

Chapter-I

INTRODUCTION

Background of the Study

Mathematics is the subject that has significant impacts on people. Every people need mathematics to solve the problems in the daily activities. The development of mathematics was simultaneous with the social development. The development of mathematics has its far history with the development of human civilization. "Mathematics is used throughout the whole world as an essential tool in many fields, including natural science, engineering, medicine and the social science" (Bell, 2008).

As a school subject, mathematics has a tremendous authority. Having difficulty with mathematics is a serious issue. Successes or failure in mathematics in school has a deceive influence on choice of further education and career both with regarded to access and necessarily self-confidence. Mathematical competencies are of importance to life as citizen and private individual, social-life and everyday-life (Niss & Hojgard Jensen, 2002). Just like mother tong competency, mathematics is associated with a basic literacy and a corresponding literacy in case of its absence. It is serious matter for a child not to be successful in gaining functional mathematical skills. This lacks of success may have consequences for the both the child's perceptions of their own capacity to manage the challenges of schooling and to their future education and life (Lange, 2009).

Instead, the learning difficulties may be due to external factors such as socio-culture disadvantage, limited opportunity to learn, lack of support from home and inappropriate curriculum or insufficient teaching in early years. The learning

problems these students experience are often further exacerbated by their emotional reaction to lack of success. These students, in the past have been referred to as “Slow learners” and “Low achievers”. Badian (1996) ever refers to them as having “garden variety” learning problems, meaning that such difficulties are widespread and in no way unusual. We normally referred to these students now as has been general learning difficulties. Their lack of success is evident across most areas of the school curriculum (Westwood, 2008).

Niss and Hojgard Jensen, (2002), Lange, (2008), Badian, (1996), West Wood, (2008) are the sources of difficulties. From these sources the learning difficulties in mathematics may be define in terms of output difficulties, organizational difficulties, language difficulties, attention difficulties, visual spatial or ordering difficulties, difficulties in multiple task, and difficulties in cognitive process. However in these learning difficulties in mathematics refers to those outputs in mathematics problem data related to recall basic mathematical fact, procedures, rules, formulae, to retrieving fact or pursue procedure to difficulty in maintaining précising during mathematical work and to difficulties in remembering previously encounter patterns to convert verbal problems in mathematical way and too difficult in inter-relation between content and principle.

Mathematics and Dalit

As generally from poor and uneducated background, Dalit students are identified as having specific learning difficulties especially in mathematical difficulty (dyscalculia) but there is a divergence of views about causes and identification. Interestingly, it has been suggested that Dalit students actually have a mathematical learning difficulty. It is believed that most of the Dalit students have a learning difficulty. That is, educators have created their mathematical problems

regardless of the reason for Dalit students' mathematical difficulties. Dalit students with learning difficulties may already have an external locus of control. They believe they cannot improve their mathematical capacities. It is when they feel confident to move ahead, make mistakes, discuss and question, that engagement and achievement will occur.

The term "mathematics" comes from Greek word "*máthēma*" with the meaning "knowledge, study and learning". In ancient time, people felt their concern about the knowledge on mathematics. They were of course motivated in their social needs. Civilization flourished such as the Babylonians, the Greeks, the Hindi, the Chinese, the Japanese and the Arabs etc. they have contributed a lot in discovers in field of mathematics. Mathematics has led to the development of various subjects, vocations and technology. It is science, which is still playing an important role in various field of life. Mathematics is an essential part of civilization. It was originated together with the origin of human civilization so; the study of mathematics is the study of civilization. It was originated from practical experiences of man's needs and it continued to develop along with the development of civilization and vice-versa. Mathematics is creation of human mind concerned with ideas, process and techniques of research. Mathematics is intimately associated in every moment of man's life. Mathematics is interpreted, explained and used in different ways or situation of human live.

Dalit refers to groups of people who are religiously, culturally, socially and economically backward, who belongs to different language and ethnic-group. They are poor, deprived and socially backward. Poor means they do not have access to enough food, health housing and clothing. They also do not have access to education and employment with deprived from justice, which they face in everyday life. Dalit

are settled in all the 73 district of Nepal and are known as untouchable, e.g. Kami, Sarki, Damai, Gaine and Sunar other many castes belong to this group of people.

These castes were made based on function they earned out.

Statement of the Problem

In my own experience of five years of teaching at Shree Aadarsh H. Secondary school, Nawalparasi, the researcher faced different problems of teaching and learning mathematics. The researcher found record of S.L.C. result of over past five years 30 percent students passed in this school. Among them, every year nearly 25 percent Dalit student participated in S.L.C. examination but only 0.4 percent passed the examination. It is also one of key factors for the drop out the rate of Dalit students. The S.L.C. result of school also shows that most of the unsuccessful Dalit students have failed in mathematics subject and hence it shows there is low achievement of Dalit students in learning mathematics.

Table-1: Achievement of S. L. C. Result

Year(B.S.)	No. Students	Total Passed %	Dalit %	Dalit Passed %
2068	110	22.5	28.67	6.25
2069	105	28.09	27.56	0.00
2070	120	33.09	22.22	7.14
2071	115	37.52	26.23	9.19
2072	120	38.12	25.23	9.52

(Sources: S.L.C. Examination Statistics (B.S. 2068-072), Shree Aadarsh H.

Secondary School.

From this table, S. L. C. result of Shree Aadarsh H. Secondary, Nawalparasi District was satisfactory and increases in every year. But the S.L.C. result of Dalit was very poor which decreased the total passed% of S.L.C.

To address the reason behind this study focused on the following research questions:

- Why Dalit students are back in learning mathematics?
- How can we minimize these difficulties in learning mathematics?

Objectives of the Study

The main purpose of this study is identifying the causes of difficulties faced by students in learning mathematics by Dalit students at Grade-X. The objectives of the study are to find out the main important personal, environmental, influencing factors of low mathematics achievements of Dalit Students. The specific objectives of the study are as follow:

- To explore the difficulties faced by the Dalit students in learning mathematics.
- To analyze the causes of learning difficulties faced by Dalit students in learning mathematics.

Significance of the Study

Every research is important in itself because it give details of various unseen facts in any area of study. Most of the Dalit Students are poor in mathematics. The present research is significant as it explores the factors, which contribute to the difficulties faced by Dalit students in learning mathematics. This helps to improve the mathematics teaching learning status to reduce failure in mathematics among Dalit students.

The findings of the study would be useful in analyzing the reasons behind this degradation. Hence, this study has the following significance:

- It would help teachers, policy makers, and related agencies to improve the achievement of Dalit students in learning mathematics.
- It would help to encourage and motivate the participation of Dalit students in learning mathematics.
- This study would help to identify and diagnose the difficulties in learning mathematics in secondary level.
- This study would also open the door for further study about the problems of learning mathematics.

Delimitation of the Study

Delimitation of the study concerned with the limitation of time, financial resources and material. Following were the delimitation of this study.

- The study has been delimited to only Shree Aadarsh Higher Secondary School of Nawalparasi District.
- The study was conducted only in Grade-X of Shree Aadarsh H. Secondary school, Nawalparasi.
- Five students have been sampled from 65 students in learning mathematics at secondary school.

Operational Definition of Related Terms

Participation

In this study, the term 'participation' is defined as involvements of Dalit students of Grade-X, of Shree Aadarsh Higher Secondary School, who are academically regular in mathematics classes and participate in every classroom activities, do class works and share mathematical problems with teachers in the school.

Dalit

Here, the term 'Dalit' refers to the students who are religiously, culturally, socially, economically and historically oppressed, excluded and treated as untouchables communities who have to face discrimination in different forms whether be it in school or society.

Difficulties

In this study, difficulty is defined as the status or situation that causes problems for Dalit students of secondary level learning in mathematics in three selected schools in Nawalparasi district because students feel difficulty due to communication, interaction pattern and behavior, participation and learning opportunity at home and school.

Students

In this study, the term 'students' stands for those Dalit students who were studying in Grade X. Dalit students were treated as untouchable groups in Nepali community, who especially come from Chamar, Mushar, Harijan, BK, Dom community etc.

Parents

In this study, the 'parents' means father, mother, brother, sister and other guardians of Dalit students studying in Shree Shivapurgadhi S.S., Shree Tribhuvan Higher Secondary School and Shree Aadarsha H.S.S. Nawalparasi.

Chapter-II

REVIEW OF RELATED LITERATURE

A review of related literature is source of further study (or research task). It helps to give the better idea in research. There are so many research studies about the difficulties faced by Dalit student in learning mathematics under different variables such as teacher, students, teaching method, family background, socio-economic factors, mentally and physically healthy person etc.

In this section, some related literatures with this topic were reviewed as mentioned below.

Empirical Review

Adhikari (2000) concluded a research on “A comparative study of achievement in mathematics of primary level students related to parents’ income” by using purposive sampling method. His study was based on qualitative nature. For this research, researcher selected 10 students from each comparative study by taking interview schedule and observation form. The findings of this study showed that the achievement of high-income group was higher than the achievement of middle and low-income group. However, the achievement of middle group was not found significantly higher than that of low-income group. He found that mathematics achievement of student was affected by their parent’s income.

Poudel (2004) did a search entitled “Learning strategies for out of school children from Dalit community.” This main target of research was to find out the learning skills and the way of learning in the daily lives of untouchable children. To examine the skills which are helping them for life and suggest the way of stabilizing linkage between everyday life and out of school children program in curriculum he

found the difference between social and classroom learning in our classes more emphasis was placed on theoretical aspect and less on practical. The study drew some implication for the improvement of teaching and learning method of the out of school program curriculum.

According to above information, researcher found more difficulties and challenges in mathematics. The main difficulties are home environment, cultural difference, language of school, quality of teacher, discontinuity at school and home etc.

Ghimire (2005) did a case study on “Difficulties on Learning Algebra.” The objective of the study was to identify the difficulties on the content of algebra and to identify the difficulties on the classroom practices. This study was conducted with the sample size of four blind students. The students were selected by random sampling process. Different tools such as observation, interview and written test were applied to identify their learning difficulties on algebra and concluded that the blind students have ability to only add, subtract, multiply of simple very short algebraic terms but unable to divide. They have the limited knowledge about factorization, H.C.F and L.C.M. The major difficulties of the blind students were found such as to develop clear concept on subject matter, to write algebraic concept, to solve the process of mathematical problem in Brail Script, to adjust integrated class and to use material and method in learning mathematics.

Luitel (2005) did a study on “A study of learning difficulties area in mathematics of grade-VIII for deaf students.” The objective of the study was to identify the difficulty in arithmetic and to locate areas as to relate them to their cases. The students were chosen sample random process; observation and interview were used to identify the learning difficulties in mathematics. The study concluded that

deaf students had the fundamental knowledge of mathematics but in academic course they were feeling difficulties in learning mathematic (arithmetic) because of various reasons such as to develop clear concept on verbal problems, to generalize the learners concept, to understand the language association, limited vocabulary in mathematical words, fast forgetting to discriminate the condition of the situation. These difficulties are not only due to their problems but due to the lack of supportive environments such as teaching methods, instructional materials, social interaction, and their place in the family and society.

Panta (2007) in his doctoral dissertation entitled “A study of learning difficulties in mathematics among Grade-V students in the Kathmandu Valley of Nepal” did a study in a government and a private school. He took students, teachers and parents of the selected schools and found the school related factors; (quality of school program, quality of teacher, time allotment), class specific factors (quality of instruction, time for learning, opportunity of learning, relationship with other students), home related factors (parental help, support), social factors (home culture and school cultural difference, language of school and home), personal factors (time for learning and motivation) are the main factors which influence learning mathematics.

Rijal (2008) conducted a study on “Difficulties in Learning Mathematics”: A Case Study of RanaTharu in Kachanpur District. The objective of this study was to identify the difficulties in learning mathematics of RanaTharu students at lower secondary level and to identify the causes of difficulties. This study was based on qualitative in nature. The study was conducted with the sample size of five Rana Tharu students of Grade-VI. Face to face, interview with students, parents, mathematics teachers, head teacher and the observation was taken. The collected data

were analyzed by using mathematics categorization and interpreted according to the cultural difference and discontinuity. The finding of the study shows that there is cultural difference and discontinuity at school and home. There is discontinuity in language, lack of interpersonal relation, no proper interaction between teachers and student. The home environment and school environment have not been conducive for learning mathematics.

Kaphle (2010) conducted a study on “Problem Faced by Tharu Children in Mathematics Classroom at Lower Secondary Level”. This study based on descriptive survey design. The objective of study was to identify and analyze the problem faced by Tharu children at lower secondary level. This research is both qualitative as well as quantitative in nature. Ten schools were selected as sample of study. Classroom observation form and questionnaire to students were used to collect data. On the basis of reviewed literature and different concept of theories (Cultural difference, discontinuity and constructivism) were developed as indicators to analyze problems of the study. The finding of the study shows that there is cultural difference and discontinuity at school and home.

Ghimire (2013) conducted a study on” Difficulties of Student in Learning Mathematics”. This study based on descriptive survey design. The objective of this study was to find the difficulties of Bote students in learning mathematics at lower secondary level. This research was qualitative in nature. The study was conducted with sample size of four Bote Students of Grade-VII. Face to face interview with students, parents, mathematical teacher, head teacher and the observation was taken. Such collected data were analyzed by using thematic categorization and interpreted. According to cultural difference and discontinuity, theory finding of the study show that, there is cultural difference and discontinuity at school and home. There is

discontinuity in language, poor relationship with entire teachers, low participation in classroom discussion, and poor interaction with the teachers. Bote socio-economic and financial condition is not enough to send their children at school and afford them in further education.

Chaudhary (2014) did a research entitled “Difficulties faced by Learning Geometry at Lower Secondary Level.” This study based on descriptive survey design. The objective of this study was to find the difficulty faced student in learning geometry at lower secondary level. This research was qualitative in nature. The finding of the study shows that there was discontinuity in language, lack of proper understanding about geometry contents and figure, lack of interpersonal relation, no proper interaction between teachers and students, low attends in class, lack of understanding languages in learning mathematics.

Sunar, (2017) did research entitled "Mathematical disposition of basic level students" in which the researcher explored the contextual effects associated with classroom and school that may be related to self-concept and achievement. Current literature suggests that educators try to enhance self-concept and skill development simultaneously. The researcher used mixed methods (qualitative and quantitative). In this study, the researcher took 8 schools as samples among different schools of Kathmandu district. The mean and median score were used to investigate the mathematical disposition. According to the analysis of the difficulties in mathematics of this thesis, problem is higher when based on the test instead of grades. Grades in turns have a stronger impact on self-concept. Implications of literature suggest the separation and focus on the specific domain that is known to directly affect because the correlation between the self-concept and students problem is higher for related subjects over non-related subject.

According to above the information, researcher found all the difficulties and challenges in learning mathematics at secondary level. The main difficulties are home environment, social factors (home culture and school cultural difference, language of school and home), and personal factors (time for learning and motivation) the main factors which influence the in learning mathematics.

Theoretical literature

The theoretical discussion is needed for the interaction of the findings of the study. There are many theories about the learning and development of children such as cognitive, behaviorist, humanist, social constructivism and so on. Among them constructivism is new one. According to this theory, every child learns from society. They learn from social contact and interaction at home, family and the society. According to these theories, knowledge can be constructed from society.

Cultural Difference and Discontinuity Theory

In this section, the researcher will discuss the theoretical framework for the study that has support the significance of difficulties on learning mathematics of Dalit students. Discontinuity, difference between the culture of home and school, there were more difficulty in learning mathematics and participation of Dalit students, simply because of conflicting nature of curriculum, educational setting, socio-cultural background, teaching practices of the children. Therefore, children from Dalit students learn poorly in class and ultimately they have no option except dropping out from their school. Dalit students were from poor economic environment, illiterate family backgrounds they faced many difficulties in learning mathematics. There were many learning theories which can be used for the analysis an interpretation of data such as social learning theory, cultural language theory everyday life theory and

cultural difference/discounting theory and so on. Therefore, for the analysis and interpretation data the researcher had used a cultural discontinuity theory of John Ogbu (2000, 2001).

Ogbu (2001) emphasizes learning only as the product of the cultural and language differences but rather the nature of the relation between the culture and language of minority/disadvantaged and dominant groups. In any society, majority group controls the school system through implementation of their curriculum, and using their language as the only means of instruction. Regarding cultural difference, identity and school learning, he has put the examples on the case of the United States of American (USA).

However, he developed the theory of culture difference on the case of US. It might have implication to his study that is related to cultural discontinuity and learning difficulties in mathematics of Dalit who also disadvantages group in terms of culture of discrimination, domination and backward form mainstream. Mainly the Dalit children hesitated to interact with the other children in the school as well as in the community due to the socio-cultural reasons. Such scenario hinders interaction and participation with other caste people that observing and engaging in the works of their father, mother and elders. But they do not get the opportunity in the school excepting listening, which is the dominating activity during the day at school.

As his study suggests, involuntary minorities face more difficulties in school learning participation and performance due to big gap between their cultures and mainstream culture. For them it is too difficult to cross cultural boundaries in school compared to the voluntary minorities with the primary cultural difference. He further elaborates that primary cultural differenced may create problem in the inter personal and inter group relations as real as difficulties in academic work, for several reasons.

Among them, most important reasons as children with different cultural backgrounds start schooling assuming different cultural world and human relation in school but they get a vast difference reality in school. Next lack of necessary concept and skills in their own cultures may obstacle their learning.

Ogbu's Theory in the context of Ethnic Group of Community

In this section, the researcher discussed the theoretical framework for the study that has support the significance of difficulties on learning mathematics of the students. Discontinuity, difference between the culture of home and school, there were more difficulty in learning mathematics and participation of students, simply because of conflicting nature of curriculum, educational setting, socio-cultural background, teaching practices of the children. Consequently, children from students learn poorly in class and ultimately they have no option except drooping out from their school. Students were from poor economic environment, illiterate family backgrounds they faced many difficulties in learning mathematics. There were many learning theories, which can be used for the analysis an interpretation of data such as social learning theory, cultural language theory everyday life theory and cultural difference/discontinuity theory and so on. So, for the analysis and interpretation data the researcher had used a cultural discontinuity theory of John Ogbu (2000, 2001).

Ogbu (2000) delineates about the cultural differences and cultural discontinuity that deals with the problem in children learning caused by the differences and discontinuities between culture of home and school. Those children whose home cultures are much similar to cultures of schools can cope easily with the system that may result better learning achievement. Similarly, the children with unmatched or dissimilar home cultures with school cultures and they don't have enough attention in their learning and don't get much recognition of their culture and

they have to work hard achieving learning outcomes compare to the children with well matched.

As his study suggests, involuntary minorities face more difficulties in school learning participation and performance due to big gap between their cultures and mainstream culture. For them, it is too difficult to cross cultural boundaries in school compared to the voluntary minorities with the primary cultural difference. He further elaborates that primary cultural differenced may create problem in the inter personal and inter group relations as real as difficulties in academic work for several reasons. Among them, most important reasons for children with different cultural backgrounds start schooling assuming different cultural world and human relation in school but they get a vast difference reality in school. In addition, lack of necessary concept and skills in their own cultures may be an obstacle for their learning.

Ogbu (2001) furthermore argues that discontinuity also occurs in the area of language, thought and measurement. It happens mainly due to the difference between the teaching and learning strategies in home/community i.e. informal education and the style used in school i.e. formal education. Similarly, since children learn in school environment without to their natural context in their experience, learning may have no any significance to their everyday life. Ogbu (1982), argue that the primary secondary cultural discontinuity also cause the difficulties in learning and he argues that the children from disadvantaged caste tends to develop coping behavior and attitudes that are different to school culture that obstructs their learning. The theory of cultural discontinuity describes social structure but there are micro cultures in every household that influence children's learning. In his consideration, everyday life theory is to consider finding out the children's home and their interpretation of it

Dalit children are more or less concerned with school problems and the problems of caste like minority. The children with similar culture as that of school may do well in school whereas the disadvantaged minority children like Dalit children may have poor performance in the school because their cultures are less congruent and incompatible with the culture of school. Since they are provided education in culturally different environments, they certainly face difficulties in acquiring skills and contents demanded by the curriculum through teaching/learning activities rather than they are culturally deprived of learning.

Ahn, Usher, Butz and Bong (2016) considers cultural differences in the extent to which the social sources of self-efficacy impact on self-efficacy and mathematical performance overall. It has previously been suggested that social effects are different in cultures that are predominantly individualist, like the US and Western Europe, to cultures that are collectivist, as in South East Asia. They undertook a quantitative study in the US, the Philippines and in Korea.

The important results are as follows:

- Mathematics self-efficacy has a significant positive correlation with students' mathematics achievement. This is consistent with previous research, both theoretical and empirical. It also provides evidence that this relationship is independent of culture.
- Mathematics anxiety is negatively correlated with mathematics self-efficacy. Again, this is an expected result and previous research has suggested this. In more vernacular terms, it means that the more confident a learner is in mathematics, the less anxious they are.

- Students in individualistic cultures report stronger mathematics self-efficacy compared with collectivist cultures. This is often in spite of superior performance by learners in collectivist cultures. This could be because people in collectivist cultures refrain from higher ratings because of a cultural desire to express humility.
- Vicarious sources of self-efficacy tend to be from teachers and verbal persuasion comes from family and peers.

This research confirms the importance of self-efficacy in learning mathematics. It challenges the view that learning mathematics should be predominantly rote learning and practice. Problem solving is necessary to develop self-efficacy. Learners need chance to explore and examine non-routine problems. Importantly, they need to develop the capacity to assess the strategies they use, themselves and with the support of teachers and peers.

Not only is self-efficacy correlated with mathematics performance, it is also important in respect to mathematics anxiety. The more self-efficacious the individual, the less anxious they become.

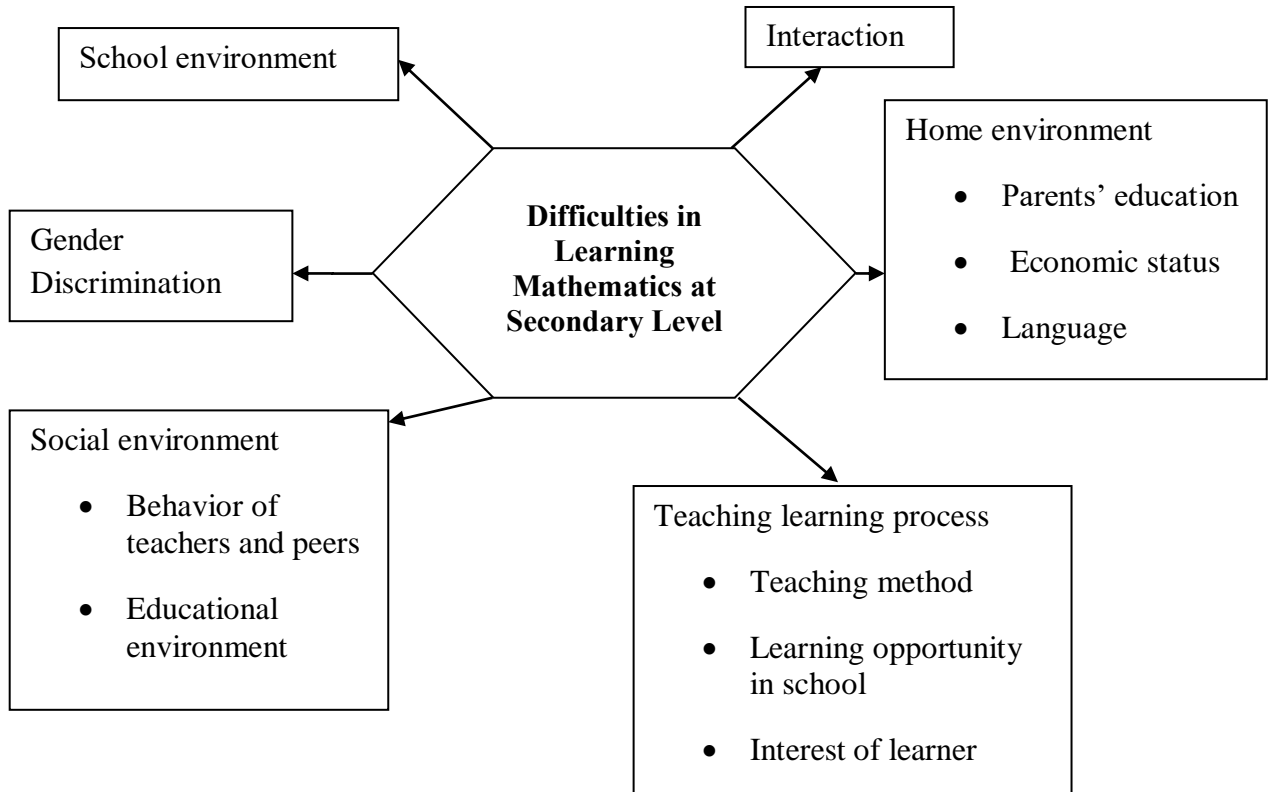
Finally, although this research considers self-efficacy sources in different cultures, it draws attention to the importance of social sources and within what contexts this might develop. The research shows vicarious sources tend to be from the teacher; verbal persuasion comes from family and peers. This is important in understanding multiple social roles in learning mathematics.

Conceptual Framework

The case study related to find the difficulties in learning mathematics at secondary level in learning mathematics in public schools, which will be based on the

discontinuity theory this framework is directly adopted from a thesis prepared by John Ogbu's (2014).

Figure: Conceptual Framework of the Study



(Source: United stated America case study of John Ogbu's, 2014)

The conceptual framework would be helpful in findings the causes of difficulties faced by students learning in mathematics. Home environment reflects the parent's education, economics status and learning opportunity at home. Culture and customs reflects home culture and culture of society. Teaching learning process reflects teaching method, learning opportunity at school and interest of learner. This study examines the impact of support and intervention on difficulties in learning mathematics.

Chapter-III

METHODS AND PROCEDURES

Research is the systematic approach to obtain new and reliable knowledge (Ethridg, 1995). Research methodology is a science, which determines how the research becomes complete and systematic. So, the methodology is the branch of the research. It is a qualitative research; the researcher studies things in their natural setting attempting to make sense of or interpret phenomenon in terms of meaning. This research includes the study and collection of validity of empirical materials, case study, personal experience, life story, interviews, observation, historical interaction, visual text that describes routine and problematic moment and meaning in individual's lives (Anderson, 2001).

This chapter describes the design of study, sample of the study, tools of study, data collection method, interpretation of the data. Here, researcher took some major procedure for research methodology.

Design of the Study

This is a qualitative research. This is a case study design, where Dalit is case for this research that especially concerned with causes of difficulties facing in learning mathematics. A comprehensive study of a social unit is that unit person, a group, a social institution, a district or a community called a case study (Young P.V., 1998). In the case study researcher typically observed the characteristics of an individual unit, a child, a class, a school or a community. The data collected through observation, interview with a students, mathematics teacher, Head teacher and parents of sample students. The obtained data have been analyzed through the descriptive method.

Sample of the Study

Nepal's formal education system comprises of primary, secondary and higher secondary school which includes +2 year of education and University Education. But, researcher's focus is secondary level of Dalit Students who have difficulties in learning mathematics.

This is a case study. In this case study, the unit of analysis was Dalit students. The researcher selected 5 Dalit as the case represents out of sixty five students of Grade-X. The researcher selected 2 boys and 3 girls by using purposive sampling methods, which gave appropriate and actual information. The criteria of selecting respondent were gender, family status and student's position in class.

According to District Education Office of Nawalparasi, there are 10 public and 5 private secondary schools in Jamuniya VDC. The researcher selected 3 secondary public school by purposively sampling method where the percentage of the Dalit student maximum in Grade-X. The researcher selected 5 Dalit students out of 19 Dalit students. So, these students were taken from Shree Aadarsh H. Secondary, Shree Shivapurgadhi secondary school and Tribhuvan Higher secondary school Nawalparasi District. Mathematics teacher, headmaster and parents of the sample students were selected as respondents of the study.

Tools of the Study

For this study, the researcher has used the following tools to collect the necessarily information.

Observation

“Observation may be defined as systematic viewing coupled with consideration of seen phenomenon” (Young P.V., 1998).

The observation schedule was prepared by using the article, research. Here, the researcher included the case student's behavior with teachers, behaviors with peers, attitude towards teachers and peers, relation with mathematics teachers, Head teacher and peers, participation of case students in group and individuals, homework, class work, teacher's activities with case students. If the form was incomplete during the observation, the researcher used the personal diary for recording data. This was related with Appendix-A.

Interview Schedule

“The interview is the face-to-face interpersonal role situation in which one person, interviewer, ask a person being interviewed, the respondent, questions designed to obtained answers, pertinent to the research problems" (Kerlinger, 2000). On the basis of objective of the study, the researcher prepared the interview schedule for Mathematics Teacher, Head Teacher, students as well as parents.

The data from the interviews were taken from direct questions. Here, the researcher took interview with case students, parents of those case students and mathematics teachers with their experiences, opinions, feelings, and knowledge.

Validity of Tools

Validity refers to how well a test measures what it is purposed to measure. Reliability and validity of the research tools was determined with the help of related theory and suggestion of subject expert. To determine the validity of research tools the interview was taken over a period of time with the selected samples. The frequent class observation was done to check the consistency of methods and procedures used in classroom. The school documents were gathered to and noted for the trustworthiness. Further cross match had been adopted to maintain the trust of the study. The researcher also tried to ensure the internal validity by observing the same

data on the basis theoretical framework developed by the researcher in previous section.

Data Collection Procedure

The researcher spent four weeks for the observation in research area. The following procedures for collecting data were followed for this study:

- Mathematics classroom was observed by using observation form (Appendix – A) to note the events of the classroom and school. The researcher watched, listened, interacted and then recorded the essential data about learning environment and activities in real situation. The research observation list was administered to collect data about learning environment and Dalit student activities in real situation. The researcher also maintained a diary to note down information during observation. The researcher observed the grade 10 class during observation period and noted the events of the classroom and school environment. The detailed data of school environment, home environment and individual respondent character were obtained by observing and filling the observation forms.
- Interview was also conducted to Dalit students, their parents, mathematics teacher and head teacher separately in order to investigate difficulty faced by Dalit students in learning mathematics. Researcher had prepared interview guidelines under the heading like home environment, school environment, workload, learning style and their interest in mathematics. Researcher conducted interview with Dalit students using interviews guideline (Appendix- B) one by one to collect identical information from all respondents. Similarly, separate interview was also conducted with mathematics teacher, head teacher and parents of each respondent by using interview guideline

(Appendix-C, Appendix-D and Appendix-E) respectively. Similarly, views of head teacher towards the respondents were taken separately. Also frequent interaction was conducted with the parents, teacher and the respondents. Ultimately, the researcher prepared the individual respondent records separately.

- The unpublished documents like school record files, attendance register, school result sheet, teacher profile, obtained marks sheets of respondents from 8 up to 10 classes, scholarship scheme register of Dalit students were studied thoroughly to collect secondary information from the school.

Data Analysis and Interpretation Procedure

Analysis of the data is descriptive in nature. The researcher read all the data to obtain the general sense. At first, the collected information was categorized according to the category of the respondents and different themes are given in the form of interview and the observation form.

Recently, the word 'triangulation' has been used widely in the discussion of qualitative research. Triangulation is a method to get an accurate and reliable picture of situation. The idea to assess learning and attitudes from a range of perspectives is called triangulation. The researcher was trying to understand by collecting different kinds of information from different perspectives from different sources and with data triangulation where the data were obtained from the classroom observation and interview with the students, teachers and parents.

Chapter-IV

ANALYSIS AND INTERPRETATION OF DATA

This is a case study related to causes of learning difficulties of Dalit students at Grade X of Nawalparasi District. The main objective of this study was to analyze the causes of learning difficulties faced by Dalit students in learning mathematics. The main tools used for this study were interview schedules, class observation forms and related published and unpublished school documents. The main respondents of this study were focused on children, parent, head teacher and mathematics teacher of Grade- X of the school. Only three schools were chosen for this study purposively.

This chapter includes the analysis and interpretation of the study. The data obtained of the study were presented in terms of following topics: Learning environment at home and school, language, interpersonal relation, teacher-students interaction, Gender discrimination, Irregularity, lack of parental involvement in the school, Lack of believe and support and teaching method background of the students, physical facilities, school environment, and interaction of students. The collected information at first was categorized according to the category of the respondent and different themes were given in the text of interview or the observation notes. These themes were considered as a code and the similar code. Version of respondents were collected together and explained in their perspectives. The school environment and other details were obtained by observing school environment and interviewing with the Head Teachers as well document analysis of the schools. The home environment and other details were obtained by taking interview with their parent. The researcher had noted the case students' pre-class document, their regularity in class, their behaviors, etc. from the school documents.

The descriptive methods were used mainly in this research because this is qualitative study. The researcher had as attempted to calculate the study describing and analyzing the information acquired in the research process. The collected information were analyzed and described in the following headings:

Introduction of case Students

Causes of difficulties faced by the Dalit students in learning mathematics

- Learning environment at home and school
- Parents' education and economic condition
- Language
- teachers' students' interaction
- Gender discrimination
- Irregularity
- Lack of parental involvement in the school
- Lack of believe and support
- Teaching learning process

Introduction of case students

Respondent-A

Respondent-A was of fifteen years old boy and he studies in class 10. He was born in Jamuniya VDC ward No: 9 of Nawalparasi District. It takes about 15 minutes to go to school from his home. There are six members in his family. In comparison with other Dalit families, his family seemed little bit small. His father is Rickshaw Driver and the mother is housewife. Sometimes, his mother goes to forest to bring

pattari and makes mat (Gonair) from that *pattari*. After selling Gonair in Hatiya, she earns some money. He also helps his mother to bring *pattari*.

From this research, it seems that his family was backward in economic condition as well as in education. Before the school time, he was busy in works at home and in leisure time he was busy in playing football. His guardians were very careless about his study. He felt that mathematics was very hard subject. He did not complete his homework. Due to poverty, he was unable to take tuition class. When the researcher was in his house, he said, “I felt difficulties in learning mathematics because there were no other higher educated people to teach mathematics. He said, “Hum hisab nasamjhaichiyai (i.e. in English: I could not understand mathematics).”

Respondent -B

Respondent-B was seventeen years old girl studying in class-X. She was born at Jamuniya VDC-5 of Nawalparasi District. She has seven family members in her family. In her family she is the elder child of their parents. When researcher observed her house and family, he found that their economic condition to be very poor. The researcher found that as she is the eldest child of her family, she always engaged herself in household works. So, she did not enough time to do mathematics practices at home.

Her family's main source of income comes from the business of selling *Chatpate*. She was interested in study and she was interested in making *Chatpate*. She said, “Our economic condition is very poor.” She was laborious and curious student. She could not speak Nepali language fluently. She said, “I feel difficulty while writing and speaking Nepali language at school.” She does homework every day and attends the class regularly. She said, “I understand mathematics at class but I couldn't

remember for a long time.” She said, “Dalit student feel mathematics as a difficult subject due to various reasons such as lack of tuition opportunity, poor economic problems, lack of educated people at home, due to the traditional culture and poor language.”

Respondent-C

Respondent-C, one of the Dalit girl students, studying in class-X, is seventeen years old. She got third position in class-X. However, she likes Nepali and science subject but she does not like Mathematics and English. She is one of the talented students of that school and she takes participate in extracurricular activities. But due to her poor economic condition of her family, she did not spend more time in study. Also she doesn't practice mathematics problems at home due to lack of time. Her mother is housewife and her mother also works in the field of other person as a worker. Her father is a shoemaker so he lacks awareness to teach his children.

The researcher also found that she regularly participated in extracurricular activities in the school and most of time she own the first prize. The researcher also found that she was regular in taking class. However, sometimes, she missed the class because of her household works. She was also punctual in taking class. She wanted to try to do mathematics homework but she rarely completed mathematics problems because she did not have enough time to do homework.

Respondent-D

Respondent-D, a sixteen years old girl studying in Grade-X., was born in Jamuniya VDC-9, Nawalparasi District. As a member from joint family, she had eleven members in her family. She was elder daughter in her family. Her family's economic condition was not good. Her father was in India for earning money. Her

main work was to take care of her younger sister/brother when her elder male member went for their works. Her family was illiterate family.

She has been average in study and she showed some interest in her study but due to insufficient time, she could not practice math and do other homework. Mathematics teacher said, “She tries to do homework but commits mistakes while doing due to lack of guidance.” She has only the best friend her own caste. She said that her friends had already married. She was quite aged among her friends and due to that she felt quite uneasy with her classmates. Her mother said, “Due to joint family, she had little space to get adjusted and had to pay more attention to her to younger sister, who obstructed her study.” When the researcher observed the class, she rarely interacted in the class and shares her opinions with teachers. She said that teachers also did not pay attention to the girls students. Head teacher said, “Her parents don’t visit school and try to know about her education.” According to her mother, they were more conscious about her marriage rather than continuing her study.

Respondent-E

Respondent-E seventeen years old boy, one of the Dalit students of class- X. He was one of the top ten students of class-X. He had seven family members. His father did labor work mother was a housewife. Being the first child of his parents, sometimes his mother brought wood from Jamuniya forest and sold to earn some money. He also helped his mother to bring firewood, so he had not enough time to study but he is a laborious student. He labored hard. His favourite subject was mathematics but did not do much practice due to lack of time. His parents did not have any awareness to teach the children. The researcher found that there was no anxiety about their children's education. He did not want to make friendship with naughty children who didn’t read carefully and dropping out the school. According to

the schools register, he was often being absent. He said, "A Teacher behavior towards me is equality with other Non-Dalit student." I study only one hour in the evening, so that he has enough time to do more mathematics practices at home. Due to the household work he had no time to study at home. When the researcher observed the class, the researcher found most of the places fully captured by the upper caste student. He said that discrimination of untouchable prevails more in society and also in school. In society, upper caste children were not given chance to meet, play, eat and sit together with the lower castes by their parents

Causes of Difficulties Faced by Dalit Student in Learning mathematics

There were so many causes of difficulties faced by Dalit students in learning mathematics. These difficulties have been collected with the help of related literature, theory, interview with student, their parents and guardians, mathematics teacher and related document of schools. Such variables are described separately as follow:

Learning environment at home and school

Environment is the totality of the educational atmosphere in home and school. Home is regarded as the first school to all individual. They learn how to behave, how to respect elders, how to co-operate to each other. Home environment play a vital role in learning. Home environment refers the occupation, economic condition, and learning opportunity if the student at home. School is the second home of any child. The teachers, students and parents are the components of the school. School environment reflects believe and tradition of the school community delineating the relation among parents, students and teachers. Scholarship to the student, extra classes provided, dominance of language, and cultural dominance are the major aspects of school environment.

Dalit students use informal language in his/her family, low word (i.e., not standard vocabulary) but in school informal language is not suitable. But in schools standard vocabulary are used. In every house hold there is micro cultural which is discontinued in school culture. There is gap between silence culture and forward culture. Home environment is affected by everyday life of all individuals.

Culture is as the totality of socially transmitted behavior, patterns, arts, beliefs, institutions, and all other products of human work and thought as well as the total of inherited ideas, beliefs, values and knowledge which constitute the shared bases of social action. In a sense, culture is related to the development of the mentality, which people follow during their life in their learning activities. There are many cultural issues in teaching and learning mathematics in the context of Nepal.

“We don’t have basic thinks in our house, how long we go on this way. We are in difficult situation to survive. How can we send the children to school?”(Parent’s Views)

From the above view, it indicates that the economic status of family influence to the achievement of the student. The high economic can get better chances to buy books, copies, and take tuition and coaching classes. Mathematics needs more labor and effort than other subjects. Dalit student have not obtained such facility at home. One of the respondents expressed as;

“Our parents forced us to stay in the house and work, making mat (Gonaire), carrying firewood, Kharahi. They said making Gonaire is our main occupation. Parents said, "You engage in carrying patter and making Gonaire with it rather than going to school.”

The above view indicates that children of Dalit community had no sufficient time at home for practice. They have to be engaged to solve their economic problems. Mathematics needs more practice to achieve the good marks. Dalit children have not obtained such facilities.

Dalit students did not get support to learn mathematics. The researcher found that respondents A, B, C, D and E had to be engaged in household works. They did not have time to study at home. Due to these responses, they were always absent in school. Teachers didn't ask this type of student about their home environment. At home, they learned by observing and doing things side by side. But they didn't get chances as such in school. The everyday lives of Dalit student in home and school practice have been different. In school, they get theoretical knowledge like they have to use theorem to solve different problems. But they work in their home making *Gonaire, Patiyar, and using hand Ek Bita, Ek Hat, EkGaj etc.* Also they have to rely on traditional units (*Mana/Pathi, Paseri, Muthi, Bita etc.*) which is used everywhere in the society. These discontinuities between everyday life and school practice make Dalit students feel complicated on learning mathematics. So they felt difficulties to learn mathematics simple problems like LCM, HCF of algebraic function, word problems, multiply by minus sign, construction of angles, parallel line, parallelogram, triangle are main difficulties. Ogbu, (2001) theory argued that due to the cultural discontinuous between home and school Dalit student felt difficulties in learning mathematics. Due to some of the cultural discontinuities between home and school, the things have not been supportive for the learning mathematics for Dalit students.

The students leave their own family culture outside the school and enter the school that is different from their home culture. Because of this difference in the home and school culture, many students struggle to learn mathematics that is even

more decontextualized from their community and society. In Nepalese classrooms, these issues are the issue of inequity, inequality, gender issue, and the issue of native language, issues of ethnicity, and the issues of traditional curriculum. So, they are all cultural matters that are more or less linked with social and political aspects too.

Finally, researcher found that culture of Dalit at home and schools were unmatched. So, the Dalit students failed in mathematics. The home and school environment of Dalit students was not favorable for learning mathematics.

Parent Education and Economic Condition

Dalit are always kept far from opportunity by the state. Most of the Dalit people of parental generation are uneducated and their economic condition is poor. They could not fulfill the needs of family. Dalits are uneducated person due to the lack of knowledge. They do not know about the important of education. So they are engaged in farming and household works. As a result, their children are also engaged in the same works like *making Gaonaire, making shoes, mat etc.* It developed work, transmission from mother to daughter and father to son. This process is also help to transfer from generation to generation. Dalit children learn and develop away copy with situation and task and particularly method of civilizing style to the best situation. For the example, most of the Dalit student traditional measurement tools like *Ek hat, Ek bita, Ekgaj, etc.* in their house. In school, students used special or standard measurement tools like kilogram, gram, kilometer, centimeter, etc. measuring instruments like protector, scale, compass etc. There are discontinuities between traditional practices and modern practices. Hence, according to the theory of cultural discontinuities, there are discontinuities between, home and schools environment. So Dalit student felt difficulties in learning mathematics.

The researcher asked Dalit students' parents and head teacher on the topic, "How does parents' education and income affect their children's education?"

- *"I am illiterate and the children do their homework themselves at home."*
(Parents)
- *"We can't afford for the education because our income is low for fooding and clothing."* (Parents)
- *"Education has no special significance for daughter since they have to do the household works after marriage."* (Parents)
- *"I think this education would not play vital role in individual's learning. I expect my son could take some occupation as soon as possible by leaving school. It would be far better if he can join making shoe or any other works."* (Parents)
- *"We have to go to work to earn money for food, clothing and education."*
(Students)
- *"My parents can't afford to pay for school fee, tuition fee."* (Students)
- *"Dalit students have to earn pocket money themselves. So they focus on wage-earning jobs rather than study."* (Head Teacher)
- *"Dalit parents are often illiterate hence they don't show concern about their children's education. They don't take part in conference because of illiteracy. Parents' awareness about education of their children is the major factor to improve their children's study."*(Mathematics Teacher)

From the above views, the researcher found that the Dalit students failed in S.L.C. in mathematics because of the extreme poverty they faced in everyday life.

Most of the Dalit students have faced difficulties for hand-to-mouth problem. So, Dalit students didn't do their homework regularly. Due to lack of guidance of parents and sufficient time at home for mathematics practices, they became weak in mathematics.

Language

Language is the most of essential affecting factor for failure of Dalit students in mathematics. It is the great medium of human civilization which sets them apart from the other living beings. Language is a system of communication medium for thought. It is the major component for learning. When the researcher observed a class, it was found that there is language misunderstanding between teacher and Dalit students. Dalit student usually used informal (mother tongue) language but their teacher and friends didn't speak about it. The teacher and other students wanted Dalit students to speak formal respected language. Because of this cause, the relation between teacher and Dalit student and their friend has not been good. From the class observation, the researcher found that Dalit student are always silent in the class room. Then the researcher asked to Respondent-A, why do you often remind silent in the classroom? He replied, *"Hamra Napali bole naawala. Saro bolaichhi, padhaichhai ta naibujhichhhiyai."* Also he said, *"Our parents at home frequently speak Bhojpuri language but they don't use Nepali. So we must speak Maithili Language. We have no opportunity to learn Nepali language at home but in schoolteacher always teach us in Nepali language. If teacher taught us in Maithili language, it would be easier for us to understand the mathematics problems."*

"Dalit student have language problems they are not good speaker of Nepali correctly, they speak mixed language (Maithili language used in Nepali language), which creates difficulty in understanding Nepali Language in comparison to other

student. That causes they are failure in mathematics in S. L. C.” (Mathematics teacher)

The above responses it shows that, Dalit student used their own language at school and classroom but teacher used Nepali language at classroom. There is a language problem understanding the mathematical process and concepts for the Dalit students.

Episode

“In an observed class, mathematics teacher went to the class and then after the researcher also entered in the class, with him entire students stood up and said good morning Sir! The teacher also wished good morning and told them to sit down. It was noticed that the school environment has taught them about the respect for the teacher. There were seventy students in the class. Teacher took the attendance of the students. There were 45 students present on that day. Teacher said, “Open your book, please” and he wrote the topic indices. He wrote a problem on the black board and solved that. All the students were busy to write the solution from the blackboard. The teacher didn’t review the previous lesson a related topic for Indices and didn’t check the homework. After some time the teacher asked with the student, whether you understood the lesson or not. Some student said, “Yes Sir!” but one of the Dalit student asked with teacher in own language. Teacher didn’t understand his language and teacher asked him, “What do you mean?” and also said do not use your own language; it is school not your home. After this student, other Dalit students did not try to ask again about their problem. They got much depressed and sit on the bench. The teacher again repeated again the problems on the blackboard and situation was the same. Then the class is finished.

From the above classroom observation, the activities of mathematics teacher and Dalit students showed that, Dalit student use their own language in school and but teacher use Nepali language in classroom but teacher could not understand their language. There is language problem between teacher and Dalit students. It is the main problem for learning mathematics to Dalit student. This also matches with theory of discontinuity by Ogbu, (2001). Hence, it is concluded that language creates the difficulties in learning mathematics.

Teacher- Students Interactions

Interaction is a social activity. Interaction may be within person or a group. Within, interaction refers to the mental activity with his/her mind and soul. It depends upon the person intellectual capacity. Inter-individual interaction refers to the sharing, adjustment, and cooperation. The interaction between persons may be symbolic or code language. Interaction brings the maturity in learning. The way of teacher directly effect on the learning mathematics of the students- teacher behavior teaching methods practical application of the subject of teaching learning methods.

In these study teacher-students interaction means the relation of Dalit students with mathematics teachers, Head Master and other students of class. In observed class, researcher five key respondents were silent in the class. The researcher asked questions with them, “Why do you silent in class?” They simultaneously said we like to be silent Miss. In case of respondent-A is afraid of asking questions to teacher. He feels problems to ask question in the class due to his improper language that the teacher don’t understood and become angry. Dalit student were afraid of asking questions in the class. They felt difficulty to ask questions with the teacher due to language problems. It made to sit silence either they understand or not understand.

Episode

The teacher entered in to the class with the teaching materials and researcher also entered in the class with him. He had started to teach. He wrote the topic construction of 'Parallelograms standing on the same base and between the same parallel lines are equal in area'. He review the previous lesson on that they one of the researcher respondent asked question with the teacher from the previous lesson in their own language. "Sir, hum hishab naisamjhichiyai." Teacher said if you want to ask question to me, ask in Nepali language. Do not use your language. The student was quite serious. Teacher constructed a parallelogram on the black board using geometry box. Then, teacher asked some questions with other students. But Dalit students didn't get such opportunity in the class. They were sitting in the last bench and seem to be silent. He further constructs another parallelogram. Teacher asked with student, "Did you construct parallelogram?" One of the student said, "Nai Sir!" Teacher did not care him. The class was finished and the teacher gave homework for remaining questions.

From the above classroom activities, the researcher found that the Dalit student often remain silent, frustrated and hesitated to take part in learning activities because of the lack prerequisites knowledge of related chapter. The children generally were afraid of asking questions to the teacher. They felt problems to asked question in the class due to his language that the teacher didn't understand and became angry. Dalit student most often receive dominated behavior and have to cope with humiliating environment in the class only because of their poor Nepali Language proficiency. There is no proper communication with mathematics teacher and Dalit student in mathematics classroom. It shows that the culture of home also creates

difficulties for learning mathematics. So, interaction also plays vital role in learning mathematics, which creates difficulties.

Hence, according to the theory of cultural discontinuity, Ogbu (2000, 2001) argued that due to cultural discontinuity between home and school children face problems in learning mathematics.

Gender Discrimination

Nepal is patriarchal structure. It seems that women are not given equal position in the society by males and they are in continuous issue for the equal right. In Nepalese society, there is believed that son looks after parents in their old age and daughter for maintenance of household works. Due to these beliefs, sons are given and daughters are kept within the four walls of the house. Specially, Dalits face discrimination although son and daughter are uneducated.

The researcher found that in Dalit society there are great differences existing between son and daughter. They learn to do house hold works, to bring Pater is only for girls, they also think that it is only the task of the girls. Dalit women are forced to accept discrimination and differences. Dalit girls are forced to do household works, take care of small sister and brother because their mother has been doing it, so they have to do it. Their mother thinks that daughters mostly do household works. It is her duty to finish all the works of house.

"Education has no use especially in daughter's life since they have to do the household works after marriage". (Parent's View)

"I think this education is not for us. We are poor people and our children cannot read or write as other rich people children can do. It is enough if they know their simple calculation and simple reading and writing skill. Therefore, I expect

some occupation for our children as soon as possible without getting higher education. It would be better if they can join farming.” (Parent’s View)

“I think education has no great significance. So I don’t send our children to the school. Moreover, our girl children generally have to work indoor in our community. Another thing is that the girls are not allowed to do outdoor activities. There is an inborn concept about the girls that they should not be sent in the outdoor activities because they cannot do. So I think that girls would do only household activities outside the home.” (Parent’s View)

“According to the views of the Dalit parents, it is clear that the parents hold discriminatory attitude towards their daughter. They encourage their sons more than daughter for study. That is one of the causes behind difficulties faced by Dalit students in learning mathematics. But we never discriminate between boys and girls in school.”(Mathematics teacher)

From the above responses, there is psychological factor which has greatly contributed to the learning difficulties of Dalit students. The Dalit parents have been convinced that education cannot do any good to their children. This has prevented them from building up their confidence. This ultimately affects their children's performance level in mathematics. The social practices that encourage people to send the daughters to household to work and sons to playground are the outcomes of the systems that unequally ensure discrimination between sons and daughters. Even though this practice is prevalent in other communities in our society as well, it is rampant in Dalit community as they lack awareness have been suffering from extreme poverty. So, Dalit parents and guardians fail to motivationally encourage their daughters in learning process.

There is extreme form of illiteracy and ignorance in Dalit community. This has prevented them from changing their mindset. So, they have strictly followed and continued social practices. The sons get inheritance right to the paternal/maternal properties whereas daughters are considered as an 'object' for giving away to other people's houses for domestic work. Sons are regarded as important family supporter; on the other hand, daughters are regarded as the workers to be engaged in their husbands' home. Such behavior of parents creates much difficulty in learning process of mathematics for Dalit students. Although the parents give more importance to boys than the girls, they have not shown much interest for their son's study, which has caused difficulties in learning mathematics. On the whole, the parents think that their children cannot achieve anything such as getting job or any good work, which makes them feel that education holds no significance in their children's lives. The mathematics teacher remarked that even though the Dalit parents had discriminatory attitude towards Dalit and non-Dalit children and males and females, mathematics teachers treated every student equally and impartially in the school.

Irregularity

Irregularity is one of the main problems of Dalit students in learning mathematics. They are compelled to attend their school after the completion of their household works. The school is their second priority because their first priority is to manage food for survival. They have to be engaged in carrying firewood, *Patteri*, *Kharahi* from nearer forest and working at other houses. It shows that they are usually irregular in their school. From the data provided by the school, 5 Dalit students in mathematics were found as follows from the table:

Table-2: Attendance

Name of Respondents	Attendance Day (in a month)
Amit Sunar	10
Anuradha B.K	6
Anita Dom	7
Ram Kumar Harizan	9
Rajani Kumari Sharki	11

(Source: Jamuniya VDC-9, Nawalparasi.)

The above mention data present that their attendance in their school is measurable. It is concluded that their irregularity in schools is very high. Due to this, they feel difficulties in learning mathematics.

“I am not regular in the class at school due to household works. I can’t understand some lessons of the missed classes. Other causes behind not understanding the lesson is language. Due to these reasons, I can’t solve and complete assignment given to me in the school. There are many members at home but a few members are capable of earning. It is very difficult to survive in life. We have to face difficulty in buying books and copies. Then, I am afraid of getting punishment and give up the desire of going to school.” (Student)

“It is so difficult for each student to perform well due to their irregularity. Student should be engaged in exercise after the completion of basic knowledge. But due to their irregularity in the classes, we get confused whether to revise the lesson or initiate new exercise. Therefore, irregularity of students has also created problems and they can’t proceed forward in learning. Thus, Dalit students feel that mathematics is very hard subject” (Mathematics Teacher).

“There is great impact in learning mathematics because of their frequent absence; we made great effort to make them regular in the class but we could not succeed completely. The main reason behind is that Dalit parents are uneducated, lack positive concept towards education and poor economic condition are the factors which have played big role in the irregularity of the Dalit Students. After getting information about their daily life, I concluded that, their study can't be improved until they are regular.” (Head Teacher)

From the above responses of Dalit student and the head teacher, the researcher concludes that there is vast irregularity of the Dalit students in the classes. One of the reasons behind the difficulty is that students have not been punctual as they have to work for livelihood. The student said that as there are many family members in his family, it is very difficult to manage food for survival. This justifies that there is a great problem in learning mathematics. The study also shows that many Dalit students have lost their interest to go to school because of poverty. In this regard, the mathematics teacher also accepted the fact that the low economic condition, work load at home, language and fear of punishment from teacher caused the students' unpunctuality in the class at school. Therefore, such irregularities have created the great obstacles in learning mathematics. Similarly, the head teacher agreed with the mathematics teacher that unless the Dalit students were regular in the class, their performance would never improve.

Lack of Parental Involvement in the School

Respondents' parents did not frequently visit the school. They did not visit school in any functions and any time with any comments on teachers' side and their children's side about the educational materials. In a study by Keith and Keith, (1993), they found that family from all socio-economic levels should be involved with the

children's educations at home. However, families with of higher socio-economic status tended to be more involved at school.

An interview with head teacher revealed that respondent's parents rarely visited their children's school not even once a year and never tried to know about their educational status. Parents of one of the respondents spoke out outright that the school should be responsible for their children and parents further expressed that, they even don't know their teachers and even don't have enough time to allocate to visit the school due to socio-economic condition.

The parental involvement in the life of school turned out to be a positive influence upon people progress and development. Thesis included, help in class room and educational visit, attendance at meeting to discuss children progress (Poland and Bourne, 1994). The parental involvement in people's educational development within the home is also clearly beneficial. Parents who motivated their children to read and learn and provided them with extra material and books at home had positive effects upon their children's learning. Parents and teachers' meeting concluded in the school that lack of presence of Dalit student clearly signifies that teachers seemed less responsible towards Dalit student. The essence of maintaining reciprocal relationship among teacher and parents normally leads towards betterment in teaching learning procedure. But communication gap make teacher less accountable towards their responsibility. Concerning the learning opportunity for the children at school and at home, learning environment was not conducive for learning mathematics.

Studies have shown that parental involvement directly affects their children mathematics achievement (Sender and Sheldon, 2009, Yan and Lin, 2005). Students with parents are involved in their education are more likely to perform better in mathematics and achieve more than other students. Sirvani (2007) agrees with this

and claims that parental involvement contributes significantly to the achievement of both primary and secondary school students in mathematics. In addition, these students are more likely to continue further in mathematics (Sheldon, 2009). Yan and Lin, (2005) also claimed that the higher expectation parents have for their children more than children, the better results we have in mathematics achievement.

Lack of Belief and Support

Parental belief has a significant impact on student mathematics achievement and attitude towards mathematics (Fan and Chen, 2001, Aunola et al, 2003). Parental aspiration and parent's attitude toward mathematics have been identified as having a significant impact on students' participation in advance level mathematics and student achievement in mathematics.

Parents of respondents hold a dogmatic notion that will not pay and good for them and seem lacking confidence towards their children that they could do better in their future. One of the respondent's parents reveals that *“we have not noticed any individual from our caste doing good after completion of high school education. So, we prefer our children to do some household works such as farming, Gonaire making, labor works etc.”*

Although some of the respondents were found to be interested to go to work, they were frequently absent at school. Students think school learning can't support and improve their daily life. For example, one high school graduate candidate from Dalit community is not involved in any good occupation. So, the parents encourage children to engage their children in their own parental occupation like shoe making, *Gonaire* making, *Dalo* making and in labor activities. This dogmatic and traditional

thought leads the children to develop inferiority complex and it makes prone to them as lacking confidence in solving technical subject like mathematics.

Government and non-government agencies didn't provide scholarship to the respondents. They didn't get any financial supports and or other educational support and incentives from any agencies. While observing all this, the researcher found that school didn't have the provision to support students providing scholarship and boost their mortality. It is not only due to ignorance, but also due to annoyance, parents feel extra burden to provide school dress and educational material to their children and school has also overlooked such problems which has somehow deteriorated their mentally whether to continue their education or not. Resultantly, the students feel inferior among their peer groups and can't make progress in their education due to lack of concentration in subject matter. In this way, it is the next determining difficulty in learning mathematics for Dalit students.

Teaching Learning Process

Teaching learning process is the major factor in learning mathematics. Teacher's education, experiences and expertise determine the teachers' qualification. Mathematics is a practical subject. It can be solved by different process and techniques. The way the teacher directly makes effort on the mathematical teaching the student and teachers' behaviors, teaching method, practical application of the subject of teaching learning methods are various forms of teaching learning process.

The experienced teacher makes him/her student to understand things in simple and clear way. A trained teacher can attract and motivate the students towards the mathematics with the help of different teaching skills regarding teaching learning process. A trained teacher can use rightly and appropriately the teaching materials and

makes the teaching learning easy and interesting. As mathematics is practical subject, its use of teaching material is necessary in the study of this subject. If we can't use appropriate method, then the teaching learning process can't be effective in mathematics teaching. There are so many methods being used such as discovery, problem solving, discussion, experimental, etc.

When the researcher visited in the field, he found that the mathematics teacher has experienced for six years. There was no problem on the part of mathematics teacher. But there was problem of teaching materials because this school is situated in rural place.

"I often used student centered method as well as explained the problems steps by steps. But school has problems of availability of teaching materials. We have not sufficient teaching materials as we need. But our school usually promotes the student participation for teaching in the classroom."(Mathematics Teacher)

This statement shows that there are some problems regarding the use of appropriate methods, lack of teaching materials and teacher's knowledge of teaching methods.

Interest of learner influences the teaching learning strategies, achievement strategy and achievement of students. When man grows up and develops, the area of interest is being increasing. Interest depends upon the individual; some are interested in gains, some are in study, music, arts, literature, etc. If the students are interested in mathematics then he/she gives enough time to study mathematics and ultimately gets good achievement in this subject. But if the students regard mathematics as a hard subject, they can't solve the problems and they don't take more time for this subject.

“I feel mathematics is a hard subject because of lack of practice. I mostly do household works at least 4-5 hours per day.” (Student’s View)

“They believed that mathematics is a difficult subject. This belief prevented them from taking a general concept on the mathematics as a subject.” (Mathematics Teacher)

The interview with the students proves that even though the Dalit students told that their poor performance in mathematics has resulted due to lack of practice at home, it is the psychological fear which has really made mathematics a difficult subject. So, the mathematics agrees with this view that this fear has prevented the Dalit students from taking a simplistic or general view on the mathematics as a subject in the school.

Chapter-V

SUMMARY, FINDINGS, CONCLUSION AND RECOMMENDATION

This chapter deals with the summary, findings from the discussion of chapter and conclusions and recommendations for further study. In this chapter, it includes the summary of the entire research work.

Summary of the Study

A range of sources show that failure in mathematics is a problem not only in Nepal but in the world as low achievement in mathematics have created difficulties in teaching and learning.

This is a case study related to the causes of difficulties in learning mathematics of Dalit student at Grade-X in Nawalparasi District. The purpose of the study was to identify the causes of difficulties in learning mathematics. For this purpose, the specific objective is to analyze the background causes of learning difficulties faced by Dalit students in learning mathematics. The major tools used for this study were interview schedule, class observation form and related published and unpublished documents. The respondents of this study were Dalit student of Class-X, mathematics teacher, Head Teacher, and Parents.

Findings of the Study

From this case study, the causes of the difficulties faced by Dalit students in learning mathematics are found in the following major points:

- Dalit financial condition is not strong to send their children at school and afford them in their further education. Most of the parents are illiterate and their children are used as the means of earning money for their simple livelihood.

- Because of the economic condition and lack of positive concept about the education of their parents, the students are irregular in the school.
- There is a discriminatory behaviour between son and daughter.
- There is lack of interpersonal relation between Dalit student and mathematics teacher and other students in class.
- There is a discontinuity between practice of mathematical concept at home and school.
- Dalit students have used their mother tongue at home and Nepali language as the second language which is never used in his/her home. There is language discontinuity at home and in school.
- The school has not provided scholarship and financial aid to Dalit students who were economically and most talented.
- Lack of parents-teacher meeting is also another problem. There are highly qualified teachers but not aware about it.
- Home environment, language, economic condition, irregularity in the school and interpersonal relations are the major difficulties in learning mathematics of Dalit student.

Conclusion

Regarding the conclusion, the researcher derived from the field works in Shree Adarsh H. Secondary, Nawalparasi that Dalit students are very high in numbers in the school but very low numbers of students passed in the S. L.C. examination. Most of them failed in mathematics subject as they were mostly absent in the class. According

to mathematics teacher, Dalit students are poorer than other students in learning mathematics. From the study, the researcher draws the following conclusion:

- Language plays the vital role in learning mathematics. Due to the lack of proper understanding of the language, it has created the difficulties in learning mathematics.
- The culture also play vital role in learning mathematics. Due to unmatched culture at home and school, students' difficulty level has arisen in learning mathematics.
- The learning environments play vital role in better performance in learning mathematics. The lack of proper environment at school has created the difficulties in learning mathematics.
- The economic condition of the parents has been poor. In addition, there has not been favourable learning environment for students at home; and there has been no awareness program of parents. Students have not been provided any extra classes in the school.

Recommendations

Dalit parents don't take much interest in how their children are learning. They should be aware about improving the education of their children. To raise the mathematics achievement of Dalit student, different awareness and opportunity should be made available. This research is not complete research. There is limitation of this research. However, after the analysis and conclusion of the study, the research has made the following recommendations for further study to validate the findings of the present study:

- This study was done only in Aadarsha H. Secondary School Nawalparasi as a case. For the generalization of result of the study, similar study should be done in large samples.
- The study of these kinds should be conducted at all levels of schools and other subjects as well.
- Similar study can be carried out in private schools.
- Similar study can be carried out for different branches of mathematics.
- Similar study can be carried out in another special community.
- Similar study can be done on the causes of schools dropout problems of Dalit student.
- As this study has been conducted on learning difficulties in mathematics faced by Dalit students, it can be helpful to explore learning difficulties in other caste groups such as Tharu, Chepang, Rai etc.

Appendix-A

Observation Form for Children Participation in Learning in the Classroom

School:

Respondents' Attendance:

Date of Observation:

Topic/Sub topic:

Teachers' Activity	Attendance	Children's Participation Individually	Children's Participation in Group	Homework	Classwork	Observation Comment
1						
2						
3						
4						
5						
6						
7						
8						
9						
10						

The observation of the selected Dalit student was taken on the basis of following main topics and noted

- Friends behavior towards children
- Main area of interest in learning
- Teachers behavior towards the children
- Main interesting things in learning mathematics
- Main difficulty things in learning mathematics.

Appendix-B

Interview Guideline with Key Respondents

Name of Student:

Date:

Class:

Roll No. :

Age:

Gender:

Address:

Position in the class:

Name of School:

The interview with the Key respondents had been taken on the basis of following main topics:

- Family background and Culture/Language
- Personal history and Interest
- Reading opportunity at home
- View about the learning environment at school and home
- Interaction and discussion with classmates and teachers
- Homework and class work
- View about mathematics and teachers
- Causes of difficulties in learning mathematics
- Expectation with teacher, parents and school.

Appendix-C

Interview Guideline with Mathematics Teacher

Name:

Date:

Qualification:

Sex:

Experience:

Address:

Training:

Name of School:

The interview with the mathematics teacher had been taken on the basis of following main topics:

- Teaching strategies
- Problems on teaching Dalit Students
- Encouragement provided to the student learning
- Participation on the class
- Area of difficulties in learning mathematics
- Causes of difficulties in learning mathematics
- Effects of culture and language in learning mathematics
- Relation with students

Appendix-D

Interview Guideline with Head Teacher

Name:

Date:

Qualification:

Sex:

Experience:

Address:

Name of School:

Training

The interview with the Head Teacher had been taken based on following main topics:

- Learning environment in the school
- Students and teacher relation
- Students opportunity for learning with teacher
- Guidance/Training for mathematics teachers
- Difficulties things for Dalit Students at school
- Causes for difficulties in learning mathematics

Appendix-E

Interview Guideline with Parents

Name:

Date:

Age:

Duration:

Education Status:

Gender:

Address:

The interview with the parents of key respondents had been taken on the basis of following main topics:

- Economic condition
- Behavior towards child at home
- Environment at home for learning
- Child's interest
- Reading/Practicing opportunity at home
- Physical facility for learning
- Expectation from school

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