. In short, 'Dalit' for this study is defined as the caste

or group of people, who are socially, culturally, economically and politically exploited, discriminated and disadvantaged in the society due to unequal social system. In other words, 'Dalit' is considered as politically voiceless which is socially prestige less, economically exploited and psychologically dominated person or caste or group of people in the society. Because of the unequal social system they are considered as untouchable and water unacceptable people by the people who believe in caste system that helps establishing their legitimacy over state's power and resource.

Dalit are scattered everywhere in Nepal. According to censuses of 2001, the total population of Nepal was 2,31,51,423. The population of Dalit was 29,45,223, which is the (12.85%) of the total population of Nepal. According to censuses of 2011, the total population of Nepal is 2,64,94,504 and according to the report "poverty in Nepal" 2069/70 of CBS, the population of Dalit in Nepal is 13.3%. They are settled in mountains, capital city inner terai and terai region of Nepal. To name some of them are Damai, Kami, Sarki and Gaine in the mountains, Poda, Kasain, Cheldar, Chyame and Badi in Kathmandu and Dum, Dhobi, Lohar, Mushar, Chammar, Dhusadh, Kushwa, Tamata and Kudke in inner terai and terai region.

Of the many disadvantaged communities of Nepal, Dalit is one. The Dalit community has its caste and sub-caste system. They are also multi-lingual, These Dalits are settled in all the 77 districts of Nepal and are known as water-taboo caste (Paninachalne) or untouchable (Achhut). There are both the paninachalne and achhut group in Nepal. Achhut is a synonym of paninachalne groups. Kamai, Damai, Sarki, Badi, Gain, Sunar and many other castes belong to this group of people. These caste, in the past, were made on the basis of the function they carried out. Based on Hindu mythology, these Dalits belong to the Sudra groups of the Hindu's

Varnashram system. Going back to the history of the Dalits in Nepal, these people are worker grade people. Initially, occupation only was the basis of caste system. But later on, the basis was not followed these occupational groups of people got socially stylized as hereditarily being born as Dalit, living as Dalit and dying as Dalit. Thus, the Dalits became an exclusive caste group.

Mostly of Dalits people are very poor. This socio-economic status also less than other upper caste people. Some people have followed the caste specific traditional occupation to establish in the society and some followed agricultural field. These occupational skills contribute a little improvement of their life style. One of the reasons of being poor is that they have a large number of children. Because of lack of education they give birth to a large number of children. So, the education of parents take care of their child seriously rather than the literate and literate parents. Educationally, the Dalit people are still backward. Only a few people are educated in this community. So, The most people are economically poor and they cannot send their children in school.

In this way, to find out the challenges of the Dalit students in Mathematics learning was the main objective of this research. This study tried to identify the access of Dalit students in Mathematics learning, to find the major challenges affecting the access of Dalit students in learning Mathematics and find the ways to reduce the challenges of Dalit students in mathematics learning.

### **Statement of the Problem**

This study concerned with the challenges of the Dalit students in mathematics learning at secondary level. Dalit students are culturally backward and have facing

different problem than other students. Mathematics is a major for every student to his/her career.

In general, it can be seen that mathematics is an essential part of one's daily life. In the official works or house hold works or field works, everywhere more or less mathematical knowledge is required and in fact, in every working field people are using mathematics with or without knowing the mathematical knowledge is required and in fact, in every working field people are using mathematics with or without knowing the mathematical concept. So, children also do need mathematics concepts for performing their daily task who do not go to school for gaining formal education. Such pupil can be categorized into 3 parts as such as, some learn mathematics formally, some informally and also some non formally. Despite this fact, those pupils who learn formally so can be seen to be fragmented into Dalit and non-Dalit students and comparatively, we can see that Dalit students are more- backward in education which is also true in mathematics. I was intending to study the access of Dalit students in mathematics learning. In this context the study was focused in the following research question:

- ) What are the challenges of Dalit students to learn mathematics.
- ) How can we resolve the challenges in learning mathematics of Dalit student ?

### **Objective of the Study**

The study intended to accomplish the following objectives:

- ) To identify the access of Dalit students in Mathematics learning.
- ) To find the major challenges affecting the access of Dalit students in Mathematics learning.
- ) To overcome the challenges in learning Mathematics of Dalit students.

### **Significance of the Study**

This research study tried to identify the access in learning mathematics of school children of Dalit students. With reference to this context, it would be worthwhile to study to access of Dalit students. It can be used to improve the mathematics learning of Dalit students. It provides the appropriate information about the difficulty of Dalit students in learning mathematics. Every country wants to serve quality education to their public. Nepal has accepted the universal motto "education for all" to tie-up the prevailing different caste and their religion, culture and traditions. The Dalit are dominated in the level of social hierarchy. This research study tried to identify the participation in learning mathematics of Dalit students. It was used to improve the mathematical learning of Dalit students. It provides the appropriate information about the challenges of Dalit students in learning Mathematics.

This study had the following implications:

- ) This study identifies the problems that might be seen in mathematics teaching and also to show the way to solve them.
- ) This study helps to give information about the different mathematics program for the government to improve the Dalit students.
- ) This study encourages the Dalit students to study the mathematics learning.
- ) This study provides the information was helpful to understand the access in mathematics learning.
- ) This study helps the researcher as well as parents to create better learning environment and awareness to provide reasonable education facilities.
- ) This study help positive attitude in equal opportunity in learning mathematics.

This study intended to find out the real scenario of the Dalit access in mathematics learning. This study explores the condition of Dalit students' challenges in mathematics learning. The present study identifies that it is not only appropriate for the upcoming students who try to study in the related topics, but also for the policy makers and those who want to know more about Dalit related issues.

### **Delimitation of the Study**

This study was conducted within the following delimitations:

- ) This study was carried out at Bishnupur ward No. 3, Siraha district.
- ) This study was based on secondary level Dalit students of Shree Janta Secondary School Bishnupur-3 Rajpur Siraha.
- ) This study was conducted to three boys and three girls of Dalit students of class X.
- ) The study was limited to the observation and interview as tool for data collection.

### **Definition of Related Terms**

**Dalit Students:** Person who is socially, oppressed, economically, exploited, culturally, ostracized and politically, expanded disadvantaged (i.e. paninachalnejaat). According to Nepali dictionary, "caste or group of people who are unable to get equal rights prestige proud in the society, exploited and disadvantaged caste or group of people due to unequal social system.

**Achievement:** The term 'Achievement' is defined as score obtained by the Dalit students in yearly exam.

**Participation:** Participation in this study is defined in term of class attendance, classroom interaction (with teachers and students) and extra activities (like homework, classwork, class test etc.) of Dalit students in as secondary school.

**Secondary School:** The school from one upto ten is known secondary school. In my study secondary level indicates 9 and 10 classes.

**Learning:** Learning is the process of obtaining or acquiring knowledge through different experiences. Knowledge or skill gained through education is also known as learning.

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

**School Environment:** The school environment plays the important role to decided the future position of the students and the life of students. The teaching activities and extra- curricular activities conducted in the school come within the school environment.

**Home Environment:** The management of physical and psychological aspects for learning of Dalit children at home.

## **Chapter II**

### **REVIEW OF RELATED LITERATURE**

The previous studies could not be ignored because they provided the foundation to the present study. There were different research studies concerning Dalit students that help to draw necessary conclusions. In this chapter different items of literature to the Dalit student have been reviewed.

#### **Empirical Review**

Ghimire (1997) did a research entitled "A study on factors affecting teaching/learning mathematics at secondary level", with the aim to study the factor affecting in learning of mathematics in secondary level by sex wise and rural/urban location of school in terms of the following aspects school environment, family background, motivational factors, physical facilities, interest of the learners and instructional materials. The tools for the study were administrated to the sample of ninety students and t-test was applied and found that:

Environment of the school in both rural and urban affects equally but the boys more affected than girls. Students of Arghakanchi and Chitwan were more affected than that of Kathmandu. The students of Arghakanchi were found more affected than of Chitwan. The students of Kathmandu were more motivated to study mathematics than that of Arghakanchi and Chitwan. The students of urban areas were more interested in the study of mathematics and the girls paid more attention to the study.

Generally, some studies have been done to explore whether the learning is affected by poverty, sex factor, cost of education, parents income, parents education. The present study is different from those of the existing research. In the sense that, it deals about the major factors and how those factors affect the student's achievement and why they

have dropout their school. This context and the review of above literature helped researcher to understand the Badi community whose mathematical learning and affecting factor have not yet studied. Therefore, on this ground the researcher undertook this study.

Thapa (2001) did a research entitled " Learning strategy for out of school children from Dalit community". His main target in this research was to find out the learning skills and ways of learning the daily lives of lives of untouchable children. To examine the skills which are helping them for better life and suggest the ways of establishing linkage between everyday life and out of school children's program curriculum. For the data collection, the researcher developed a form of table and set of questionnaire. For the collection of data, the researcher visited selected person which by purposively. This is a case study in qualitative nature. He found the different between social and grade room learning. In out of school grades more emphasis was placed on theoretical aspects and less on practical. The study drew some implications for the improvement of learning and learning methods of the out of school program curriculum. And he also suggested that the OSP materials must be related of every life of the children and their ways of learning.

Pant (2002) has conducted her study on the topic "A study of achievement and participation of female in bachelor level mathematics education". The main objective of the study were to compare the mathematics achievement of male and female students in B.Ed. level and to find out the factor affecting participation of female in mathematics learning in B.Ed. level. For the data collection, the researcher developed a form of table and set of questionnaire. For the collection of data, the researcher developed a form of table and set of questionnaire. For, the collection of data, the researcher visited sampled campuses which by random sampling. The conclusions of

the study were: there is no difference in mathematical achievement in higher education by gender/sec. social factor such as discrimination behavior, economic condition, lack of time for hard labour are responsible for making lower participation of female in the study of mathematics.

Poudel (2004) did a research entitled "Learning mathematics for out of school children". He wrote that most of us, from the distance, might have visualized that the non-schooling children from untouchable caste have negligible idea about mathematics. The researcher found that non-schooling children from untouchable caste learning mathematics through their everyday life in different ways. They learned by looking others works, by hearing them and by repeating it. Without formal education they learned many mathematical skills that helped them to perform their tasks easily. Mostly, they learned such mathematical skills from the environment. Also they were learning such mathematical skills from their peers, parents and other elders.

Paudel (2005) studied, "Learning strategies of mathematical concepts of out of school". His main target in this research was to find out the learning skill and ways of learning mathematics in the daily life of the untouchable children who were out of school. In this research, the research was choose Ghorme village to Tanahu district and studied the four children of Kami and Sarki caste. He selected two children in each cast and studied briefly about these children how they are learning mathematics. From this study researcher found that non-schooling children from Dalit caste learned mathematics through their everyday life in different ways. They learned by looking others work, by learning from their peers, parents and other elders. He also found the formation of mathematical ideas on Dalit children began with household works, form

works labor work, playing and other activities. Some mathematical knowledge was acquired traditionally imitation observation, active participation and so on.

Dhakal (2008) has conducted on the topic, "Mathematics achievement of grade VI students in Kavre district". The objectives of thesis were to find out the mathematics achievement and to compare the mathematics achievement of students studying instructional and public school. For the data collection, the research developed a form of table and set of questionnaire then the researcher visited sample campuses which were selected by random sampling. The researcher used to the table which is analyzed statistically in term of mean, standard deviation and t-test. The conclusion of the study were mathematical achievement level of grade VI is satisfactory. The achievement level of student, studying in institution school is higher than student studying public school. The achievement level of girl's students and boy's students are almost same.

### **Theoretical Review**

There are so many theories which can be used to understand the learning process. The theoretical discussion is needed for the interactive finding of the study. Many theories about learning and development of children such as cognitive, behaviorist, humanist, social constructivism of which constructivism is one of the theories to analyze and interpret the data of mathematics of resolve the problem. To analyze and find the suitable solution in the area of low participation in mathematics; constructivism becomes one of the possible theory to solve the problem on the topic of "Challenges of the Dalit students in mathematics learning" (A case study of Dalit student). Every student learns from society from social contact with home, family, and universe. According to them, knowledge can be constructed from society. This kind of thoughts can be given by constructivism.

## **Constructivism**

Constructivism is related to educational theory to deal with the problems of mathematics. It helps to find out the problem of low participation in mathematics. It is a theory based on observation and scientific study to deal the problem of learning. It asserts on forming the understanding and knowledge of the world through experiencing things. When we encounter something, our mind perceives the things and reconcile with previous ideas with preexisted idea. It means our mind becomes active creator to reach and act with present surrounding. In the similar way constructivist idea of learning can point towards number of different teaching practice. It encourage the student to involve themselves actively and used techniques of learner centered, group work discussion, learning by doing, use outside tools to be more practical and gain high achievement in mathematics rather than classroom it focus on real life learning environment, social interaction and use of complex idea share with other outside of classroom easily. Constructivism transforms the students from passive receipting of information to active participant in teaching process.

Constructivism based on three axioms that are as follows.

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

From above axioms Upadhyay (2001) took three terms action, reflection and scaffolding to describe three broad aspects of constructivism, psychological aspect, philosophical aspect and sociological aspect. Piaget stresses on the key word "action" through which he advocates that knowledge is gained. He said that essential way of knowledge is not directly thought our sense, but primarily through our action.

Philosophical aspect of constructivism is also called radical constructivism, which is

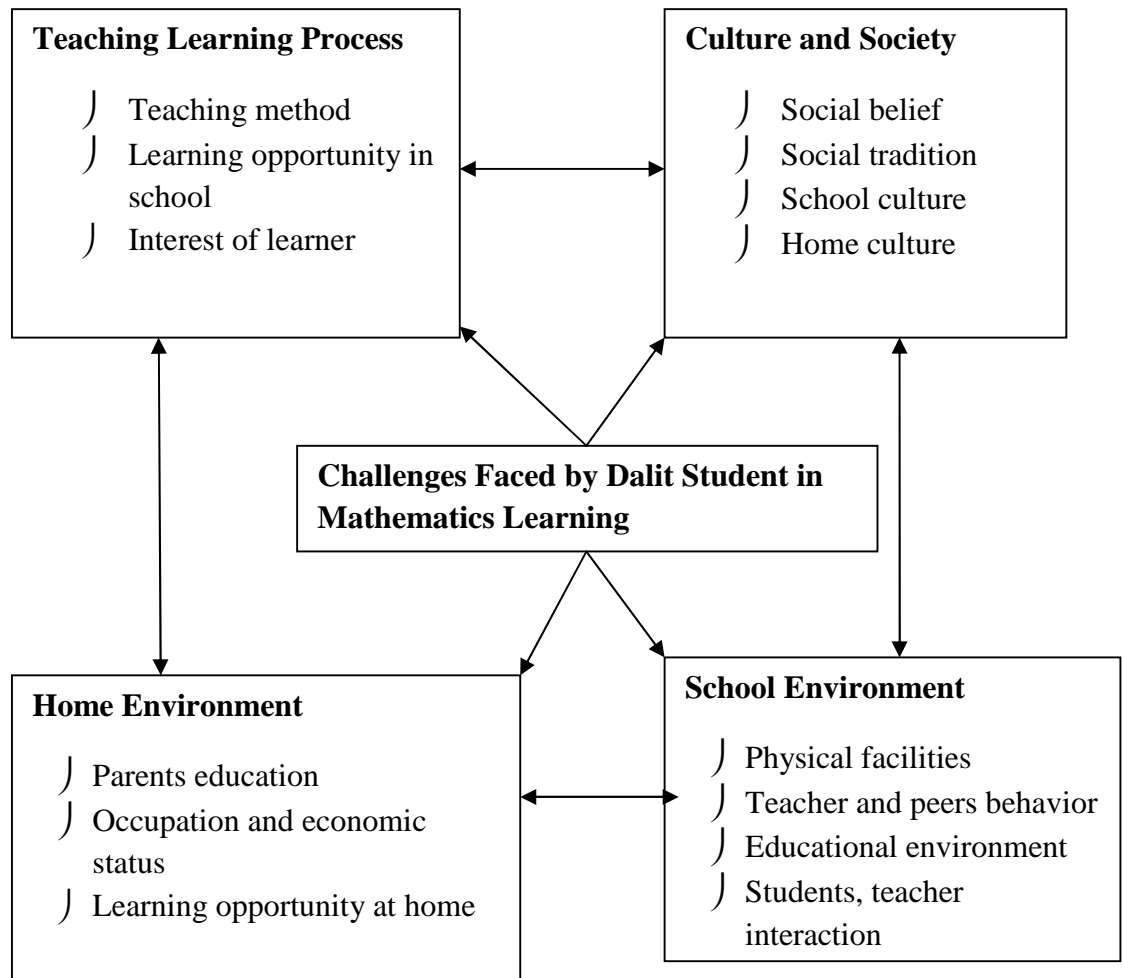
led by Glasersfeld who advocates social constructivism led by Vygotsky, who states that knowledge is socially constructed.

To find out the challenges of Dalits the great discussion, interaction dialogue, conversation among dalit students, teachers and parents is necessary. So to find out the challenges of Dalit students this theory is supportive.

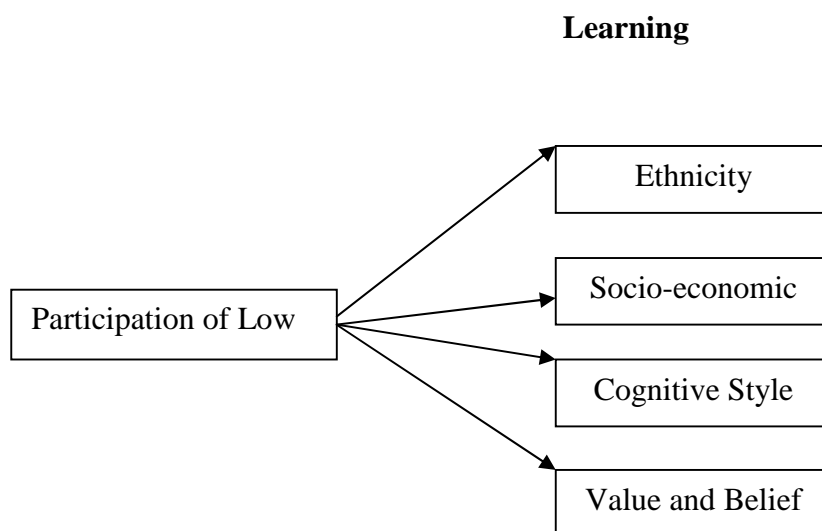
### **Conceptual Understanding of the Study**

There are different Challenges of Dalit students in mathematics learning. Home is the first schools of students so the home environment plays the vital role in mathematics learning. Parent's education and their behavior participate the learning. How much time the students get in learning and how much time they pass for household work participation learning.

Which methods the students and teacher has used in their study participate the mathematics learning. So, teacher and students should pay attention while apply the method in mathematics learning. Culture is the sum of past and present and it is the base of human being that participates in everything as in learning. The social environment includes the people's behavior of the society, their social studies and social status. The researcher had developed the following framework:



**Figure No. 1: Framework for the Challenges of Dalit Students in Mathematics**



**Figure No. 2: Causes of Low Participation of Dalit Students in Mathematics**

**Learning**

The above framework shows there are four different categories which are more appropriate to deal about the participation of dalit students in mathematics learning. These categories are teaching learning process, culture and society, home environment and school environment. Man is a social being, so his behavior is every shaped by the society. The ways they speak, eat, and think and behave participate the other people of the society.

School is the place of learning that's why its environment plays the vital role in mathematics learning. How the students are behaved in the school participation the learning. Students-students relation, students-teachers relation, school-parents relation and the overall environment of the school participate the learning.

I found that every man is guided by his will what he becomes is the outcome of his interest student's in the subject varies according to the situation. Students can get marks in their interested subjects. So, interest too, play the key role in learning. With the help of this framework, the present researcher analyses the collected data from descriptive method.

## **Chapter III**

### **RESEARCH METHODS AND PROCEDURES**

The research methodology adopted in this inquiry has been briefly described here. It is decided before hand as to what population and sample are to be taken to be used, how data are to be obtained, analyzed and interpreted. The Subtitles of research methodology are research design, sampling, tools and their description, data collection procedure and its analysis.

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

A comprehensive study of a social unit-be that unit person, a group, a social institution, a district or a community is called a case study. (P.V.Young). I have chosen case study for this study for this study because it gave detail and depth information about the challenges of Dalit students.

The study focused on the Challenges of Dalit students in Mathematics learning. This was a case study based on qualitative research as well as descriptive in nature. The selected respondents' responses were minutely described in this study and their case related to the Challenges of Mathematics learning was described.

#### **Select of Study Area**

The researcher selected Dalit students (one of the Dalit community) located at Bishnupur-3, Siraha because of poor educational condition and backwardness in every aspects of their life. Some of their students did not attend any educational institution yet. Majority of Dalit population reside in this area it is accessible. So that, it was the appropriate study site of this research study.

The researcher chose purposively Shree Janta Secondary School, Bishnupur-3, Siraha. The researcher had a convincing reason for selecting the school that it was

located in this area, where the Dalit community was living and its catchment area for study site.

### **Sample of the Study**

The respondents of the case study were Dalit students, their parents, and mathematics teachers who were selected from the school purposively. Shree Janta Secondary School Bishnupur -3 Rajpur had only six Dalit students who were weak in Mathematics were selected for this study. I conducted an interview related to their difficulties on participation of the Dalit students in Mathematics learning and personal background. They all agreed to this view. Thus, I observed the selected area and selected Dalit students about 30 days. In that time, the researcher observed them carefully how they learned and where they felt difficulty on Mathematics learning. Among the students of grade 10, only six students who belong to Dalit community were selected purposively (three boys and three girls) for the interview.

### **Tools of the Study**

One of the most important part of study is data collection. There are many tools for the qualitative research to get the information from the people about their experiences, ideas and believes. Data was collected from school, classroom observation form and interview guidelines were the main tools used for the data collection.

### **Observation Form**

Observation refers to the study of the respondents' behavior by the direct method. Classroom observation was the tool of this study. The classroom observation form included required information, the researcher observation, school overall as well as key respondents individually and collectively during their work at school,

classroom playing with peers, by interacting with teacher. The researcher developed the observation checklist which is mentioned in Appendix-A.

### **In-Depth Interview**

The interview schedule developed in semi-structure form. The interview had been conducted with the students, parents and mathematics teachers. The guideline for interview with students has been shown in the Appendix B. Interview was conducted among six students, related to parents and mathematics teacher with the help of interview schedule appendix B, C and D respectively.

### **Written Documents**

Written documents were important for the qualitative research. Different information related to were collected from student's records, personal diary, students such as a past result, personal diary were considered as the secondary data.

### **Data collection procedure**

To collect the primary and secondary data, class observation were done regularly for 30 days during teaching learning activities. I observed, listen, interact and record the essential data from the information on the basis of observation from classroom behavior, interest, class test, homework, interest and needs in mathematics learning and other essential information would be carefully observed and noted every day.

With the help of unstructured interview would be taken with the above respondents would be taken with focus children, mathematics teacher and respondent's parents. The interacted with the above respondents would be carefully listened and noted properly. The schools attendance, regularity and other behavior or activities was noted from school record.

**Data Analysis and Interpretation Procedure**

In this study, the data analysis was descriptive in nature. The collected information at first, were categorized according to the category of the respondents, and their different respondents were given in the text of interview and observation notes. After categorizing the collected data was interpreted and explained the perspective of the respondents which were more helpful to fulfill the objectives of this study. Cross match or triangulation uses more than one method or tool to collect more than one sources of data for making the research qualitative and faithful. It is related to the students, teachers and parents to collect the data for this research. It was adopted to maintain the validity and reliability of the information. Then, the cross matched information was analyzed and which was descriptive in nature. The case of the students which were collected from the different technique, were the major factors and their description lead to the research in its full shape. The data analysis was interpreted by using the framework of the research in literature reviewed.

## **Chapter IV**

### **ANALYSIS AND INTERPRETATION**

This is a qualitative study related to the "Challenges faced by Dalit students in learning Mathematics". This research was conducted at Shree Janta Secondary School Bishnupur-3, Rajpur ,Siraha on six students. The main objectives of this study were to identify the access of Dalit students in mathematics learning, to find the major challenges affecting the access of Dalit student in learning mathematics and to solve the challenges in learning mathematics of Dalit students. This chapter deals with the analysis and interpretation of the collected information derived from the case study. The researcher used class observation procedure in this study. I had observed the case students' behaviors, activities, and interaction with teacher in his research and related published and unpublished school documents. The students' home environment and their behaviors were evaluated by the researcher with the help of interview schedule. The researcher had conducted interview and had also noted the case of students as per class documents, their regularity, behavior etc. from school documents.

#### **Analysis of Student's Class Attendance According to School Record**

The number of cases school opening days and student's attendance days under grade IX and X attendance percent from the school's record are presented in the following table.

**Table 1: Class Attendance of Dalit Students**

S.N	Grade ix(2073)			Grade x (2074)			
	School opening Days	Students Attendance days	Students Attendance Percents	School Opening Days	Student attendance Days	Student attendance percents	Participation Level
A	185	130	70.27	192	105	54.69	3.5
B	185	135	72.97	192	145	75.52	4
C	185	122	65.94	192	135	70.31	4
D	185	141	76.22	192	82	42.70	3
E	185	129	69.73	192	96	50	3.5
F	185	140	75.68	192	145	75.52	4

Excellent (5) (80-100)%, Good (4) (60-80)%, Normal (3) (45-60)%, Poor (2) (32-45)%, Very poor (1) (0-32)%

The finding recorded in Table'1 show that out of 185 school opening days of grade ix in 2073, the attendance days of Dalit students A,B,C,D,E & F have 130,135,122,141,129&140 respectively and out of 192 school opening day of grade x in 2074, the attendance days of Dalit students A,B,C,D,E& F have 105,145,135,82,96,145 respectively attendance percentage of student. A has 70.27% in grade ix and 54.69% in grade x, B has 72.97% in grade ix and 75.52% in grade x, C has 65.94% in grade ix and 70.31% in grade x, D has 76.21% in grade ix and 42.70% in grade x, E has 69.73% in grade ix and 50% in grade x, F has 75.66% in grade ix and 75.52% in grade x. From the attendance percent of ix and x, researcher found that participation level of A has 3.5 which is good, B has 4 which is good, C has 4 which is good, D has 3 which is normal, E has 3.5 which is good and F has 4 which is good.

**Analysis of Student's Classroom Interaction Level in the Teacher and other Students are Presented in the Following:**

Six selected Dalit students' class room interaction level in the teacher and other students are presented in the following:

**Table 2: Interaction Position of Dalit Students**

<b>S.N</b>	<b>Interaction position with teacher</b>	<b>Interaction position with other students</b>	<b>Participation level (In average)</b>
A	3	4	3.5
B	2	3	2.5
C	3	4	3.5
D	3	3	3
E	2	4	3
F	4	3	3.5

Excellent-5, Good-4, Normal-3, Poor-2, Very Poor-1

The finding recorded in Table 2 shows that Interaction Levels of Dalit Students with teachers are: A has 3, which is normal, B has 2 which is poor, C has 3 which is normal, D has which is also Normal and which is also normal, E has 2 which is poor and F has 4 which is good position. Interaction level of these students with other students are A has 4 which is good, B has 3 which is normal, C has 4 which is good , D has 3 which is normal, E has 3 which is also normal and F has 3 which is good position in participation level. In average A has 3.5,B has 2.5, C has 3.5, D has 3, E has 3 and F has 4.A, C and F has satisfactory and participatory level of B,D and E were not satisfactory.

### Analysis of Students Extra Activities Level (H/W,C/W and C/T)

Six selected Dalit student's participation level in Extra Activities (i.e., Homework, Class work, Class test) has presented in the following table.

**Table 3: Analysis of Students Extra Activities Level**

S.N	Participation			In average
	H/W	C/W	C/T	
A	4	3	3	3.33
B	3	3	3	3
C	4	3	4	3.67
D	3	2	4	2.67
E	4	3	2	3
F	3	4	2	3

Excellent-5, Good-4, Normal-3, Poor-2, Very Poor-1

The finding recorded in table 3 shows that participation level in H/W of selected Dalit students are: A has 4 which is good, B has 3 which is normal, C has 4 which is good ,D has 3 which is normal, E has 4 which is good and F has 3 which is normal. The participation levels in C/W of selected Dalit student are: A has which is normal, B has 3 which is normal, C has 3 which is normal ,D has 2 which is poor, E has 3 which is normal and F has 4 which is Good.So on participation level in C/T of selected Dalit student are: A has 3 which is normal, B has 3 which is normal, C has 4 which is good ,D has 3 which is normal, E has 2 which is poor and F has 2 which is poor . In average the participation level of A has 3.33 which is normal, has 3 which is normal, C has 3.67 which is good ,D has 2.67 which is normal, E has 3 which is normal and F has 3 which is normal.

## **Analysis of Access in Mathematics of Dalit Students**

### **Respondent I**

Respondent I was Mr. Hem kumar Das, 15 years old boy studying at grade X. He lives in Bishnupur- 3 Rajokhar of Siraha district. It takes 15 minutes to reach in school from his home. There are seven family members in this house and they all believe in Hindu religion. He is known as a disciplined boy in the school. His interested subject is Nepali in school and his aim in life is to be a doctor. His educational standard is described in comparison with his previous class. He has 25th position in previous class but later his position is 27th in the class. His parents are uneducated. It is very hard to maintain this family economically, his father is a farmer and mother is a house wife. His brother is studying in grade three and his sister is studying in grade five in the same school. He is interested in his study but due to the lack of his economic condition of family he has to do all the house hold works because her father and mother are busy to earn money around the village area.

About his study, his father told;

*"We are Dalit, there was no provision of study. So I am illiterate because of illiterate. I cannot understand about his study. Hence, he leaves his homework. Due to poor economic condition it is very hard for us to arrange the food and clothing. His father earns some money by doing the some work around the village area. It is very hard to buy his pen, copy etc."*

About his own study Hem said;

*"Main occupation of my family is farming. I am busy every time in household works, so I could not give sufficient time for the mathematics learning at home. I*

*couldn't understand the mathematics problems and I feel very difficult in learning mathematics."*

From the above views of parents and students, I concluded that he had no time to do homework. He was investing her maximum time to do household works. His family members were not educated to give feedback for his further study.

Vgotask's (2011) states every function in the child's culture developments appears twice first on the social level and later on the individuals. Every people born in society/community and grow up, So school as a miniature society where pupils learn everything so teacher support his/her for advance learner by own their creation.

## **Respondent II**

Respondent II was Reena Kumara Mahara of 17 years old girl studying at grade X. She was studying in Shree Janta Secondary School Rajpur .Her house is about 1 k.m. far from the school. All members from her house follow the Hindu religion and speak Maithili language. There are seven members in her family. Her main aim in life is to be a good singer. She wants to be a singer of national standard but not a singer who goes to the door of other's houses.

Her class roll number is 15. Science is her favorable subject. She is not interested very much in English, mathematics and Nepali and others. Her father used to manage livelihood by continuing the profession of predecessors but later the situation has changed and he himself has the consciousness so not involved in his profession. He used to go to the hard labor. In extra- curricular activities, she has regularly participated in singing program and mostly wins the prize. She does not want to miss the class but sometimes she misses the class because of her household works. She is interested in school accurately at quarter to ten with school uniform.

She usually presents in mathematics class with incomplete homework because she could not solve all the problems and there was no one who guided her in study at home.

Reena said,

*"Due to poor economic condition my father could not buy our copy, pencil, school dress, bag etc."*

She does not like to do household works with her mother. She is interested in reading and writing. Further she said,

*"My father said to me, farming is our occupation so you should engage in this work rather than school."*

When I observed the class she was sitting with discipline. The teacher's behavior was not different for her comparing to other students. She felt that her relation with other is going to be good than previous. About her study the mathematics teacher told;

"She often does not have copy and pen but she always does homework, expect special condition. She would get good result if she studies at home regularly. She doesn't have good family environment to study".

About her study her mother told;

*"We are the people of passing our life by working in daily wages. We have the problems of food and clothing .So we cannot give attention in her study. The main problem is that we are economically weak."*

And her father said

*"We are economically backward because of lack of knowledge and education. We have not capacity to help for her study. The sources of income hardly complete their demand so children could not get good facilities for education. Maya does the household work because of our business."*

These statements conclude that most of the Dalit parents were economically and educationally backward, which played the main role of low access of Dalit students in mathematics classroom.

### **Respondent III**

Respondent III was Prithvi Narayan Sada of 17 years old boy studying at grade X. His house is located at Bishnupur-4 Gadhiya, Siraha and it takes about 20 minutes to go to the school. There are six members in his family and they all follow the Hindu religion. In comparison with other Dalit family, his family seemed small. His father is a labor in work in other field works. His mother seemed busy in household work as a house wife and she is also illiterate.

Social is her favorite subject. His hobby is to play football and his aim in life is to be a good football player. He is known as a good student of the class but the his teacher said that he was restless he had talked in the class while the teacher was teaching. He usually asks the question to the teacher unhesitating when he faced the problem.

While observing the mathematics class, I have shown that he usually presented his homework and immediately solved the mathematical problems which the teacher worked out in the class work. He has one friend in the classroom with whom he used to sit and outside the school too. He has passed his time with the same friend. He seemed satisfied with the school environment. He always respects teacher and staff of

school because he thought that they provided the opportunity to get the equal education to all thought that knowledge of mathematics should be applied to the daily life. So, he is interested in mathematical learning he passes his most of the hours to the mathematics problem than the other subjects. He is interested in magical problem from out of the course. The best student among Dalit students is intelligent in mathematics because of his good home environment he could succeed in mathematics.

#### **Respondent IV**

Mamta Kumari Rajak of 15 years old girl, studies in grade X. There are five members in her family. Her parents are engaged in agriculture. They go to the daily work to gain economic help. She helps her parents both in house hold work and works outside the house, her main work is to take care her younger brother and to work the household works when her parents go out of the home. She does not have good family environment to study. The source of income is very poor. So the children could not get good education. She has to do all the house works because her mother used to think that a daughter must do house hold works to be a cultured daughter. Mamta said that she did not like to go to school. I asked with her. "Why are you not interested to go to school ?"

She said; *" I am always became late due to household works and dominated by other students of my class."*

I again asked her about time for mathematics learning at home.

She said; *"I have no sufficient time for mathematics learning at home due to household works."*

According to the school attendance register, she seemed to be late but presented except special conditions. There were no any opportunities provided by school to her. Nepal government provides special scholarship for the Dalit students which help her to manage the stationeries. About the difficulties of learning mathematics, Mamta told;

*"There are so many difficulties in learning mathematics. I have got more difficulties in geometry, menstruation and arithmetic."* These were due to lack of study time, poor economic condition, friendship of bad society etc.

Above this argue teacher was passive in teaching learning process. He used tradition method to teaching. Teacher didn't familiar with Dalit students. So Dalit students were afraid to ask questions with him.

Vygotsky, (2011) states that "teacher should encourage to develop ZPD in classroom. He also said that left the students fee in classroom to gain new knowledge, students create solve their problem by their own activities.

### **Respondent V**

Respondent V was Rakesh Kumar Mahara .He is 16 years old student of grade X. He lives in Bishnupur-3, Siraha. It takes 30 minutes to reach in school from his home. There are seven family members in his house and they all believe in Hindu religion. He is a disciplined boy in the school. His interested subject is social in school and his aim in life is to be an army. He had secured 10<sup>th</sup> position in previous class but his father and mother are uneducated. It is very hard to mention this family economically. His father is a farmer and mother used to be a house wife. He has four brothers and one sister who are studying in three, five, six and two respectively in the public school.

He is a regular student in school and reaches school on time in school uniform. While observing the mathematics class, the researcher saw him with homework regularly but according to the mathematics teacher sometimes he comes without homework. After returning home from the school he takes his snacks and then go to play and return home at evening. He does not show his interest in household work so he gets enough time to study. He is a normal student of mathematics, but he is a friendly student in the class, either questions or talks in the classroom. His friend said that he had less interest in mathematics. The mathematics teacher helped him while he focused the problem while solving the problem in the class work.

### **Respondent VI**

Respondent VI was Dipika Kumara Das. She is 17 years old student of grade X.. She lives in Bishnupur-3 (Rajokhair), Siraha which is 15 minutes far from the school. There are eight members in her family and they all follow the Hindu religion. Her family speaks Maithili language. Her father is Parmod Das and Mother is Kushum Das. Her father was literate with under SLC and mother was illiterate. Home environment for learning was not so effective in her family. There was economic problem in her family. Her father worked in Qatar. Her family thinks that daughter must do house hold works. It is her duty to finish all the works of house. Her family members Said, "Study is not important for girl."

After returning from school Dipika gets engaged in household works. When I asked her about the learning difficulties in mathematics, she said;

*"I have not enough time for doing homework and practice the extra problems of mathematics, so I feel difficulties in learning mathematics."*

About her study Dipika's father said;

*"I don't know any more about education but I have been providing expense for education. Teacher told me that my children are doing better than that of past years. I have left responsibility to the school."*

According to these views, I concluded that the lack of education of parents affected the educational status of their children. The role of teacher in learning process was not sufficient, the parents awareness, their education, way of handling and guiding the family members were also most effective factors. If the parents have good education, they try to do their best to enable their children academically. The parents teach the basic knowledge of life, practical aspects, skillful concepts, right vision, appropriate norms and values to their children. So they can live easily in society and inspire them to the right use of life's every potentiality and opportunity.

### **Challenges Faced by the Dalit Students in Learning Mathematics**

Factors that discourage the students from learning mathematics can be related to school environment. Anxiety about learning mathematics can be due to students' bad experience from previous school, lack of teachers consideration for students various learning styles as well as to certain situation connected with students family environment. Very often children watch their parents struggling with unpaid bills, unforeseen debts and many other problems. As a result, young people start to associate mathematics with pain and frustration and don't try to learn it. Many of them remain convinced that mathematics is something unpleasant and should be avoided throughout their whole lives. In their adult lives they miss professional and personal opportunities because they perform poorly in mathematics. Another reason for students' aversion towards mathematics is their inability to be connected mathematics concepts with their daily life.

According to mathematics teacher:

*"Mathematics education requires highly motivated students because it requires reasoning, making interpretation and solving problems, mathematics issues and concepts. The challenges of mathematics learning for today's education are that it requires disciplined study, concentration and motivated. To meet these challenges, learners must be focused and motivated to progress."*

Supporting these views, the head teacher says:

*"The teacher's role in student's motivation should not be underestimated for helping students to become motivated learners and obtain the mathematical knowledge successfully. The teacher's main instructional task is to create a learning environment where students can engage in mathematical thinking activities and see mathematics as something requiring "exploration, conjecture, representation, generalization verification and reflection."*

Today's students strongly need to know the uses of mathematics that taught in their practical life. They could not see any connection of their lives with different part of mathematics such as geometry, trigonometry and algebra. These were due to the fact that the process of information and their motivation for learning does not correspond with traditional method of classroom teaching. According to mathematical abstract, lecture method is still commonly used to teach mathematics. They are supposed to look for those connections on their own outside the classroom. However, nowadays students desperately need to understand how mathematical concepts will relate to their working place as well as their society. And if they do not see any reason why they have to learn a topic, they lose motivation and their problems in learning mathematics can results in severe failures in their future, professional lives.

Every teacher should be capable to teach the subject matter effectively. But most of the teachers in school level are untrained with low qualification. Parent's negligence plays the favorable role to reduce the children's self-confidence. Weak relationship between teachers and students destroy the creativity, which must be realized. Many students who are weak in the study are interested to sit with weak students and it is difficult to create the learning environment. They copy the guide and talent students' note for doing homework but do not devote time for thinking seriously. Ultimately, they hate mathematics. They do not know about application and utility within and outside, national and international perspective. School environment is directly related to the effective learning, if not the learning program will be technically paralyzed. Most of the schools are unable to maintain the effective learning opportunity.

Negative attitude of parents towards the, children their study and tending to narrow minded. Parents have some duties to perform for schools. The role of parents is not only to send their children to the school but also to check reliable situation that their children are going to right way or not. But most of the students play the optimum role for the betterment even so many economical and sociological disasters which are still standing opposite to the improvement. Most of people in Nepal still lie below the poverty boarder line. They do not able to fulfill their basic needs and their capacity runs far from them. Such condition destroy the family background, consequently the poor children become servant for rich family. They do not get the opportunity to study to study. Such conditions play the vital role to the educational achievement.

With the help of related literature, theory, interview with students, their parents, mathematics teacher, head master, observation and related documents of school it was assumed that there were different factor at teaching the participation of

Dalit students in learning mathematics. Some challenges of Dalit Students in learning mathematics as follows:

### **Inappropriateness of Teaching Learning Process**

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

In the observation school, the present researcher had tried to know the teaching method used by teachers in mathematics classroom, learning opportunity in school and interest of the learner while learning. This study focuses these things with the Dalit learners. The mathematical problem can be solved by different process in mathematics. The teacher teaches directly effects on the mathematical learning of students. It is better to use student centered approach the teacher centered approach while teaching mathematics.

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

participation in mathematics. States that knowledge construction is both a social and cognitive process.

When the researcher asked with the students the question "How is your interest in mathematics?" Most of the respondents had taken this subject as the most difficult subject in comparison with other subjects which the curriculum includes. The responses to the questions were following:

*"It is difficult to study so I do not like mathematics."* (Student)

*"It is not difficult to learn mathematics if I take class regular."* (Student)

*"Mathematics is interesting I could not give time at home so it is difficult."* (Student)

From the above responses it could be said that most of them feel mathematics difficult. They are not interested in mathematics. The main cause of their responses is taken as a method used by teachers while teaching learning activities in the classroom. When the present researcher tried to know the method of teaching of the teachers, the responses from the respondent teachers are as follows:

*"I use student centered method as well as explain the problems step by step on the background while teaching mathematics. But I prefer to use problem solving methods most. If necessary I use teaching materials."* (Views of Math Teacher)

The above views indicated that the teacher used problem solving methods but explaining step by step. It was also observed that the teacher used different teaching methods as relevant to the topics. The teacher also used teaching materials as necessary for the lesson. Hence we concluded that teaching method in the classroom was satisfactory from the response of the respondents.

It is a theory based on observation and scientific study to deal the problem of learning. It asserts on forming the understanding and knowledge of the world through

experiencing things. When we encounter something, our mind perceives the things and reconcile with previous ideas which has already existed or reconciled with pre exist idea. It means our mind becomes active creator to reach and act with present surrounding. In the similar way constructivist idea of learning can point towards number of different teaching practice. It encourages the student to involve themselves actively and use techniques of learner centered, group work discussion, learning by doing, use outside tools to be more practical and gain high achievement in mathematics rather than classroom it focus on real life learning environment, social interaction and use of complex idea share with others outside of classroom easily. Constructivism transforms the students from passive receipting of information to active participant in teaching process. "What is the field of interest of the Dalit students?" The responses were as following:

I observed the theory constructivism transform the students from passive receipting of information to active participation in teaching process. This theory focus real life learning environment, social interaction and use of complex idea share with other outside of classroom early. It encourage the students involve themselves actively and use techniques of learners centered. Group work, discussion, and learning by doing use outside tools to be more practical.

*"They are interested in singing, dancing, listening folk music and games. They are also interested in visiting and less of them are interested in studying."* (Teacher)

When the teacher was asked the question by the researcher, "Why Dalit students are unsuccessful in mathematics test?" The following responses were obtained:

*"The Dalit students do not give enough time to practice at home. They are irregular in class. Their irregularity makes more difficult to pass in mathematics. They couldn't afford tuition and coaching class."* (Teacher)

According to mathematics teacher, because of the poverty, Unaffordability for tuition and coaching, lack of interest the mathematics subject, lack of time of practice in mathematics they were low performer in mathematics. From the above responses, Dalit students were irregular so they felt each problem hard as they were not interested in mathematics. Their participation in mathematics was low.

The observation and interview taken from students and teacher, it was found that most of the Dalit students used to be absent in class. So it carried out problems in teaching learning process which were problem to finish the course in time problems to be selected and to be used appropriate method and materials, teacher plan was failed but the teacher had tried to apply the interaction, problem solving method and student centered method according to Vygotskyls' social development theory of students' participation.

When researcher asked the question "What do you think the teacher's behavior towards you"? The responses to this question were as follows:

*"Teacher behaves equally in the class"* (Student)

*"They do not discriminate in the class. But they do not give the special attention to us".* (Student)

*"If we ask the teachers they give us positive response".* (Student)

*"Teacher does not give the special attention to us".* (Student)

According to the response it could be used that teacher does not discriminate them. Teacher behaves equally in the classroom. The Dalit students wanted the special attention from the teacher.

Peer group is another influencing factor of the students' teaching learning process. If the peer group encourages them for study, they are quick learner and active player in teaching learning process. If not, they are weak in learning. The responses obtained from the researcher to the question "How do the peer groups behave you?" were as following:

*"Some of them help us and some niggle us."* (Student)

*"Some of them help us in learning mathematics."* (Student)

*"They discriminate us in the social place also."* (Student)

According to them some of students did not discriminate them and helped them to learn. But other students hated them in the school and at the home also. There were discrimination between Dalit and other till now.

From the above discussion, the present research found that the poverty of the family, peer group, school environment, the interest of the learner, processes of motivation used by teacher while teaching learning activities, and other issues were the major factors which creates the difficulties in teaching learning process.

### **Unsupportive Home Environment**

Home is the first school to every individual. The students spend most of the time in the house. The children learn many things from their parents. The response to the question "How does work load affect your learning?" is as following:

*"I have to help my parents at the home; I could not be regular in the class".*

(Student)

*"I have to help in the work at home. I could not give time to my study. So, I do not participate in mathematics period."* (Student)

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

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

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

*"I could not participate them, it is difficult to pay for their education so I think they do not go to school and work at home with us for daily life."* (Parents)

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

*"It is difficult to live without education but it is difficult to pay for their education."* (Parents)

From the above responses it can be said that most of the parents are aware for their children's education. They thought education makes life easy. According to them leave good life their children should study. Because their problems it was difficult to sent their children to school. At last it can be said that the Dalit were also aware for their children's education.

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

*"The income is not sufficient for feeding, clothing, health it is difficult to pay for their education".* (Parents)

*"The source of income is merely enough to fulfill their demand so we cannot afford for their good education"* (Parents)

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

From the above response the I found that most of the parents have difficulty to conduct their home. They had not enough income sources for good education. It can be said that income of the family effect the performance leaved of the children. The responses the question " how does the home environment affect your study?" were as following:

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

*"There are too many members in the home they carry and quarrel. It is difficult to study at home. We could not see anyone studying in the home so we do not think we have to study"*

(Students)

From the above responses it was found that there is no environment to study for Dalit students in the home. They could not practice mathematics problem at home. They have to peaceful room to study. There were crowed and quarellist environment in the home.

From the observation and interview taken from students, parents it was found that most of the selected Dalit students were very poor economically culturally and educationally. Parents couldn't regard their child's education because of hard labor in participate and house of upper caste. So they couldn't give time for their child's. They couldn't provide learning opportunity in home but they didn't base on the basis of son and daughter.

### **Lack of Parents Education and Low Socio-economic Status**

Home is the first school for the children and mother is the first teacher of the children and father, elder brothers and sisters are transferring the knowledge to the child. If the parents are literate and have good moral and character then their children also imitate the same behavior. If parents have bad behavior and are illiterate, their children learn that behaviors from parents, elder brother and sister. Hence, the poor parents education is another factor affecting the access in mathematics of Dalit students. In this regards, Respondent C said:

*"My parents are simply literate. They always engage in household work. I have to help my parents. So, I can't take effort about my education. My mother spends almost time to making domestic materials. Grandfather and grandmother are sick and too old. They do not know the value of education. So I have no guidance at home and there is no separate room to read peacefully at home".*

The above view show that most of Dalit parents are illiterate. Dalit parents couldn't guide their children at home due to the lack of education. Dalit parents were engaged on different works. The involvement of parents in their children's learning was negligible. Parents' education level had been most effective factor in academic achievement. Parents served as a role model and a guide in encouraging their children

to purpose high educational goals and desires. By establishing the educational recourses on hand in the home and holding particular attitudes and values towards their children's learning. Researcher asked to a respondent about her family's economic and academic condition, She said;

*"Our economic condition is very poor. There is no other than my father or earning money. It is difficult to afford the educational expenses. In family there is no well-educated person who helps in my mathematics learning."*

The number of studies indicated that the student's achievement is correlated highly with the educational attainment of parents. For instance, students whose parents have less than high school education obtained lower grade in mathematics than those whose parents had higher level of education.

### **Discriminative School Environment**

The school environment plays the important role to decided the future position of the students and the life of students. The teaching activities and extra- curricular activities conducted in the school come within the school environment. There should be rule and regulation followed by the teacher and students in the school student should be regular in the school for the good achievement. Discipline of the students is also responsible for the good learning. There should be good relationship between teacher, students, headmaster, parents and school administration but students are not so close to the teacher and headmaster of the school Dalit students do not be close to the teacher but other student close to the teacher.

The school is compound with surrounding the wall. It makes the school environment safe from the outside noise and unnecessary contact with people. The school is about near the small market but so for the village. The school environment is

peaceful. There is no disturbance on the study of the students. Generally students and teachers have to come on time in the school.

In educational field there are libraries, games, compound of the school, toilet, blocks, and drinking water, the textbook and teachers are the sources of knowledge for the students. Buildings are sufficient and toilet facility is good. Drinking water is sufficient in the school. The school compound is large. The school conducts different extra- curricular activities such as quizzes, discussion, and dance program game mainly foot ball and volleyball.

Library is the important organ of the educational institute to promote the students education. To improve on the achievement and to empower the mind of the student library should be compulsory in each school.

The school had average physical environment there were sufficient play ground tap of water and school was situated in peace environment, which had supported to the students in learning. School used to conduct extra- curricular activities such as mental or educational and physical activities. Dalit students were interested to take participate in the physical activities but they were not interested in the educational activities such as quiz context, discussion, essay competition etc.

### **Domination of Traditional Thought and Belief in the Culture of Dalit Society**

Culture is the base of human civilization which shapes the psychology of the individual and the society. Man is the social animal so every activities of society affect him. Dalit community is one of the communities, which has been dominated by other so called upper caste. In the past, this caste was dominated by upper caste but now that discrimination is very less and legally punishable.

There were following responses on the question "How does social values and belief affect their children.

*"The upper castes always hates"* (Parents)

*"They discriminate us in the every time and everywhere."* (Parents)

*"We are not allowed to get inside their home."* (Parents)

From the above responses it can be said that Dalit were dominated every time from the upper caste. From such kinds of behave they participated themselves lower caste people, which was block of mind making for learning. They could not be confident for their learning. So they were poor in mathematics and in class.

The response on the question "How does social tradition, participation children mathematics learning?" were as following:

*"We have to work in their houses"* (Parents)

*"If our children are educated and they get job they need not serve upper caste people"*  
(Parents)

*"It is our obligation to follow the traditional because we are poor"* (Parents)

*"Our duty is to serve the upper classes and out child follows us."* (Parents)

From the above responses it can be said that Dalit thought it is their duty to serve upper classes. They thought they need not to be educated their children because they have to serve the upper classes. They thought serving upper classes is their tradition. So they have to. But two of their parents said that they need not follow the tradition if they get good job to service. The traditions, serving upper cast hamper the children's education. They had to lose the time working in their home. Hence, they could not progress.

The society was stratified in to two categories which were lower and upper society. Upper society was those were upper class people live with sound of economic, education, cast and lower society was those were low class people live within economic crisis and especially in cast used to live. In that whole society lower class people were dominated by upper class people. They thought that lower class people are our servant and they should work in our house. Therefore, Dalit society has not been flourished by the upper caste people. In the Dalit society they used to celebrate Hindu religion. But most of Dalit people spend lots of money in festival. In Dashain or Tihar festival they spent lots of money by taking loan. Most of Dalit people spent money in food and new clothes they have Dalit habit, to spent the money and food in unnecessary case. So they passed their time in unnecessary deeds like drinking alcohol, playing cards, care board. Because of there, activities social perfection dispersed in the society which created negative Impact up on their children.

### **Over Aged and Early Marriage**

The girls coming from the Dalit community were found over aged rather than other caste students. The main cause was to be over aged was lately joining in the school. Almost Dalit students were admitted in the school after more freedom.

According to respondent C;

*"My almost classmates have already been got married and dropped school. In my classroom I am older than other classmate. So, I feel hesitation and cannot ask any problems frequently to the teacher. As a result I am poor in mathematics,"*

Supporting the students view, parents said;

*"Farming and laborer is our main occupation, which is main source of income. We are mostly poor in economic status, so we married them in their early*

*age. Dalit give first priority to their parents' culture than education for their children."*

From above statements given by student and parents, it indicated the culture influenced by their parental convention due to which, they are obliged to get married in their early age and usually appeared in school very late comparing other students. Dalit students were generally over aged due to which they are after teased by their friends and ashamed to ask solving question with the teacher. Most of the Dalit girl students did not come in school regularly due to their effective learning due to which they felt some sort humiliation and embarrassment. So, they are poor in mathematics. Most of Dalit parents admit their over aged children in the school so they cannot be more attentive in school.

Mathematics Teacher said;

*"The students get admitted in school very late and most of them are married. They are after supposed to their creative age for their better learning and they also feel hesitation in asking with me".*

The above view stated by mathematics teacher clarifies that admission of Dalit students in school is highly influenced by their parental culture and poor economic condition in which they are tied with their professional boundaries. Regardless to say that they can't deserve if they are not willing to follow it, they have to give first priority to their culture and family requirements than their education. So their status makes than appear at school very late.

The over aged also hamper in learning mathematics. Due to over age and discontents in school, the students felt frustration and humiliation to ask the problem. At school most of their friends were in lower age in comparison to them. School did

not emphasize their family problem. So, they felt difficulty for the adjustment, Mathematics needs more support and interaction with teacher and classmates, which is not favorable to these students due to psychological depression in school and classroom. Obgu (2000) argues that the difference in culture at home and school arise the low participation in mathematics classroom.

Finally, it can say that over aged and early marriage are challenges affecting the access in mathematics for Dalit students.

### **Lack of Family and Society Inspiration**

A person named Dependra Ram who is a well social worker opined in the interviewed that there is lack of inspiration of Dalit family and social being.

According to him, "Inspiration is one of the best elements of energy in any learning. It makes a student to work hard and access to learning. I think parents and social should inspire them for their better learning. They should inspire them telling about any persons success in education and his/her life style so that the Dalit students may inspire to learn and study".

According to him the Challenges of Dalit students in mathematics learning are as follow:

- ) I think there is lack of tuition class of mathematics to make good math students they need mathematics material and friendly teacher but I see that it is lacked.
- ) Having poor economics they have lack of maturation for mind developing.
- ) There is lack of love of parents and society.
- ) Their attention is towards earning for survival.

After getting his interview, I have come into conclusion that they have no good mathematics tuition environment. They have poor economics condition that's why their attention is toward only for earning instead of learning mathematics.

Similarly, I found that they are not loved but hated. Because of hated behavior of society they are bored and filling guilty which decrease their interest in mathematics learning. They are believed on their traditional culture, which makes them backward in learning, generally in mathematics learning for an example of farming, dancing, singing in bus and train.

Due to the lack of educational awareness the parents couldn't maintain the home environment to study for students. They want that their children should help in their work at home. In the school students come from different ethnic case group caste and culture. The teacher should teach the students in different method according their necessity. But the teacher in the class taught the students in traditionally way. They want to use materials. Teacher could not teach them according to their individual difference. Mainly the work of the teacher in the school is to guide students, provide extra- activities, encourage and motivate the students in mathematic learning.

The researcher observed fifteen classes in the school by focusing on the teaching learning activities in the classroom activities. It is very difficult to present all the data in this study due to time and constraint, so, three episodes are presented below.

**Episode First**

*"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 40 students. In the class 'A' the desk and bench were sufficient in the class. The white board was kept at the right place. The teacher started to teach simple interest. Teacher wrote down a problem and formula on the white board and started to solve each step. He asked then whether they understood or not, some of them said yes sir. Mainly the students on the first bench were active most of Dalit students were passive. Again the teacher wrote another problem explaining step by step asking them at least he did the problem in the white board. Then he told them to do the exercises at home".*

In this case episode, I found that most of the Dalit students of the class were not so active. The teaching method was a lecture and practice oriented. The teacher behaved commonly to all the students. He did not focus the Dalit students specially. They were not interested in the classroom due to teaching method used by teachers. It was also found that the learners' interest in mathematics learning was also not as good as assumed. Therefore, the Dalit students were passive in mathematics class.

From the second episode, I found that the low participation of students in classroom activities was another factor which directly affects the access of dalit student in teaching learning process..

### Episode Second

*"The second class was observed in the second day. There were 32 students in the class. The class was well managed. The white board was placed on the right place all of the present students were in the classroom. The teacher wrote deductive method in the white board. Then he asked the students what they know about deductive method. The student responded without any hesitation after then he defined the deductive methods. Then he wrote a problem from the exercise book and solved it explaining step by step. He was watering all the students in the class. At the last he gave homework from the exercise book".*

In this episode, I found most of the Dalit students were present and stayed the whole period. Some of them seemed to be interested in mathematics class. There was no differentiation between both Dalit and other students. Teachers' behavior was equally but they did not give them special attention.

### Episode Third

*"The third class observation of the teacher. There were 35 students in the class. There were about 10 Dalit students among them. The class was well- managed. The white board was kept in the right place. Some of the dalit students were absent. The teacher started to teach the factorization. He started the class connecting previous lesion. 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. In the board explaining each step at the last he told them to do the exercise of the text book which too much for the students".*

In the episode, I found that the teaching method used by the teacher was lecture and practice the class was well- managed. Some of the Dalit students were absent. Only the little number of students was seen to be participated in the classroom. Most of the Dalit students had seated in the last bench. They were not well motivated and responded toward the teacher.

### **Overcome to the Challenges of Dalit Students in Learning Mathematics**

To overcome the challenges of Dalit students, to increase their access in learning mathematics, the school environment should be inclusive and Dalit friendly. Also the parents education should provided to Dalit students parents such that they can manage proper environment to their students. Furthermore, students are of old aged and they got marriage in early age so for their continuous learning parents should be motivated to the marriage of their children at proper age. Most of the Dalit students are not cased and appreciated by their teachers and friends in the classroom and schools. So, to ensure their access the classroom and school should be managed to addressed and respect Dalit students. In learning and school activities Dalit students should be provided maximum opportunity. Also, it is found that most of the Dalit parents were illiterate and uneducated. So, they should be convinced and aware about the need of education. In this way the challenges of Dalit students in learning mathematics should be solved.

## **Chapter V**

### **FINDINGS, CONCLUSIONS AND IMPLICATIONS**

This chapter incorporates the findings, conclusions from the discussion of previous chapter. Moreover, it has even some implications which will fulfill for further study.

#### **Findings**

Nepal is a country with multi-caste, multi-language, multi-religions, multi-culture. Dalit is one of the castes back warded in the society. This is the case study of Dalit students. The researcher observed c the mathematics class 30 days regularly so the researcher found the factor directly the recorded findings are analyzed by the researcher. Daily participation of Dalit students is less than other students. They were compelled help their parents in their occupation, due to the poverty, so, Dalit students were seemed irregular in the school.

Irregularity is one of the causes being Dalit students failed in the mathematics subjects. Access of Dalit students in the class discussion, homework, class work was less. Dalit students were less interested in mathematics learning. They felt that mathematics was more difficult than others subject. They said that they needed more labor and practice than other subject; they did not have more time for practices. The teaching methods used by the teacher were other factors of low participation of Dalit students in mathematics learning. The teaching method was traditional. Teaching materials were lots but had not been used at case school in mathematics learning. There is no special support to the Dalit students from the school. Dalit students are interested in physical activities but less in mental activities. The major access of Dalit students in mathematic learning of weak economic condition social belief, tradition of

the society, problem of health, far distance of the school, bad family environment, gender basis. Nepal is declared as the inclusive country where there is no discrimination based on caste, sex, language and others in theory. But in practice, it was not shown. Similarly, in the teaching learning process Dalit students felt excluded. This kind of exclusion is another cause of low participation of Dalit students in mathematics learning.

In this way, this research was a case study related to access of the Dalit students in secondary level mathematics in Siraha district. The objectives of this study was to find out the difficulties faced by Dalit students in mathematics learning. The major tools used for this study were observation form, interviews, questionnaire, classroom observation and related published and unpublished materials. The major findings of my study were;

The access of Dalit students in mathematics learning

- ) The access of Dalit students in classroom was too low
- ) The access of Dalit students in their class test and homework was found to be less.
- ) The number of Dalit students remained in a classroom was found not to be giving much attention than other students.
- ) They generally sit at the last bench of classroom.
- ) They were found to be less interactive with teachers and other students.

### **The Major Challenges Affecting the Access of Dalit Students in Mathematics Learning**

- ) Inappropriateness of Teaching learning process
- ) Lack of Parental education and Low Socio- economic status

- ) Over aged and early marriage
- ) Unsupportive Home environment
- ) Discriminative School environment
- ) Domination of Traditional Thought and Belief in the Culture of Dalit Society.
- ) Lack of Teacher and students interaction
- ) Lack of family and society inspiration

### **To Overcome the Challenges of Dalit Students in Mathematics Learning**

- ) Teaching learning process should be Dalit friendly.
- ) Parental educational level and their economic status should be enhanced.
- ) Students over aged and early marriage should be controlled.
- ) Learning environment at home should be created by parents for their children.
- ) School and teacher have to praise and provide opportunity to Dalit students.
- ) School environment should be inclusive.
- ) Traditional thoughts and misconceptions of Dalit community should be reduced.
- ) Students- teacher interaction should be enhanced.

### **Conclusions**

From the above study of the access of Dalit students in mathematics learning it was found that large number of Dalit students were absent, sit at the last bench, minimum access of Dalit students in homework, class work and class test too, having less attention in classroom in classroom and being less interactive with their teachers and their friends.

In order to solve the above problems which I found at first the number of attendance of Dalit students should be increased by giving awareness to them.

Similarly, the habit which they like sitting at the last bench can be removed by arranging rotation sitting system. Also to increase the access of them at the every curriculum activities friendly and homely environment should be created.

The challenges affecting the access of Dalit students in mathematics learning were seen which were teaching learning process, parental education and economic status, over aged and Early marriage, home environment, school environment, culture and society and teacher student interaction etc.

These responsible factors should be managed properly. Then the challenges of Dalit will be solved for this, student centered method should be implemented rather than traditional method to modify the teaching learning . Similarly to lift the level of awareness of parents regarding at education various types of formal and informal programme should be lunched. Economic based programme should be lunched at Dalit students by giving scholarship, discount in their tuition fee and so on. In this way the challenges of Dalit can be solved.

On the basis of the study of the field and findings, the followings conclusion has been drawn.

- ) Most of the teachers were trained and less experienced.
- ) Teaching was satisfactory in the school.
- ) The access of Dalit students less than other students.
- ) There was no interaction between Dalit students and teachers in class.
- ) Dalilt were irregular in the school. So they few participate in the mathematics.

The major case of access of Dalit students are economic condition, expensive education, social tradition, social belief, family environment, parents education, house hold work lack of motivation, psychological effect etc.

## Implications

Dalit students are discriminated in the society. It is difficult to adjust in the society because they are weak in society. They could not be able in competition among the society because they are weak in the study. They become backward in every aspect of the society. To improve the condition of Dalit students and to make them independent in the society different kinds of awareness should be taken for the Dalit students. We do something so that it could help other to know some ideas and apply them in the time they need in a particular kind of situation. This research helps to improve the pedagogy of the teacher. Ultimately it helps the Dalit students and teacher to improve their field. It also helps for curriculum planner, policy maker and myself too.

It's my hope that my research further helps for such marginal student's condition at other subjects too. So that it also makes someone to think about the level of access of every student in every subject. Similarly this study has pedagogical implications, psychological implications, training implication, organizational implications and personal implication for myself to improve the access of Dalit students in mathematics learning. The following implications:

- ) All the necessary educational materials should be given from the school to the Dalit students.
- ) To encourage the Dalit students to be regular in the class regular Dalit students should be awarded and irregular should be punished.
- ) In the school Dalit students should be given special attention. They should be encouraged to participate in the classroom interview.
- ) There should be discount in tuition, hostel etc, for Dalit students.

- ) There should be fixed free cost in boarding school for Dalit students.
- ) New trends emerging in the teaching learning process should be applied in the teaching process.
- ) Inclusiveness should be promoted in the classroom. So that, Dalit students will be encouraged.

## REFERENCES

- Acharya, B.R. (2015). The study on inclusive mathematics classroom practice in school of Arghakhanchi district. *Mathematics education forum*, 37(1),36-41.
- Acharya, B.R. (2015). The study on inclusive mathematics classroom practice in school of Arghakhanchi district. *Mathematics education forum*,37 (1),36-41.
- Basel, R. (2007). *The relation of socio-economic status in mathematics achievement of Dalit students at primary level*. An unpublished master's thesis in mathematics education, T.U., Kirtipur.
- Bell,F.H. (1978).Teaching and learning mathematics, Wincbrow company, McGraw Hill.
- Best J.W.and Kahn, J.V. 2009. *Research in Education* (10th ed.). New Delhi: Prentice Hall of India.
- Centre Bureau of Statistics National Census (2068). Kathmandu: CBS Ramshapath.
- Creswell, J.W. (2012). Educational research: planning, conducting and evaluating quantitative and qualitative research (4th ed.). Boston, MA: person Education, Inc.
- Dhakal, B.P. (2008), *A study on teacher's believe towards discipline and their grand room practice*. An unpublished master's thesis in mathematics education, T.U., Kirtipur.
- Ernest,P. (1991). The philosophy of mathematics Education, Tyler and Francis Inc.
- Ghimire, T. (1997).*A study on factor affecting teaching learning mathematics at secondary level*. An unpublished master's thesis in mathematics education, T.U., Kirtipur
- Hatch, J. 2002.Doing Qualitative research in education settings. In: Analyzing Qualitative Data Albany: Suny press,pp.147-191.

- Khanal,p.(2073). Educational research methodology, Kathmandu: Sun light publication.
- Koirala, B.N. (1996). Participatory approach to education for Dalit of Nepal, T.U., CERID, Kathmandu.
- Niure,D.P. (2069) Reaserch methodology, Kathmandu, Kirtipur: Quest Publication.
- Pant, S. (2002). *A study of achievement and participation of female in bachelor's level mathematics education*. An unpublished master's thesis in mathematics education, T.U., Kirtipur.
- Parajuli, Dr.T.R. and Other (2067).Educational measurement and evaluation, Kathmandu: Sunlight publication.
- Poudel, B. (2004). *Learning strategies of mathematics concepts of out of school children: A case study of dalit community*. An unpublished master's thesis in mathematics education, T.U., Kirtipur.
- Poudel, B. S. (2005). *Learning strategies of mathematics concepts of out of school children: A case study of dalit community*. An unpublished master's thesis in mathematics education, T.U., Kirtipur.
- Steele, D.F (1995). A constructivist approach to mathematics teaching and learning by fourth-grade teachers.
- Thapa, J. B. (2001). *Learning strategy for out of school children from dalit community*. M.Phil thesis submitted to RDSES, Denmark
- <http://www.doesiraha.gov.np>.
- <http://www.google.com>
- <http://www.cbs.gov.np>

**APPENDIX 'A'**

**Class Observation Form**

Name of School:

Name of Teacher:

Total no of Students:

Date:

Location of School:

Year:

Time:

Subject:

**S.N.**

**1. Home Environment**

Children involvement in household work

Learning opportunity at home

Family economy condition

Behavior towards students

**2. Teaching Learning Process**

Regularity of Dalit students in school.

Teaching method used in mathematics class.

Interaction between teacher and students.

Evaluating system of the mathematics class.

In class dalit students are passive or active.

**3. School Environment**

Extra-curricular activities

Sitting style of the students.

Rule and regulation of the school.

Discrimination among dalit and other students.

4. **Culture and Society**

Behaviour of dalit students and other students.

Really dominated by other upper caste.

Dalit's norms, values, culture, custom and believe.



**APPENDIX 'C'**

**GUIDELINES FOR INTERVIEW WITH PARENTS**

Name:

Address:

Occupation:

Cast:

Qualification:

Name of his/her Child:

The interview with parents was taken on the basis of following main topics.

1. Parent's view about Dalit children education.  
.....
2. Monthly income of parents.  
.....
3. View about improvement of the achievement of the children.  
.....
4. Thought about the education of their children.  
.....
5. View about the participation of Dalit students by mathematics learning.  
.....
6. Effect of values and customs in mathematics learning.  
.....

**APPENDIX 'D'**

**Guideline for Interview with Teacher**

Name of the Teacher:

Subject:

Qualification:

Class:

Warning Period:

The interview with teacher was taken on the basis of following main topics.

1. View of the mathematics teacher towards the participation of the Dalit students in mathematics learning.  
.....
2. Opportunity provided to the Dalit students in mathematics teacher.  
.....
3. Interest of Dalit students in mathematics teaching.  
.....
4. Thinking of teacher towards Dalit students.  
.....
5. Interest of parents about the achievement of Dalit students.  
.....
6. Teaching method used in mathematics class.  
.....
7. Participation of Dalit students of mathematician class work and homework.  
.....
8. Value and importance of mathematics learning.  
.....