PARTICIPATION OF DALIT STUDENTS IN MATHEMATICS LEARNING

THESIS

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LETTER OF CERTIFICATE

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LETTER OF APPROVAL

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Purna Chandra Neupane

ABSTRACT

This study related to participation in mathematics of Dalits students in secondary school in Rukum district. The objectives of this study were to identify the participation of Dalit student's in mathematics learning, to find the major factors affecting the participation of Dalit students in mathematics learning. The design of this study was qualitative with case study approach. I selected the Dalit students of secondary level in Prabhat Higher Secondary School, Dopai Chhibang of Rukum district. I selected five Dalit students, respective their parents, one mathematics teacher and head teacher chosen for the study as sample and I have used purposive sampling. Class observation and interview were the main tools for the data collection process.

I visited the sample school and concerning the mathematics teacher, Dalit students and respective parents and head teacher. I found that the participation of Dalit students in mathematics learning is comparatively less than other students. Similarly, the factor affecting the participation of Dalit students in mathematics learning are poor economic condition of the family, negative social belief and tradition, household work load, cost of education, lack of motivation, psychological effect, distance of the school were the problems of participating the Dalit students in mathematics class.

To improve the learning capacity of Dalit students in mathematics, they should be motivated to be regular in school, necessary materials should be provided to them from the school, there should be discussion between Dalit students, parents and mathematics teacher about their student, there should be discount in tuition classes and hostel fee, there should be at least on Dalit teacher in each school. The economic help should be provided to them and the people who discriminate them should be discouraged.

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Chapter – I

INTRODUCTION

Background of the Study

Education is the foundation of human civilization. So, it has become possible to bring up this civilization up to this stage from barbaric stage. Education, in its sense, aims to transfer the ideas, skills, attitudes, 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).

Mathematics plays an important role for the development of science and technology as well as every human discipline. It helps people to understand and interpret very important quantitative and qualitative aspects of living and natural phenomena. In this modern age, understanding and interpreting every discipline, the stage of mathematics is essential. The importance of mathematics was related from primitive age people not only in modern age. The mathematics has been utilized to solve the difficulties arisen by natural calamities, political purpose, economic planning and other social events. In the ancient period, most of the mathematical structures, rules, formulae etc. were the outcomes of the empirical mathematics. But now, the empirical (practical) mathematics has been developed into abstract mathematics theory. "Oriental literature reveals that mathematics was originated from practical experiences (Eves 1982, p. 22). Without having the knowledge of mathematics now, it is very difficult to understand other disciplines such as chemistry, physics, social sciences, economics etc. Thus, mathematics is intimately involved in every movement of every one's life and every discipline of human civilization. It is accepted as the heritage of human civilization.

Till date, Dalit students cannot participate in mathematics because of lack of parent's education and poverty. So, I feel that all my memories and experiences have somehow motivated me to explore about the current experiences of dalit students with regard to their participation in mathematics. That's why I decided to conduct systematic study on the topic "Participation of Dalit Students in Mathematics Learning."

Socio-Cultural Status of Nepal

Several types of diversities exist in Nepal. Geographically, it is divided into three regions: mountain, hill and terai belts. The life style of people differs according to the different economical belts. Nepal is a multilingual, multiethnic and multicultural country. The remarkable numbers of the followers of the religions such as Hindu, Buddhism, Muslim, Christianity and the different religious beliefs are also living in the country that co-exist with harmony and religious tolerance. Based on the criteria of the division of labour and chrat specialization, the Lichhavi for the first time reinforced a stratified caste system among the Hindu of Kathmandu valley, which has been deeply rooted in the Nepalese society at present also. The division of caste system illustrated in the code of Manusmriti that gratified people into four major castes as Brahaman, Kshastriya, Vaishya, and Shudra (Bista, 1990: 43). Forcing their academic and security functions, the first two castes were considered as the lower caste people. Those people who had the job of ritual priest with a ritual purity were called as Brahamans. Similarly, the people who were working as administrators and ruling bodies were considered as Kshatriya. The people qualified as Vaishya and Sudra were those people who were actually working people with different trades and craft specialization. The trade people and craft specialization people such as the Damai (tailors), Dhobi (washer people) the Sarki (Cobblers tanners and Shoemakers)

the Kami (black smiths) and like people were gradefied as Sudra who during the Post Vedic Period were also considered as untouchable and impure for the upper castes people.

King Prithivi Narayan Shah, the founder king of modern Nepal also accepted the caste stratification in the society by announcing Nepal as the grades of four varna and thirty six castes. Since caste groups from and deform because of marriage, there might be the possibilities that were thirty six caste people only. Though it was the reality of the society, it helped to broaden up the ditch of caste hierarchy by making people aware of their caste, functions and limitations in the society which were allocated by the previous rules through the codes of conducts. Similarly, in the nineteenth century, the first Rana Prime Minsiter, Janga Bahadur Rana after taking over the power of the country tried to make the caste system strong by providing legal functions on it. This main interest was to raise his own status to the highest possible level so that he and his successors could rule the country for a long period of time by establishing the legitimacy of the Ranas over the resources, power and the country (Bista, 1990).

This caste system was initiated in order to fulfill the interest of the dominant high caste group of people particularly Brahmans and Kahstriya by legitimizing their upper caste position in the Nepalese society. The lower caste people termed as Sudra did not get any opportunity and advantage in becoming a part of caste system except accepting the position of untouchables that made disadvantaged forever. Its continuation is still prevailing in the society at present also whether it is declared illegal by law in the country (HMG/Nepal, 1999, 2000, 2001). Since the time immemorial, these lower caste people are being discriminated, humiliated and disadvantages socially, economically, culturally and politically in the society by the

upper caste people and the state in the name of untouchable and impurity to so called upper caste people (Bista, 1990).

Dalit Composition in Nepal

To define the term "Dalit" a Nepali dictionary called 'Brihat Nepali Shabdakosh' states, "Caste or group of people who are unable to get equal right, prestige and power in the society; exploited and disadvantaged caste or group of people due to unequal social system."

CERID (1997) has used the terms 'caste' and 'ethnic group' synonymously in regards to educationally disadvantaged group identification Oxford Advanced Learners' Dictionary defines the world ethnic as (a) involving a nation, race or tribal that has a common cultural tradition; ethnic minorities/groups/communities (b) (of a person) belonging to the specified country or area by birth of family history rather than nationality.

"Even five fingers of a hand are not equal; how can an individual be equal to others?" (Koirala, 1996: p, 17). 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 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

imply socially and religiously unacceptable actions translates into 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 census of 2001, the total population of Nepal was 23151423. The population of Dalit was 2945223, which is the (12.85%) of the total population of Nepal. According to census of 2011, the total population of Nepal is 26494504 and according to the report "poverty in Nepal" 2066/067 of CBS, the population of Dlait 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 Damia, kami, Sarki, and Gaine in the mountains, pode kasain, cheldar, chyame and Badi in Kathmandu, the capital ciety and Dum, Dhobi, Lohar, Mushar, Dushad, Kalwar, Chamar, 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 multilingual. These Dalits are settled in all the 75 districts of Nepal and are known as water-taboo caste (paninachalne) or untouchable (Achhut). There are both the paninachalne and acchut

group in Nepal. Achhut is a synomym of paninachalne groups. Kami, Daai, Sarki, Badi, Gaine, Sunar and many other castes belongs to this group of people. These castes, in the past were made on the basis of the function they carried out. Based on Hindu mythology, these Dalits belongs to the Sudra groups of the Hindu's varnashram system. Going back to the history of the Dalit 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 Dalit became an exclusive caste group.

Mostly of the 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 educational they give birth to a large number of children. So, the education parents take care of their child seriously rather than the literate and illiterate parents. Educationally, the Dalit people are still backward. Only a few people are educated in this community. So, most people are economically poor and they cannot send their children in School.

Dalit Composition in Rukum District

Rukum district which lies in the mid-western development region of Nepal totally lies in the hilly and mountain region. With the natural beauty of geographical diversity in Rukum district. Rukum is also called "the place of 52 lakes and 53 hills". All of them shyarputal is greatest lake of Rukum and Rukmini is a beautiful pond of Rukum district. There are many religious as well as beautiful tourists sites such as

Deker Sai Kumari temple, Godi Debta temple, Mt. Sisne, Shyarputal, Kamal tal, Sakha Daha, Deurali cave etc. Different people of different caste and ethnic group live in this district. Underprivileged castes like Kami, Sunar, Damai, Sarki, Tamata, etc are also the inhabitants of this district, caste discrimination is not totally eradicated so in many place of Rukum, it is still being practiced. In comparison it is practiced more in rural and underdeveloped places than in well facilitate areas. Illiteracy and lack of awareness are found to be the major reasons of this problem, caste discrimination still being practiced in this district. Though discrimination is not seen in the educational areas but the students and teachers are found actively involved in society. So, we cannot say that it does not hinder the development of education in Rukum district.

Dalit are scattered everywhere in Rukum. According to census of 2001, the total population of Rukum was 188438. But according to census of 2011, the total population of Rukum is 208567, the number of house is 41856 and population density in Rukum (person per square km) is 72. There are 399 schools in Rukum district where the total population of students is 99187 but Dalit students are 12396 and grade ten, the total Dalit students are 1033 in Rukum district. Prabhat higher secondary school, Chhibang Dopai are selected school for research and total students of this school are 720 where total Dalit students are 215 and non-Dalit students are 505. Total students of grade ten in this selected school are 85 where Dalit students are 18 (i.e. 10 boys and 8 girls) and non-Dalit students are 67.

Why Am I Interested in Conducting This Research?

Each research begins from dissatisfaction that a researcher encounters in the context of either practical or theoretical situations of his/her working place (Kothari, 2004, p. 24). Likewise, I also found some dissatisfactions regarding the same subject

area that ultimately provided me an impetus to conduct a research in this topic. Some experiences intensively hurt me and take place as motivational factors to choose this research topic.

Statement of the Problem

Out of twenty six million people, there are 125 different castes ethnic group. Among them, Dalit is one of the dominated communities of Nepal. In general, most of them are settled in rural areas because of their poverty. Many researcher shows that their educational achievement is not satisfactory, it is also true in mathematics. Therefore, I interested to find that what would be their children obtaining participation in mathematics.

In general, it can be seen that mathematic 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 mathematical concepts for performing their daily tasks 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 fat, 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. Questions like these occur to my mind so I am motivated to carry out this research on the topic "Participation of Dalit Students in Mathematics Learning". So, wanting to know the real fact about their actual level in mathematics, the researcher took up this research project along with the following research questions:

- How the Dalit students participate in learning mathematics?

- Why are the major factors affecting in participation of Dalits students in mathematics learning?

Objectives of the Study

The study was intended to accomplish the following objectives:

- To identify the participation of Dalit students in mathematics learning.
- To find the major factors affecting the participating of Dalit students in mathematics learning.

Significance of the Study

For the sake of the better life everyone should study mathematics and gain better achievement. For the better achievement these should be positive attitude from every aspect towards mathematics.

Legally, there are not any barriers of ethnic group in learning mathematics education. But due to the ethnic group and other environment affect participation of Dalit students in the mathematics education in Nepal. Research more familiar with Dalit society since he is living in the same Basti and getting good opportunity to observe their problem directly, the weakness of Dalit students that is seen in mathematics. Since, researcher self-involved in education sector he saw the lower achievement of Dalit students as compared to that of non-Dalit students. Hence, researcher wanted to know what the participation level of Dalit students is as these two words: participation and achievement are indeed, interrelated with each other and also achievement is affected by participation.

1. This study helps to identify the problems that might be seen in mathematics teaching and also to show the way to solve them.
2. This study helps to increasing the average participation developing the habit of discovering the problems related to the teaching process.

3. This study helps to motivate for encourage to the Dalit students to study the mathematics.
4. This study helps the researcher as well as parents to create better learning environment and awareness to provide reasonable education facilities.
5. This study helps to bring positive attitude in equal opportunity in learning mathematics.
6. This study provides the information will be helpful to understand the participating.
7. This research provides help the basis procedures for carrying out the researches in any other field or level.

Delimitation of the Study

The study was conducted within the following delimitations.

1. The study was conducted only for the subject of mathematics.
2. This study was limited only among secondary school level students.
3. This study was limited only Dalit students.

Operational Definitions of the Terms

Dalit: According to Nepali dictionary, "Caste or group of people who are unable to get equal rights prestige, proud in the society, exploited and disadvantage caste or group of people due to unequal social system. Person or group of people who are socially, economically, culturally and politically disadvantaged (i.e. paninachalne jaat). is known as Dalit.

Participation: Participation in this study defines in term of class attendance, class room interaction (with teachers and other students) and extra activities (like homework, class work, class test etc.) of Dalits students in secondary school.

Secondary School: The school based on the class one to 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.

Factors: The term factor is defined as one of the thing that influences something. But here the terms factors indicates detrimental thing on students.

Chapter II

REVIEW OF RELATED LITERATURE

Every significant study is firmly based on relevant thinking and research that has already done. A researcher must have deeply knowledge of already established theories and researchers, which closely related to the problem, chose by him/her. Below are some of the reviews of these studies which are relevant the present study.

Empirical Review

Thapa (2001) did a research entitled, "Learning Strategy for out of School Children from Dalti Community." His main target in this research was to find out the learning skills and ways of learning the daily 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 to every life of the children and their ways of learning.

K.C. (2001) has conducted a research on the topic, "A Comparative Study of Achievement in Mathematics of Primary Level Student of Chhetri, Tharu and Kami Castes in Surkhet District." The main objective of this study was: To compare the mathematics achievement of the primary school going pupils of Chhetri, Tharu and Kami Communities of the district of Surkeht. For the data collection, the researcher

developed an observation form and a set questionnaire. For the collection of data, the researcher visited sample person which by random sampling. This study is quantitative in nature and the conclusion of the study was: Chhetri student achievement significantly higher than Tharu and Kami students in the district level achievement test. There is no significant different in the achievement of Tharu and Kami although Tharu and Kami students mean achievement was found to be higher than those of Kami, Chhetri and Kami students are found scattered through many parts of district where as Tharu students remain confined within certain school.

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 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 sex. Social factor such as discrimination behavior, economic condition, lack of time for hard labor are responsible for making lower participation of female in the study of mathematics.

Paudel (2005) studied, "Learning Strategies of Mathematical Concepts of out of School." His main target in this research was to findout the learning skills and way 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 of Tanahun district and studies the four children of Kami and Sarki caste. He selected two children in

each caste and studied briefly about these children how they are learning mathematics. From this study researcher found that non-schooling children from Dalit caste learned mathematic through their everyday life in different ways. They learned by looking other 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, from works, labor work, playing and other activities. Some mathematical knowledge was acquired traditionally imitation observation, active participation and so on.

Basel (2007) has concluded on the topic, "The Relation of Socio-Economic Status in Mathematics Achievement of Dalit Students at Primary Level." The main objectives of this research were to find the socio-economic status and mathematics achievement of Dalit students, and to determine the correlation between socio-economic status and mathematics achievement of Dlait students. The researcher used to the tools for data collection was questionnaire and observation. The researcher selected ten primary schools by purposive sampling. For the collection of data the researcher used to table and bar diagram which analyzed statistically mean. S.D. and Correlation Coefficient. The conclusions of the study were: the mean score of educated father's children in higher than the mean score of uneducated father's children. The mean score of service holder father's children is the higher score than other) agricultural, trade caste specific). The mean score of small family size children obtain the higher score than middle and large family size childrens scores. The variable father's education, father's occupation and family income were positive correlated each other but negatively correlated with family structure and family size.

Based on Dalit National Forum (DNF) Annual Report, Dalits are being exploited everywhere in every sphere of life, such as exclusion from temples, public

drinking water system, employment, education and other opportunities. Majority of Dalits themselves are still unknown of constitutional provision and unaware of their fundamental rights because they are illiterate, poor and discriminate in every sphere of life by the upper caste people. Government too has not fully implemented any of the programs against caste discrimination and unsociability declared till now.

Dhakal (2008) has conducted on the topic "Mathematics achievement of Grade VI students in Kavre District." The objectives of this study were find out the mathematics achievement and to compare the mathematic achievement of students studying institutional and public school. For the data collection, the research developed a form of table and set of questionnaire then the researcher visited sample schools which were selected by random sampling. The researcher used to the table which is analyzed statistically in term of mean, S.D. 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 and boy students are almost same.

Theoretical Review

There are so many theories which can be used to understand the participation in mathematics of Dalit students in secondary level such as sociological theories, learning theories, cultural theories, everyday life theories and cultural difference and discontinuity theory, human capital theory, social constructivist theory and so on. So, for the analysis and interpretation of data I used different theories which are described briefly below:

Human Capital Theory

When discuss about the education attainment of the poor children of developing countries I feel that human capital theory would be appropriate tool to guide for my research. Treena Wu (2010) has used this concept to analyze the constraining factors to human capital investment in the context of Indonesia over the period 1977 to 2000. She tries to show how family income and physical facilities works as constraining factors for the investment in education among poor people, for the context of my research I would like to see how family status of income work as constraint factor for human capital.

The origin of human capital theory goes back to the classical theory of economy. But theorist like Garys. Becker (1964 and 1993 updated). Ted Schultz (1961) has forwarded the recent concept the human capital. Backer presented human capital at stock or knowledge that is directly useful in the production process. The knowledge and skill, virtue that people gain from education, training medical care etc. are regarded as human capital which cannot be separated from human (owner) like physical and financial capital (Backer, 1993). The concept of human capital refers to investment in education by family and state with the exception from future earning and productivity it also present the link between birth rates and investment in education and training and how family influences the human capital of their children and the relation between investment in human capital and economic process (Backer, 1993 updated). He further said that earlier human capital theory has been motivated partly by a desire to evaluate proposals to improve the quality of the work force through schooling, training, medical service and child care. It main purpose, according to him, is tore move a little of the mystery from the economic and social world that we live in (Backer, 1993).

Recently, the growing importance of human capital theory is to analyze the social function especially in relation to education and development of human capital among different societies. As Treena Wu (2010) has described there is family investment in education developing countries in much lesser that developed countries and she points towards the two basic construing to human capital one is resource construing and monetary constrains.

Cultural Difference and Discontinuity Theories

According to Ogbu (2000), autonomous minorities are memories in number, they do not have the problems of cultural differences and langue since they have similar culture and language to the minority. Voluntary minorities are people who have migrated voluntarily expecting a better life, opportunity and more political freedom in any other society. They usually encounter the problems in the school mainly due to cultural and language differences. Involuntry minorities are found as cate like minorities who were forceful brought any other society against their will for slavery or forced labor in the time of colonization. However, he developed the theory of cultural differences on the case of the US, it might have implication to this study that is related to participation in mathematics of Dalit students of Chapang who are also memories, discrimination and domination. He argues that the gap between the minority children who are socially and culturally disadvantaged.

Ogbu (2001) furthermore argues that discontinuity also occurs in the area of language, thought and measurement. It happens mainly due to the difference in the home/community which is informal education and the style used in school is formal education. In case of Nepal, schools are also influenced by western schooling system as a consequence of donor network, modernization and globalization reposes. Ogbu emphasized that though schools are established for the purpose of helping children in their personal development and modernization of nation. There is no doubt in disrupting the transmission of the radiation culture of people. It is mainly due to the alienation of curricular content to the existing culture of people and very little or no reinforcement in the home and community that results isolation of school from the cultural system it is supposed to serve. In addition to this, the way/style of teaching/learning in school is also problematic because of its formal and unpredicted

nature as it occurs only in rigid and ritualistic manner that does not ensure hearing of children.

Constructivism

Constructivism is a theory of knowledge that argues humans generate knowledge and meaning from an interaction between their experiences and their ideas. During infancy, it was an interaction between human experiences and their reflexes or behavior-patterns.

Learning means the relatively permanent change in behavior, which occurs as a reinforced practice. It considers both physical and mental process. Behavioristic mentioned that learning is the interaction between human being and external environment. They take learning as stimulus response process. If response to the stimulus is reinforced or rewarded then a kind of habit is informed. The cognitivist mentions that learning is an innate capacity of human being.

These scholars believe that each and every child learns from society through social interaction with family and environment knowledge can be constructed through the active participation. This new thought is given by constructivism following the theories, actions, reflection and socialization.

The constructivism theory is based on observation and scientific study about how people learn. People construct their own understanding and knowledge, through experiencing things and reflecting on those experiences. In general case, it usually means encouraging students to use active technique (experiment problem solving) to create more knowledge and then to reflect and talk about where they are doing and had their understanding is changing. Constructivism transforms the students from a passive receipting of information to active participant in learning process. Constructivism categorizes students on its three axioms that are follows:

(i) Learners learn knowledge from their active participation.

(ii) Learners gain knowledge while reflecting on their own action.

(iii) Learners gain knowledge when they try to convey their solution to others.

Vygotskian Social Constructivism Theory

Constructivism is the new theory. Vygotsky has developed socio-cultural theory and he believed that children are active seeker of knowledge. In this theory, rich social and cultural context deeply affect children's cognition knowledge is constructed in social situation of discussions rather than being the reflection of the objective reality, which is known as social constructivism. In social constructivism theory, each human being makes sense of the world in a unique way. According to Vygostsky, the children's development can be understood by studying the individual that it needs to examine the external world. Child can capture every kinds of information which is needed from the context to construct the knowledge. The role of experienced person is to assist the child providing the structure and questions that provide the assembly of the information and organizations.

According to social constructivist, Vygotsky knowledge is constructed in two ways in the social situation. Firstly, social interactions influence on the nature of knowledge that is constructed and process of individual use to construct the knowledge. Thus, the constructions are socially centered and involve process of understanding, constructing meaning and making sense, children construct knowledge not only from individual but also from the context and the interaction with others who have more knowledge. The child needs some mediator like parents, teachers, adults or peer to uplift his knowledge from the knowledge s/he has.

Thus, Vygotsky proposes that child's knowledge could be predicted if we could understand a social context. Thus, Vygotsky's child is a social, outer culturally determined child.

Brenstein's Language Code Theory

Basil Bernstein made a significant contribution on the study of communication with its sociolinguistic theory of language codes. Within the boarder category of language, codes are elaborated and restricted. The term code and defines by Stephen Littlejohn (2002). "Code to a set of organizing principles behind the language employed by members of a social group" (p 278). That is to say that the way language used within a particular societal class affects the way people assign significance and meaning to the things about which they are speaking.

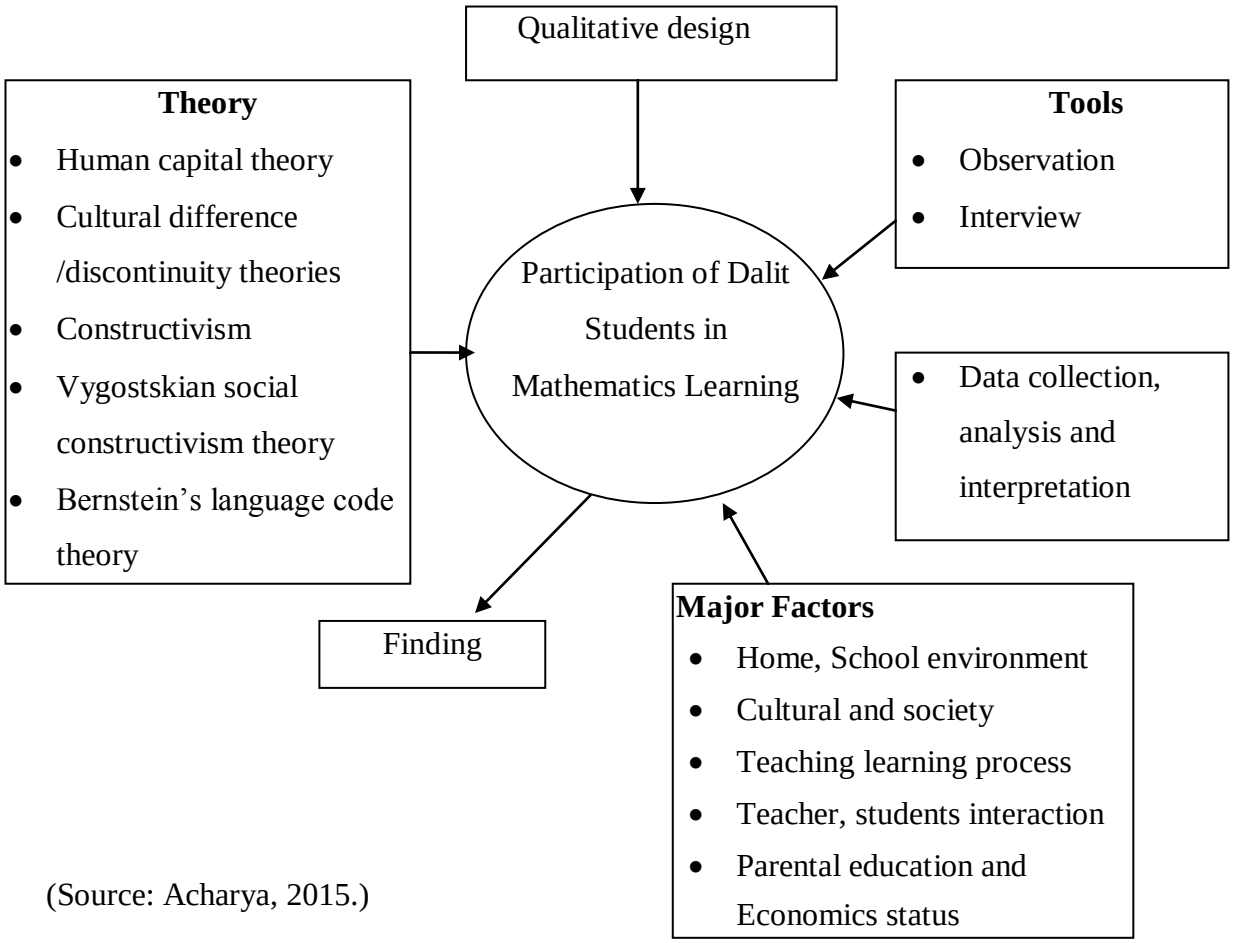
Filling the Gap

As I know that very few researches have been carried out on the Participation of Dalit Students in Mathematics Learning in the qualitative paradigm. I studied many previous research works. They have not discussed in this area. I found the gap between the reviewed literature and my purpose title of study. Thus, to fulfill the gap, I would like to study on this topic. So I believed the topics for the dissertation is suitable for carrying out a research.

Conceptual Framework

The conceptual framework devised through the literature studies facilitated to attain research objectives, get the answer of the research question and carryout the research work as a whole smoothly (Acharya, 2015). I have developed a conceptual framework for the study which is given below:

Fig. 1: Conceptual Framework



(Source: Acharya, 2015.)

The conceptual framework which mention in above figure is the important part of this study. Participation of Dalit Students in Mathematics Learning is issue of this study. I applied the qualitative research design. Different theories i.e. Human capital theory, Cultural discontinuity/difference theories, Constructivism theory, Vygotskian social constructivism theory and Bernstein's language code theory had used to interpret the data. This study was centered to explore the way of addressing the participation of Dalit students in mathematics. Data collection, analysis and interpretation process had done by the help of different theories mention in theoretical literature.

Chapter III

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 (Acharya, 2015).

Design of the Study

Research design can be divided into fixed and flexible research design (Robson, 1993). Others have referred to this distinction with 'quantitative research designs' and 'qualitative research designs'. The research design of this study is qualitative in nature. To identify the participation of Dalit students in mathematics, the research incorporated qualitative approach. Qualitative research can be regarded as 'naturalistic inquiry' in a sense that it is concerned in natural setting by trying to avoid any intentional manipulation and distortion of the environment of the informants by researcher.

Qualitative research involved the studies and collection of a variety of empirical materials, case study and personal experiences, life history, interview, observation, instructional and visual texts that descried routine and problematic moment and meaning in individual's lives are its tools for data collection. Qualitative research is a form of inquiry that explores phenomena in their natural settings and uses multi-methods to interpret, understand, explain and bring meaning to them. These data and information are collected through using tools such as observation and interviews.

Study Site

My study related to the participation of Dalit student in mathematics learning, the site selection is also a very important task in order to find the appropriate information. The selection of the research sites is mainly based in my previous knowledge about the research area. So, I chosen Prabhat higher secondary school, Chhibang, Dopai Rukum is the study site of my study.

Sampling of the Study

This is the qualitative research. In qualitative research mainly used purposive sampling quota sampling and snow ball sampling, in my study, I used purposive sampling.

Sample of the Study

This is qualitative inquiry. So, the sample size in this study is small. According to Anderson, (et al.) there are no rules for sample size in qualitative research (Anderson et al, 2001). Qualitative inquiry typically focus in depth relatively small samples, even single case (n=1) can be selected purposefully. So, the sample size of this inquiry depends upon the researcher what he/she want to know, what is the purpose of inquiry, what can be the credibility of the study, and what can be done with available time and resources. So, the respondent of this study were 5 Dalit students, their parents, one mathematics teacher and head teacher.

Research Tools

One of the most important parts 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 is the act of watching somebody or something carefully for a period of time, especially to learn something (Hornby, 2000). The observation was also necessary to fulfill the objective of the study. So, the researcher used observation form to collect necessary information to find out the participation level of selected Dalit students in which observation form contains homework, grade work, grade test, interaction level (with teacher and other students) of these students. So, observation form helped to measure the participation level of selected students.

Interview Guidelines

Karlinger (1986) describes, interview as "a face to face interpersonal role situation in which one person, the interview, ask person being interviewed, the respondents, and questions designed to obtain answers suitable to the purpose of the research problem. This approach was one of the best known to collect data in a short time.

For the research study, all the required information was not possible together through by questionnaire and observation. To clarify the information or to go depth of the information, interviews were much more helpful. So, the researcher used to this tool as required to the selected Dalit students, subject teacher and head teacher.

Quality Standard

After completing the construction of the research tools, it is necessary to maintain quality standard. For quality standard prolong field stayed, member checking and triangulation have been applied in my research.

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 behaviour, 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 schedule and questionnaire, the in-depth interview would be taken with focus children, mathematics, head teacher and respondent's parents. The interaction with the above respondents would be carefully listened and noted properly. The schools attendance, regularity and other behaviour or activities was noted from school record.

Data Analysis Procedure

This study was based on qualitative approach. The collected data would be analyzed with the help of different theories and literature given in the literature review section. Data analysis of the study was deal with the help to collect information or data and documents from data collection procedure. I took an interview to find factor affecting participation in mathematics of Dalit students. Researchers pointed out in Nepali during interview or easier and translate in English. He obtained many views form interview on the basis of that factors affecting participation in mathematics of Dalit students.

The information was collected from theoretical framework, class observation, interview and school documents were summarized into the categorical form. Among theoretical framework, I used classroom observation, interview schedule. The selected views and themes were analysis as first in the different aspects of the classroom practices that was determined on the basis of related theories and literature.

Chapter-IV

ANALYSIS AND INTERPRETATION

This is a qualitative study related to the "Participation of Dalit Students in Mathematics Learning". The research was conducted at Prabhat higher secondary school, Chhibang Dopai, Rukum related upon five Dalit students. The main objectives of this study were to identify the participation of Dalit students in mathematics learning and to find factors affecting the participating of Dalit students in mathematics learning. The main tools asked from this study were observation form interview paper and related published and unpublished school documents. The main respondents of this study were five selected Dalit students, their parents, mathematics grade teacher and head teacher of the related school. This chapter includes the analysis and interpretation of the information obtained from the study. The data obtained of the study are presented in terms of following topics personal details of respondents.

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 (2070)			Grade x (2071)			
	School opening days	Students attendance days	Student attendance percents	School opening days	Student attendance days	Student attendance percents	Participation level
A	186	140	75.27	190	145	76.32	4
B	186	101	57.30	190	104	54.74	3
C	186	129	69.35	190	123	64.74	4
D	186	88	47.31	190	94	49.47	3
E	186	100	53.76	190	105	55.26	3

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' shows that out of 186 school opening days of grade ix in 2070, the attendance days of Dalit students A, B, C, D and E have 140, 101, 129, 88 and 100 respectively and out of 190 school opening days of grade x in 2071, the attendance days of Dalit students A, B, C, D and E have, 145, 104, 123, 94 and 105 respectively attendance percentage of student. A has 75.27% in grade ix and 76.32% in grade x, B has 54.30% in grade ix and 54.74% in grade x, C has 69.35% in grade ix and 64.74% in grade x, D has 47.31% in grade ix and 49.47% in grade x and E has 53.76% in grade ix and 55.26% in grade x. From the attendance percent of ix and , research find out participation level of A has 4, which is good, B has 3 which is normal C has 4 which is good, D has 3 which is normal and E has 3 which is also normal.

Analysis of Student's Classroom Interaction According to Grade Room Observation:

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

Table 2: Interaction position of Dalit students

S.N	Interaction position with teacher	Interaction position with other students	Participation level (in average)
A	3	4	3.5
B	2	3	2.5
C	3	4	3.5
D	3	3	3
E	2	4	3

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 3 which is also normal and E has 2 which is poor 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 and E has 3 which is also normal position in participation level. In average A has 3.5, B has 2.5, C has 3.5, D has 3 and E has also 3. The result of table 2 show that the participation level of A and C was satisfactory and participation level of B, D and E were not satisfactory.

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

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

Table: 3 Extra Activities Level of Dalit Students

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	3	2.67
E	4	3	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 and E has 4 which is good. The participation levels in C/W of selected Dalit students are: A has 3 which is normal, B has 3, D has 2 which is poor and E has 3 which is normal. So on participation levels in C/T of selected Dalit students 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 and E has 2 which is poor. In average the participation levels of A has 3.33 which is normal, B has 3 which is normal, C has 3.67 which is good, D has 2.67 which is normal and E has 3 which is also normal.

Analysis the Participation in Mathematics of Dalit Students According to Interview Paper:

Respondent A

Respondent A was Ritu Kalel 16 year's old girl studying in grade x. she was born at Chhibang V.D.C ward no. 6 Jhimdanda of Rukum district. Nowadays, she lived on the same place at where she was born. There were 8 members in her family. All family followed Hindu religion. Her father Krishna Kalel and mother Sundari Kalel both are simply literate. Their occupation is farming as well as labouring. In her family she has got two younger sister and one younger brother, grandfather, grandmother and parents. Her family used Nepalese language at home. They do not have to land for farming. She is interested in her study but due to the lack of her economic condition of family she has to all the house hold works because her father and mother are busy to earn money around the village area.

About her study, her grandfather told;

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

About the own study Ritu said;

"Main occupation of my family is farming. I am busy every time in household work, so I could not give sufficient time for the mathematics learning at home. I couldn't understand the mathematics problems and I felt very difficult in learning mathematics."

From the above view of parents and students I concluded that she had no time to do homework. She was investing her maximum time to do household work. Her family members are not educated to give feedback for her further study.

Vygotask'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 B

Respondent B is Dipsika Kalel of 15 year's old girl studying at grade x. she was born at Chhibang V.D.C ward no-6 Jhimdanda of Rukum. Her family is joint family with 8 members. Her parents are farmer, so their income depends upon farming. She has two younger brothers and one elder brother. Elder brother is studied up to grade xii; younger brothers are on grade vii and grade iii. Her father's name is Ram Bahadur Kalel mother is Maya Kalel. Her father is literate but mother is illiterate. Her house is small without sufficient room. Parents are unable to manage the physical facilities that they need. She said,

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

She does not like to do household work 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 teachers' behaviour was not different for her and 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, except 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 problem 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 are economically and educationally backward, which plays the main role of low participation in mathematics classroom.

Respondent C

Respondent C was Tika Dadel of 17 years old girl studying in grade x. She was living with her parent's two younger brothers and two younger sisters. She was living at Chhibang V.D.C. ward no. 3 Gotkhola of Ruku, district. Her family speaks Nepalese language. Her father is Ramesh Dadel and mother is Dhana Dadel. 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 India. The distance between her house and school approximately 3 km. she goes to school by walking. 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 girls."*

After returning from school Tika gets engaged in household works. 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 felling difficulties in learning mathematics."

About her study Tika father said:

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

According to these views, researcher concludes that the lack of education of parents affects the educational status of their children. The role of teacher in learning process is not sufficient, the parent's awareness, their education, way of handling and guiding the family members are 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.

Respondent D

Tilsara Dadel is one of the Dalit girl students of Shree Prabhat Higher secondary School in grade x. She was 16 years old. In her family there were five members with one sister, one brother rand parents. She is eldest children of her parents. In comparison which other Dalit family her family seems to be small. Her father's name was Shyam Dadel and mother was Sharada Dadel. Her family speaks the Nepalese language. Her family engaged in agricultural works. The distance

between her house and school is nearly two kilometer. She goes to school by walking. They followed Hindu religion. Her family does not have the sufficient land but they farmed in landlords' farms. They are very poor so they have difficulties to manage daily life. Her father Shyam was skillful farmer for making halo, juwa, kuto, kodalo etc. instrument of agriculture. Her mother Sharada is housewife. She was illiterate. She was laborious in working the field. But she has not awareness about the education of her children. Tilsara said she did not like to go to school. I asked with her. *"Why you did not interest 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 providing special scholarship for the Dalit students which help her to manage the stationeries. About the difficulties of learning mathematics, Tilsara told:

"There are so many difficulties in learning mathematics. I have got more difficulties in geometry, menstruation and arithmetic." This is because of lack of study time, poor economic condition, friendship of bad society etc.

Above this argue teacher is passive in teaching learning process. He always use tradition method to teaching. Teacher doesn't familiar with Dalit students. So Dalit students were afraid to asked question with him.

Vygotsky, (1978) stats that "teacher should always encourage to develop ZPD in classroom. He also said that left the students free in classroom to gain new knowledge, students create solve their problem by their own activities.

Respondent E

He is a 17 years old boy student grade x. His house is located at Chhibang Gotkhola, Rukum and it takes 15 minutes to go to the school. There are six members in his family and they all followed the Hindu religion. In comparision with other Dalit family, his family seemed small his father is labour in work in other field works. His mother is seemed busy in household work as a house wife and she is also illiterate. Social is his favourite subject. His hobby is to play volleyball and his aim in life is to be a good volleyball player. He is known as a good student of the class but the teacher said; *he is restless he has talked in the class while the teacher is teaching. He usually ask the question to the teacher unhesitating when he faced the problem.*

While observing the mathematics class, I have shown that he has always presented his homework and immediately solved the mathematical problem 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 seem satisfied with the school environment. He always respects teacher and staff of school beacuse he thought that they has provided the opportunity to get the equal education to all thought that knowledge of mathematics should be applied to the day life. So, he is interest 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 parent's his, the best students among Dalit student is intelligent in mathematics because of his good home environment he could succeed in mathematics.

Major Factors Affecting the Participation of Dalit Students in Mathematics Learning

Factors that discourage the students from learning mathematics can be related to school environment or their home 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 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, mathematical issues and concepts. The challenges of mathematics learning for today's education are that it requires disciplined study, concentration and motivation. To meet these challenges, learners must be focused and motivated to progress."

Supporting these views, the head teacher says;

"The teachers' 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. This is 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 destroyed the creativity, which must be realized. Many students who are weak in 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. School environment need to maintain suitably according to the philosophy of 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 affects 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 the people in Nepal still lie below the poverty boarder line. They do not able to fulfill their basic needs and their capacity runs far form them. Such condition destroy the family background, consequently the poor children become servant for rich family. They do not get the opportunity 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 teacher, observation and related documents of school it was assumed that there were different factor at teaching the participation of Dalit students in mathematics. Such variables are described separately as follows:

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 teachers 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, human capital theory, cultural differences and discontinuity theory, Bernstein Language code theory of which constructivism. 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 "Participation 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. I analyzed suitable solution in the class of low participation in mathematics. States that knowledge construction is both a social and cognitive process.

When I asked with the students the question "How is your interest in mathematics?" Most of the respondents had taken subjects a most difficult subject in comparison with the other subject 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 I tried to know the method of teaching of the teachers, the responses from the respondent teachers were as follows:

"I use student centered method as well as explain the problem 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, it was 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 I encounter something, our mind perceives the things and reconcile with previous ideas which has already existed or reconciled with preexist 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 gave not enough time to practice at home. They are irregular in class. Their irregularity makes more difficult to pass in mathematics. They couldn't tuition and coaching class." (Teacher)

According to mathematics teacher, because of the poverty, they couldn't invest money for tuition and coaching, lack of interest the mathematics subject, lack of time of practice in mathematics. From the above responses, Dalit students are irregular so they feel each problem hard as they are not interested in mathematics. Their participation in mathematics was in low.

The observation and interview taken from students and teacher, it was found that most of the Dalit students used to 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 behaviour 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. It not, they are weak in learning. The response obtained from the researcher to the question "How do the peer groups behave you?" was as following:

"Some of them help us and some of them 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 do not discriminate them and help them to learn. But other students hate them in the school and in the home also. There is discrimination between Dalit and other till now.

From the above discussion, I 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 participation in mathematics classes.

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.

Parental Education and 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 imitated the same behaviour. If parents have bad behaviour and are illiterate, their children learn that behaviour from parents, elder brothers and sisters. Hence, the poor parent education is another factor affecting the participation in mathematics of Dalit students. In this regards, Respondent C said that;

"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 shows that most of the Dalit parents are illiterate. Dalit parents can't guide their children at home due to the lack of education. Dalit parents are engaged on different works. The involvement of parents in their children's learning is negligible. Parents' educational level has been most effective factor in academic achievement. Parents serve as a role model and a guide in encouraging their children to pursue high educational goals and desires. By establishing the educational resources on hand in the home and holding particular attitudes and values towards

their children's learning. Researcher asked to a respondent about her families' 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 was no well-educated person that would help 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 had less it high school education obtained lower grade in mathematics than those whose parents had higher level of education.

Over Aged and Early Marriage

The girls coming from the Dalit community were found over aged rather than other caste students. The main cause 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 classmates. So, I feel heisted 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 do not come in school regularly due to their household works. They are not provided with conductive environment for their effective learning due to which they feel 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;

"Dalit 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 question with me."

The above view stated by mathematics teacher clarify that admission of Dalit students in school is 1highly 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 discontentedness in school, the student feels frustration and humiliation to ask the problem. At school most of their friends are in lower age in comparison to them. School does not emphasize their family problem. So, they feel 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. Obgus (2000) argued that the difference in culture at home and school arises the low participation in mathematics classroom.

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

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 follows:

"I have to help my parents in 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 hamper their study. They have 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 do not participation mathematics period.

The parents were asked some question 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 school and work at home with us for daily life." *(Parents)*

"Nowadays 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 response it can be said that most of the parents are aware for their children's education. They think education makes life easy. At last it can be said that the Dalit are also aware for their children's education.

When the parents were asked "how does a parent income affect their 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."

From the above response I found that most of the parents have difficulty to conduct their home. They have not enough income sources for good education. It can be said that income of the family effect the performance level 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 in 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 response it is found that there is not 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 is crowed and quirellism 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 can't provide learning opportunity in home but they didn't base on the basis of son and daughter.

School Environment

The school environment play the important role to decide 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 in time in the school.

In educational field there are libraries, game compound of the school, toilet, blocks, and drinking water only the text book 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 football and volley ball.

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 playground 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 interested to participate in the physical activities but they were not interested to participate in the educational activities. Such as quiz context, discussion, essay competition etc.

Culture and 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 response on the question "How does social values and belief affect their children.

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

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

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

From the above response it can be said that Dalit are dominated every time from the upper caste. From such kinds of behave they participate themselves lower caste people, which is block of mind making for learning. They could not be confident for their learning. So, they are 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 follows the traditional because we are poor."(Parents)

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

From the above response it can be said that Dalit think it is their duty to serve upper classes. They think they need not be educated their children because they have to serve the upper classes. They think serving upper classes is their tradition. So, they have to. But two of them parents say 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 have to lose the time working in their home. Hence, they could not progress.

The society was stratified into 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 out 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 region. But most of Dalit people spend lots of money in festival. In Dashain, Tihar festival they spent lots of money taking loan. Most of Dalit people spend money in food and new clothes they have Dalit habit, to spend the money and food in unnecessary case. So, they pass their time in unnecessary deeds like drinking alcohol, playing cards, and care board. Because of there, activities social perfection dispersed in the society which created negative impact up on their children.

Teacher Students Interaction

Interaction is social activity. Interaction may be within individuals or in groups. Within person interaction refers to the mental activity with his/her mind and soul. It depends upon the people's intellectual activity. Individual interaction between persons may be symbolic or code language. Interaction brings the maturity in learning.

According to students;

"In the school all teachers are from Brahman, Chhetri community. If mathematics teacher were from Dalit community, we could easily interact with them."

Similarly, in this case mathematics teacher said;

"They did not ask the questions to me in classroom. Sometimes I asked question but they can't response. So, I do not ask questions to them."

The above views of students and teacher indicate that there is caste based discontinuity in mathematics classroom. There was no much interaction between mathematics teacher and Dalit students. The above views also indicates that mathematics teacher have been neglecting the question arise by Dalit students in the classroom. Hence, there is not proper interaction between Dalit students and other

students as well as teacher in the actual classroom practices. Some observed class episode is given 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 should that the students were well disciplined and the schools have taught them to respect the teacher. There were 60 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 under stood 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 told them to do the exercise at home.

In this episode, I found that most of the Dalit were present the students of the class were not so active. The teaching method was a lecture and practice. The teacher behaved commonly to all the students. He did not focus the Dalit students specially. They are not interested in the classroom due to teaching method used by teachers. It was also found that the learners' interest in mathematics learning is also not as good as assumed. So that, 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 participation of Dalit students in teaching learning process. The observation data was presented below:

Episode Second

The second class observation of the second day. There were 52 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 used deductive method in the white board. Then he asked the students what they know about deductive method.

In this episode, I found most of the Dalit students were present and stayed the whole period. Some of them were seem to be interest in mathematics class. There was no differentiation between both Dalit and other students. Teacher was behaviour equally but he did not give them special attention.

Episode Third

The third class observation of the teacher. There were 55 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 lession. 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 has seated in the last bench. They were none well motivated and responded by the teacher.

Episode Fourth

"The mathematics teacher was just entered in the class together with researcher by carrying daily use teaching materials. He had started to teach. He wrote the topic LCM. He did not review the previous lesson. The teacher wrote the question on blackboard and found the LCM by himself. Then, one of the researchers' respondent asked the question about factorization with the teacher, but he was angry and said, did you present yesterday? The student was quite serious and told "No sir." Again teacher solving another question by himself. Teacher asked some question with other students but Dalit student did not get such opportunity at class. They were sitting at last benches and seemed to be a silent. The teacher gave homework form exercise and the class was over."

From above classroom activities it indicated that there is no proper interaction between teacher and Dalit students in mathematics. Teacher does not response to the Dalit students. Teacher always dominates the Dalit students because they were not did mathematics homework regularly and they mostly became absent in school. Interaction brings the maturity in learning. But the interaction between Dalit students and teachers could not be seen in the class nicely. It is due to their socio-cultural discontinuity. At last it can be conclude that the interaction is another factor which creates the participation in mathematics for Dalit students.

Chapter-V

FINDINGS, CONCLUSIONS AND IMPLICATIONS

This chapter is basically concerned in deriving some findings and conclusions from the discussion of the previous chapter. Besides findings and conclusion, it has some implication which will be woeful for further studies and education implication. The major findings of my study were:

The Participation of Dalit Students in Mathematics Learning

- The presences of Dalit students in classroom is too low.
- The presence of Dalit students in their classwork, class test and homework is found to be less.
- The number of Dalit students remained in a classroom is found not to be giving much attention than other students.
- They generally sit at the last bench of classroom.
- They are found to be less interactive with teachers and other students.

The Factors Affecting the Participation of Dalit Students in Mathematics Learning

- Teaching learning process
- Parental education and economic status
- Over aged and early marriage
- Home environment
- School environment
- Culture and society
- Teacher, students interaction

Conclusion

From the above study of the participation of Dalit students in mathematics learning it is found that large number of Dalit students absent, sit at the last bench, minimum participation of Dalit students in homework, classwork and class test too, having less attention 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 to sit at the last bench can be disturbed by arranging rotation sitting system. Also to increase the participation of them at the every curriculum activities friendly and homely environment should be created.

The factors affecting the participation of Dalit students in mathematics learning are seen which are 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. 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.

Implication of the Study

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 make someone to think about the level of participation of every students in every subjects. Similarly this study has pedagogical implications, psychological implications, training implication, organizational implications and personal implication for myself to improve the participation of Dalit students in mathematics learning.

REFERENCES

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,* Master's Thesis, T.U., Kirtipur.

Backer, G.S. (1993). *Human capita: A theoretical and empirical analysis with special reference to education* (3rd ed.). Chicago: University of Chicago press.

Bhattarai, Y.R. (2001). *Socio-psycho learning of dropouts: a case study of Dalit children,* M.Phil, Thesis, Submitted to Danish University of Education, Copenhagen Denmark.

Dakal, B.P. (2008). *A study on teacher's believe towards discipline and their grade room practice,* Master Thesis, T.U., Kirtipur.

Dakal, R. (2008). *Mathematics achievement of grade VI students in Kavre district,* Master Thesis, T.U., Kirtipur.

DEO Rukum (2068 B.S.). *Shaikhsik samachar bulletin.*

DNF (2053 B.S. Falgun). *Voice of liberation DNF* Annual Report.

Eves, H. (1981). *An introduction to the history of mathematics,* (Fifth Edition) Saunders College Publishing, New York, USA.

Khanal, P. (2067). *Education research methodology,* Kathmandu: Sun Light Publication.

Koirala, B. N. (1998). *Participatory approach to education for Dalit of Nepal,* T.U., CERID, Kathmandu.

Neupane, B. K. (2005). *A comparative study of achievement of private and public secondary school students in algebra of Kathmandu district,* Master Thesis, FOE, T.U., Kirtipur.

Neupane, B. K. (2005). *A comparative study of achievement of private and public secondary school students in algebra of Kathmandu district,* Master Thesis, FOE, T.U., Kirtipur.

Neupane, S. R. (1985). *Achievement in mathematics by location and sex* Unpublished Master Degree Dissertation, T.U., Kathmandu.

Neupane, S. R. (1985). *Achievement in mathematics by location and sex,* Unpublished Master Degree Dissertation T.U., Kirtipur.

Neure, D.P. (2068). *Research methodology,* Kathmandu: Quest Publication.

Pant, s. (2002). *A study of achievement and participation of female in bachelor's level mathematics education,* Master Thesis, T.U., Kirtipur.

Parajuli, Dr. T.R. and Other (2067). *Educational measurement and evaluation,* Kathmandu: Sunlight Publication.

Poudel, B.S. (2005). *Learning strategies of mathematical concepts of out of school children: A case study of Dalit community,* Master's Thesis, T.U., Kirtipur.

Rao, B. and Lata, P. (1995). *Achievement in mathematics,* New Delhi: Disco Publishing House.

Singh, N. (2068). *Educational measurement and evaluation,* Kathmandu: Pairabi Prakashan.

Thapa, J.B. (2068). *Learning strategy for out of school children from Dalit community,* M.Phil. Thesis Submitted to RDSES, Denmark.

Timilsana (2004). *A study of achievement in bachelor's level mathematics, by the students graduated from 10+2 and PCL,* Master Thesis, FOE, T.U., Kirtipur

http://www.doerukum.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
    - Behaviors 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 'B'

Guideline for Interview with Dalit Students

Name: Class: Roll No.:

Position in Class: Sex: Cast:

Place of Birth:

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

1. Opportunity to the Dalit students to learn at home.

……

2. Peer group's behavior towards Dalit students.

…….

3. Encouragement provided to Dalit students by teacher.

…….

4. Relationship of teacher and Dalit students.

……

5. Participation of Dalit student's mathematics class etc.

……

6. Interest in learning mathematics.

……

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 for mathematics learning.

……

6. Effect of values and customs in mathematics learning.

……

APPENDIX 'D'

Guideline for Interview with Subject Teacher

Name of 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 teachers.

……

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 mathematics class work and homework.

……

8. Value and importance of mathematics learning.

……

APPENDIX 'E'

Interview Guidelines for Head Teacher

Name of the teacher: Qualification:

Subject:

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

1. View of the head teacher learning environment in the school.

……

2. View of the head teacher Dalit student's opportunity for learning mathematics.

……

3. Factor of low participation in mathematics of Dalit students.

……

4. Need for extra treatment for Dalit students.

……

5. Relation between teacher and Dalit students.

……

6. Economic condition of Dalit families.

……