

Chapter I

INTRODUCTION

Background of the Study

Mathematics which is dynamic in nature as discipline and essential part of human civilization is etymologically derived from an ancient greek word "Mathematics" taken from "Mathanein" which means "to learn". Golt and Futterman (1982) state "Knowledge of mathematics is indispensable to our daily life, counting object, Reading and writing number, performing arithmetic calculation as well as reasoning with numbers are tasks most people perform in their life". This shows that mathematics is taken as a process of learning. It has been developed through the human endeavors in different area has come to the height of development and will still be in the process of development forever.

According the new English Dictionary (2008) "Mathematics in a strict sense, is the abstract science which investigates deductively the conclusions, implicit in the elementary conception of the spatial and numerical relations". It has been defined as the science of number and the science of calculation. It is a systematized, organized and exact branch of science. So, mathematics is also called the science of all science and arts of all arts.

People have been using mathematics from the very beginning of human civilization. Human beings themselves created mathematics in the need for application to counting and measuring in relation to both of quantities as well as spatial objects. They invented arithmetic, algebra and devised to simplify and generalize computation. Mathematics as language is a basic tool of communication. Daily communication involves the frequent use and mathematical concepts and skills.

It is considered as the fundamental concept of the literacy. Its learning helps students to understand and interpret the important quantitative aspects of living. Thus, the knowledge of various branches of mathematics was born to fill the needs of man and to introduce great range of its application.

Achievement is the tool for evaluating the students which help to determine the quality of the student in their related areas. The popular and reliable evaluating tool for students is examination. There are different types of examinations to scale student's achievement in the different level. Achievement is determined by different variables such as school related variables, student related variables, home environment related variables and so on. The school related variables refers to the learning environment at school, teaching activity and ability of the teachers, class size, Instructional materials and so on. Similarly the student related variables refer to the gender, Age, duration of the study at home and so on. And last one is the home environment related variables that refers to family occupation, parent's education, Mother tongue, learning environment at home and so on. All of these variables determine the students achievement. The achievement of child depends not only part played by teacher but also the parent's awareness, student interest, previous knowledge, revising curriculum textbook, etc have been made to uplift the achievement and performance levels of student.

Nepal is the country where different language, culture, customs and caste. There exist many religious and racial forms in the society and people from different group who are engaged in different occupation by caste system. So, mathematics achievement different because of different ethnic groups and cultural background. In Terai region there are presence of many lower caste people and their Socio-economic status is also low having hand mouth problem as result educational

awareness is also low. Their children have poor achievement in education specially in mathematics.

Satars are one of the most backward ethnic groups of Nepal. They live in the districts of Jhapa, Morang and Sunsari. Satars also call themselves hor. They prefer to live in the peripheries of forests. They have their own unique religion and culture. Most satars are engaged in farming and labor. satars are also known as Santhals. Their language is called Santhali. They have their own script, which was developed by Dr. Raghunath Murmu in 1925. It is called olchiki. In Santhal community, The first born son is given the name of his grandfather, he is also given another name for calling him. The Santhals have different types of marriage. A women made pregnant by another male can be socially accepted in marriage. The Santhals celebrate their biggest festival “sohoray” from the end of paush and for the entire month of magh. As the Santhals like to live near forests and rivers, hunting and fishing are their favourite occupations. They are also adept in farming and put much labor in the activity. Although owners of land in the past, there are very few landowners among the Santhals today.

Primary school is the beginning phase of the child education which becomes foundation for them to reinforce their future education plan. Without being good foundation of primary education no children progress in secondary level of a result. It has it's own significance to know about the consequence of the exam of grade V. The following table shows the grade V result in mathematics of Shree Secondary School Bairiya Bhimpur Bhathigachh -6, Morang of past five years.

Years	Total student appeared	Pass students	Total appeared Santhal students	Passed Santhal students	Failed Santhal students
2068	26	16	10	2	8
2069	30	18	13	4	9
2070	33	20	17	5	12
2071	28	19	11	3	8
2072	35	21	15	4	11

(Source: School document)

The above table shows that the Santhal students are failed in most of the exam. As the result of the analysis of five years data, the researcher found that though they have showed their presence in school, they are few in number and even in that numbers they failed grade V in previous result. So there was low participation as well as low achievement in mathematics of Santhal students.

There have been a number of reasons for failure in mathematics. From this problem various district are also affected. So, the researcher choose a one case school of Morang district. The name of the case school is Shree Secondary School which is located in Bhathigachh VDC word no. 6, Bairiya Bhimpur, most of Santhal students are failed in mathematics in this case school on primary level.

Statement of the Problem

This study is concern with to find the cause of failure in mathematics of Santhal students. Santhal students are educationally backwarded, deprived from opportunity group and have faced different problems in mathematics learning than other students. All students are studied in the same class. They are taught by the same teacher, same books, same curriculum but their children have low achievement in

mathematics comparison with other caste's children. Why it happens? What are the causes of failure in mathematics? This study is centralized to find out such causes.

The problems of this study were mainly concern with the causes of failure in mathematics at primary level. The following were the research questions for this study.

-) Why do many Santhal students fail in mathematics?
-) How do the school administration support to improve low achievement of Santhal students?

Objectives of the Study

The objectives of the study were as follows:

-) To find out the causes of failure in mathematics of Santhal students.
-) To identify the strategies taken by school in improving mathematics achievement.

Significance of the Study

Mathematics is the science that deals with the logic of shape, quantity and arrangement. Math is all around us, in everything we do. The needs of math arose based on the wants of society. It has been taught for all students as compulsory subject at school level. Most of the researchers have compared mathematics achievement of students on the basis of ethnicity, parent's education, occupation and income, and they have also found its effect on mathematics achievement. But no one found that " what are the causes that bring low achievement in mathematics of Santhal students." So this study would be helpful to determine the causative factor that determines low achievement of Santhal students. As well as, this study determines

why the achievement level is low? Which is the signification of this study. This study provide the appropriate information about the difficulties of Santhal students in learning mathematics. Hence the following are the signification of this study.

-) This study would find the reasons of failure of Santhal students in mathematics which is valuable things for teacher, researcher, curriculum designer and other stake – holder related to education.
-) This study is important to identify how the learning environment affects in the achievement of Santhal students in education sector.
-) This study is useful for government, NGO, INGO and related committee to improve the education status of Santhal students and those communities have deficiency in education.
-) The study also open the door for further study in the field of learning problems of Santhal students.

Delimitation of the Study

Among all public school of Morang district only one sample school chose accordance with researcher convenience and the study result is only based on mathematics classroom of selected grade. so, the result of this study is no more generalize. This study was delimited under the following aspects.

-) This study is limited only one school of Morang district.
-) This study has done in Bhatigachh VDC ward no. 6 of Morang district.
-) This study is based on primary level Santhal students of Shree Secondary School Bairiya Bhimpur.

) Only ten failure Santhal students were taken for the study.

Definition of Related Terms

Some of the terms used in this study are defined in the following paragraph, they are Santhal, causes and low achievement.

Santhal

A scheduled tribe of people indigenous to Terai of Nepal. Santhal are one of the most backward ethnic groups of Nepal. They live in the districts of Jhapa, Morang and Sunsari. They have their own unique religion and culture. Santhals are also known as satars.

Causes

The terms causes is defined as the reasons that are affecting in the achievement of students such as practice, environment , teaching learning strategies and motivation.

Low Achievement

In this study low achievement refers to below thirty two marks obtained by the students in the test taken by school.

Chapter II

REVIEW OF RELATED LITERATURES

The main purpose of reviews of related literature was to find out what works have been done the area of the research problem under study and what has not been done in the field of the research study being undertaken. The review of related literature helps to make the concepts clear for the study and also directed to analyzed and interpret the data. There are some study related to achievement of mathematics is review for this study which can be divided into two ways: Empirical and Theoretical perspectives.

Empirical Literature

Empirical literatures are those literatures which are authentic knowledge from empirical research. This literature provides methodology and procedure in related topic. The empirical study of literature is an interdisciplinary field of research which includes the psychology, Sociology, Philosophy the contextual study of literature and the history of reading literary texts.

Highers (1999), studied on the most important conclusions form qualitative research on factors related to achievement in school are (a) teacher are critical resource; (b) the composition of the students body matters; (c) school make a difference, and (d) physical facilities, class size, curriculum, instructional strategies and other resources influence students learning indirectly through their effect on the behavior of teacher and students.

CERID (19991), identifies the major causes of drop out at primary school as getting engaged in household work, the poor economic condition, parents attitude

towards the education for girl , poor health of children, failure in grade examinations, distance location of the school, irregularities of teachers, and lukewarm attitude of parents.

Guragai (2002), conducted a research on “study of achievement in mathematics of primary level students of Morang and Dhankuta districts with the objective to compare the achievement in mathematics of primary level students between Morang, Dhankuta districts resembling Terai and hilly region for Koshi zone. The researcher developed an achievement test from the prescribed curriculum of grade Five. Four hundred students from twenty-four schools were selected. Z- test was applied to conclude that Morang district surpassed then Dhankuta district in the performance of the students in every aspect male, female, rural and Urban.

Yadav (2008), studies on the causes of low achievements in mathematics of Musahar students and his research found that the Musahar economic condition does not seem to be strong to send their children at school and afford them in their future education. Most of the Musahar parents were illiterate and they use their children as a means of earning to support their living. Most of the Musahar students speak Maithili language which Causes difficulty for them to deliver their own opinion to the teacher and understand Nepali language.

Pandey (2008), conducted a research on “causes of low achievement in mathematics: a case study” with the objective to find out the causes of low achievement, to identify the strategies taken by school in improving mathematics and to find the ways of promoting mathematics achievement. The researcher selected 6 students including 3/3 boys and girls according as different family backgrounds and the performance of the examination in mathematics. He analyzed the interview

schedules taken by head teacher, mathematics teacher, selected students as well as their parents and class observation note in the basis of the theoretical framework of the affecting factors in mathematics achievement. His study concluded that there is discontinuity between home culture and school culture. The home environment is not supportive for mathematics learning.

Dahal (2011), did a research on "Causes of low achievement in mathematics of Magar Students" (A case study in Kaski district). The objective at this study to explore the causes that bring low achievement in mathematics and to identify the strategies taken by school in improving mathematics achievement of Magar students. He collected the data from interview, observation, field documents. His study was based on qualitative research approach. This study shows that most of the Magar parents were illiterate and they use their children as a means of earning to support their family, teacher centered method, household work, motivation, the teacher used to give homework daily but students were facing the problem in delay of checking the copies and language were the causes of low achievement in mathematics of Magar students. Finally, He concluded that parent illiterate, language is the one of the obstacle for students. At last, He said that there should be the provision of teaching mathematics to the students of primary level in their mother tongue as well as in Nepali language.

Bohara (2009), studied on "factor affecting achievement of dalit student in mathematics at lower secondary level, (a case study in Daijee VDC, Kanchanpur district)" he had used semi structured face to face interview with mathematics teacher, Case respondents, their guardians and classroom observation form to collect primary data for only one case school of the Kanchanpur district. His study concluded that illiteracy, ignorance, poverty, prior knowledge, motivation for study at home, parental

support, quality of teacher, class size, student teacher interaction, social belief, social tradition, family occupation, childhood marriage, working in upper caste family, attendance were affected the mathematics achievement of dalit students.

Bam (2010), conducted a research on “causes of low achievement of grade five students: a case study” in Durgauli VDC Kailali including six students studying at grade five by using purposive sampling. He found that achievement of students is always affected by different variable such as classroom practice, negative concept about math, economic condition, socio-cultural tradition, school environment, physical facilities in school.

Since from above review, there have been many researches on achievement study of different ethnic group, factor affecting learning mathematics and causes that affect mathematics achievement. From which the researcher has found that there is many factor such as culture, physical facility, home environment, teaching learning process, motivation, teacher behavior and interaction are the influencing factor in learning mathematics.

Theoretical Perspectives

Theoretical literatures are those literatures which provide theoretical knowledge and philosophical bases for research. In qualitative research there are so many theoretical ideas and principles which are used to make the research meaningful and they guide the researcher for the analysis and interpretation over the study area. The theoretical discussion needed the interactive finding of the study. Many theories about learning and development of children such as cognitive, behaviorist, humanist, social constructivism of which constructivism is one of the theories to analyze and interpret the data of mathematics of resolve the problem. To analysis and find the

suitable solution in the area of failure in mathematics; constructivism becomes one of the possible theory to solve the problem on the topic of “causes of failure in mathematics of Santhal students”. Every child learn from society from social contact with home, family and universe. According to them, knowledge can be constructed from society. This kind of thought is given by constructivism.

Constructivism

Constructivism says that learning as construction or knowledge can constructed through active participation. It is related to educational theory to deal with the problem of mathematics. It helps to find out the problem of failure in mathematics. It is the theory based on observation and scientific study to deal the problem of learning. It encourage the student to involve themselves activity and used techniques of learner centered, group work discussion, learning by doing, use outside tools to be more practical and gain high achievement. It focus on real to be life learning environment, social interaction and use of complex ideas share with outside of classroom easily. Constructivism transforms the students from passive receipting information to active participation in teaching process. (Kerka 1997 a, p. 1).

Constructivism stands on its three axioms that are as follows: learners learn knowledge while participation, Learners gain knowledge while reflecting on their own action, Learners gain knowledge when they try to convey their solution to other.

From above axioms Upadhyay (2001), took their teams action, reflection and scaffolding to describe three board aspects off constructivism, psychological aspect, philosophical aspect and sociological aspect. Piaget stresses on the key word “action” through which he advocated that knowledge is gained. He said that essential way of knowledge is not directly through our sense but primarily through our action.

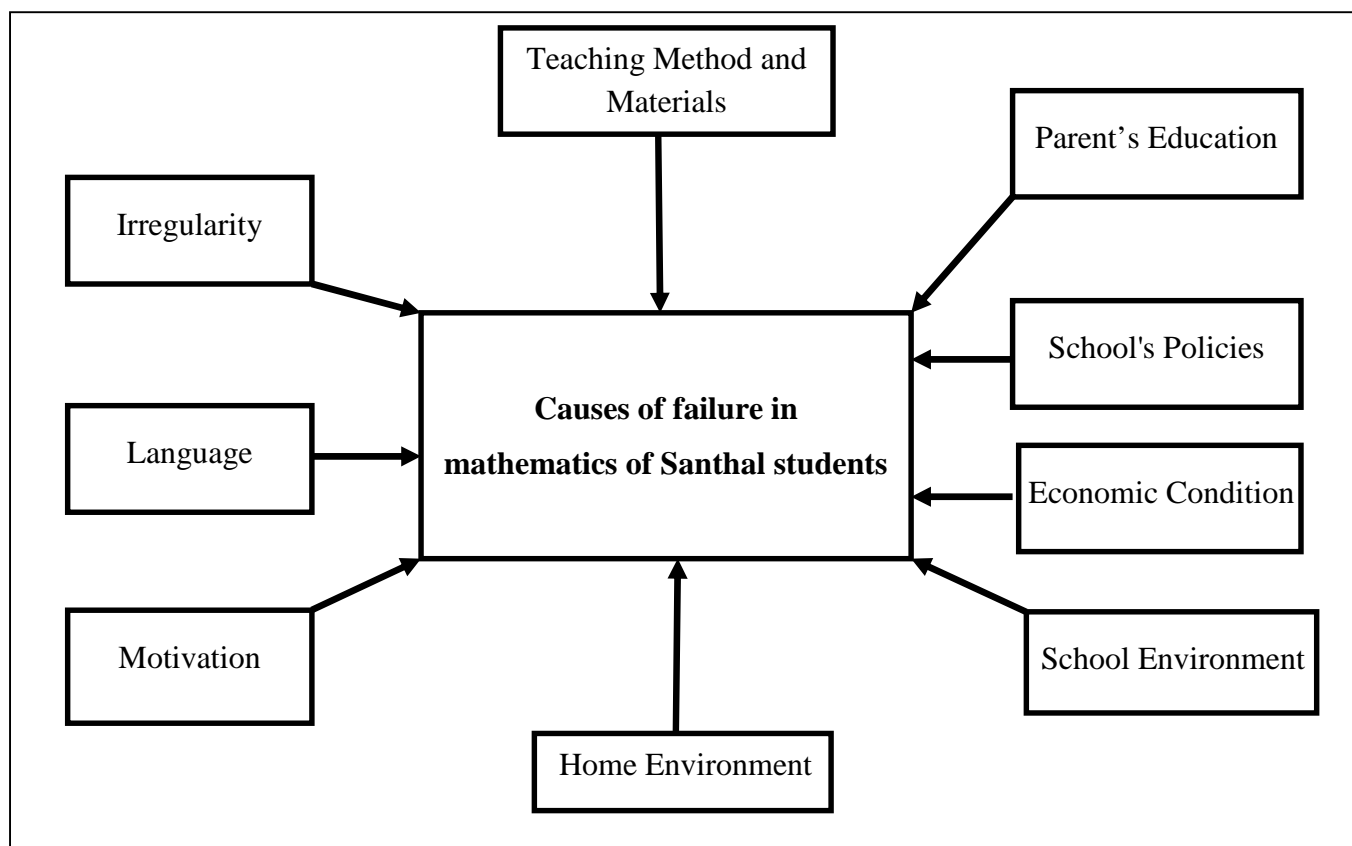
Philosophical aspect of constructivism is also called radical constructivism which is led by Glaserfeld who advocate as social constructivism leaded by Vygotsky who states that knowledge is socially constructed.

Thus we see that there are many variables which affect the result of the students in mathematics achievement from the review of some international literature. So the variables aren't fixed which influences of the achievement of student in mathematics.

Conceptual Understanding of this Study

This was a case study related to the causes of failure of Santhal students in mathematics. The following theoretical model was constructed for the failure of Santhal students on mathematics learning which was the framework for this case study.

Fig.: framework for causes of failure in mathematics of Santhal students.



(Source: Dahal, 2011)

This conceptual framework was described about the causes of failure of Santhal students in mathematics in Morang district. There was great distinct between their everyday life and school activities as they get practical knowledge in home and theoretical knowledge at school.

Chapter III

RESEARCH METHODS AND PROCEDURES

Research methods and procedures is a science, which determines how to complete the research systematically. This chapter includes design of the study, selection of case school, selection of case respondents, tools of data collection, data collection procedure and analysis and interpretation of data.

Design of the Study

Research design is the conceptual structure, strategy of the logical, systematic plan and direction of research. It is a way through the researcher to reached the focal mission of research to collect data, interpret and analyze it. This is a case study to find causes of failure of Santhal students in mathematics at primary level in Morang district. This is qualitative as well as descriptive in nature.

Selection of Case School

The study dependent upon the opinion of the Santhal people and problem of Santhal student related to mathematics. The researcher was done a case study of those ten key students attempting socio-economic background, personal habit, family education and relation of mathematics teacher other students with them. So, the researcher selected only one public school of Morang district purposively to achieve the objective of this study. The researcher selected Shree secondary school Bairiya Bhimpur Bhatigachh-6, which is located in eastern part of this district. Researcher selected this school because this school has problem of failure in mathematics of Santhal students. So, this school is very suitable for this topic.

Selection of Case Respondents

The respondents of the case study was Santhal students, their parents, mathematics teacher of related grade and head teacher. Those respondents was selected purposively to find out the cause of failure in mathematics of Santhal students. From the sample school, only ten (five boys B₁, B₂, B₃, B₄, B₅ and five girls G₁, G₂, G₃, G₄, G₅) failure Santhal students on the basis of mathematics score of previous exam was chosen according of gender, socio-economic background. The parents of case students, head teacher, mathematics teacher was selected as the respondents of the case study. For this study purpose the researcher prepared the conceptual understanding of the study in literature review. To get additional information about the case students and his/her family background researcher prepared the individual students record (Appendix – A) of low achiever Santhal students of grade five.

Tools of Data Collection

Data collection is the most important part of the study. To collect the primary and secondary data for this study the following tools were used.

In-depth Interview

On the basis of the objective of the study, the researcher prepared semi-structured interview guidelines. These guidelines were used to take interview from key students, head teacher, math teacher and parents to collect the information. Which was also prepared on the basis of theoretical literature related to this study. (Appendices- B, C, D).

School Documents

Teacher profiles, record of students, mark ledger, attendance, additional supports provided to students, past result and other relative documents at the school were used.

Non- participation Observation

The researcher observed activities of the key respondents in their school/home using the pre-establish form. Regularity of students/teacher, teacher's behavior, learning environment, relationship between teacher and Santhal student, friend's behaviors toward Santhal students etc observed by the researcher. The researcher developed the observation theme in semi-structured form (Appendix-E).

Data Collection Procedure

The researcher collected the data and information by using interview schedule and non-participation observation to collect qualitative data. The school records was studied such as mark ledger of school students, Teachers profile, physical facilities and other relevant documents. The classroom was observed being participation with math teacher and students of grade five for 20 days. The researcher recorded the behavior and activities of both teacher and students during learning activities.

With the help of unstructured interview schedule, the interview were taken with focus children, their parents, head teacher and mathematics teacher. The interaction with the above respondents were carefully listen and note properly. The students attendance, regularity and other behavior or activities was noted from school record. The school environment and other details were obtained by observing the school environment interviewing with head teacher and document analysis of school.

The learning environment of the home and other details were obtained by taking interview with the parents of Santhal students. Also interview and observation was conducted to focus parents in their own house.

Quality Standard

It was necessary to maintain quality standard. For quality standard member checking and triangulation have been applied. Furthermore to maintain the quality standard Guba and Lincoln (1998) suggests the following criteria. So, I followed these criteria to mentioned the quality standard in my research.

Credibility

This concept replaces the idea of internal validity, by which researchers seek to establish confidence in the 'truth' of their findings. Guba and Lincoln (1998) recommend several techniques inquirers may use to enhance the credibility of their research: prolonged engagement, persistent observation triangulation, peer debriefing, negative case analysis, progressive subjectivity checks and member checking. To maintain credibility of my research I tried to spend as much as time for observation and engaging with different people with their work. After getting information I wrote notes, I asked similar types of questions to others people and tried to find real practices from those information.

Transferability

Transferability replaces the concept of external validity. This criterion refers to the applicability of findings in one context (where the research is done) to other contexts or settings (where the interpretations might be transferred). To maintain transferability I had explained mathematical practices found in different community

students briefly. I had included different tools and practices in my research. I had tried to capture most of scenario by using thick description of observations, interviews and my meaning making.

Dependability

This concept replaces the idea of reliability. This is the third standard for judging qualitative standards and refers to the stability or consistency of the inquiry processes used over time. To maintain it I had presented the logic used for selecting people and events to observe, interview and include in the study. I was try to maintain credibility and transferability to ensure dependability standard.

Conformability

A fourth standard is conformability, which refers to the quality of the results produced by an inquiry in terms of how well they are supported by informants (members) who are involved in the study and by events that are independent of the inquirer. this is sometimes referred to as the audit trail (a record of how decisions were made throughout the study). I am also a part of mathematics students. So, to maintain conformability, before concluding information I reviewed those information my self several times and sometimes I conform those information to my other students/friends before concluding information as well.

Data Analysis and Interpretation

This was qualitative research hence the major part of data analysis was based on descriptive analysis. The collected information from class observation, interviews and schools records were first categorized according to the category of the respondents and then different themes were given in the text of interview schedule

and observation form. These themes were considered as a code. Similar code versions of the respondents were collected together and explained in their perspectives. Cross match was adopted to maintain validity and reliability of the result of the study. The researcher has also tried to ensure the interval validity by observing the same phenomenon repeatedly by clarifying his biases. Data analysis and interpretation was done on the basis of conceptual framework developed by the researcher in the literature review.

Chapter IV

ANALYSIS AND INTERPRETATION OF DATA

This chapter deals with the analysis and interpretation of the collected information. The researcher minutely studies the school's documents such as teacher profiles, mark ledgers, attendance as well as the records of the sampled students. Also, the researcher had observed mathematics class of grade V being participant with math teacher regularly for 20 days during teaching learning activities. Then the classroom observation note was prepared on the basis of the class observation. Every activities and behaviors of the students and teacher were carefully observed and note the school environment and other details were obtained by observing school environment and interviewing with the head teacher, subject teacher as well as document analysis of the school. The home environment and other details were obtained by taking interview with their parents and analyzed in the descriptive manner. The response of the respondents during face to face interview were carefully noted. There was no limitation for respondents for response. They were able to express freely whatever they have in their mind. The data were analyzed with the help of collected information from observation, interview and school record.

Introduction About Case School

The researcher had selected sample school "Shree Secondary School Bairiya Bhimpur Bhathigachh" VDC-6, Morang district which was established in 2014 B.S. The surrounding places of the schools are cultural diversities. The Santhal, Shah, Gurung, Rajbhar etc. the local resident of this area. Mostly, the parents of the case students are engaged in agriculture as well as labor. They are also engaged in other activities such as fishing, playing bow and arrow, hunting etc. Economically, They are

poor in the communities. Some even have difficulty to join hand and mouth. Initially, at the time of establishment there was no building but now the school has two separate permanent buildings and a medium playground with average 350 students. Among them 60% Santhal students.

Introduction of Case Students

Respondent B₁

Respondent B₁ is 11 years boy studying at grade five. He lives in Bhathigachh-6. It takes him 15 minutes to reach in school from his home. There were six family member in his home. He spoke Santhali language with his family, relatives and friends. His parents were uneducated. Economically, it was hard to maintain the family. His father was engaged in the profession of driving Rickshaw in Biratnagar city and mother used to sell fish in village. His one brother was studying in grade three in the same school. Researcher asked him about the educational environment of his house and economic condition. He said "Our economic status is very poor. There is no educated person in my family. As I am a boy my parents force me not to go school but forces to bring fodder and cut grasses for goat".

Repondent B₂

Respondent B₂ is 10 years boy of grade five. His house in located at kali chowl Bhathigachh VDC-6, takes twenty five minutes to go to the school. There were seven members in this family. His father and mother were illiterate and were engaged in farming and labor. He was interested in playing football, Kabardi game and enjoy leisure time with friends by making jokes. While observing the mathematics class, researcher showed that he had never completed his homework and unable to solve the

mathematics problem immediately when the teacher worked out in the class work. He had hardly asked the question in mathematics class but participated more in extra curriculum activities. From that, he was interrelated in physical activities. After returned home from the school, he took his snacks and then went to play football and returned home at evening. He did not shows his interest in household work.

Respondent B₃

Respondent B₃ is 13 years old boy student of grade five. He lives in kali chowli, Bhathigacch VDC-6 and he takes about 30 minutes to go school. There were 6 members in his family. His father went to India for job with his wife and his elder son. Krishna's mother helped her husband doing household work in India. His father was general literate but his mother is illiterate. According to information, his elder brother, also had a job in India. Now a days, he stay with his sister-in-law and one brother. It seemed his family was poor in economic condition. Before going to school he was busy in household works and other leisure time he was busy in playing cricket. It was very careless for his study by the guardians. He felt that mathematics was very hard subject. He did not complete his homework.

Respondent B₄

Respondent B₄ is 13 years old boy, he lived in Bhathigachh VDC-6. He has eight members in his family. His father worked in the field. His economic condition was very poor. He said "My father could not manage the money for my studies" He said that they are lower caste, due to he is dominated by the higher caste students in school. He has to do work in field on the morning and evening. So he has no enough time to do more math practices at home. About the view of mathematics teacher. "He

is very poor student in mathematics. He is failed in mathematics in grade IV. He was just promoted pass in grade IV. He does not do homework.

Respondent B₅

Respondent B₅ is 12 years old boy student of grade five. He lives in BhathigachhVDC-6. He takes about 30 minutes to go to school. There were 7 members in his family. His father and mother were illiterate and were engaged in farming. His mother used to sell vegetable and fruit in the morning and evening and worked in the house at day time. And his father was also engaged in the profession of driving Rickshaw at Biratnagar city and spend their money drinking alcohol and quarreling to own another. About his study, his mother told. "We are of Santhal caste. Hence there was no situation of study in our age. Therefore I am illiterate. So I can't understand about his study. Due to poor economic condition it is very hard for having the food and clothing. And his father spend their money in drinking alcohol. So I should do labor work, sometimes Baijnath also goes for laboring. Without laboring, it was very hard to buy his pen. copy etc."

Respondent G₁

Respondent G₁ is 11 years girl student studying in grade five. In her family there were five members. Her parents were engaged in agriculture. Beside the vegetation in the field, they went to the daily work to gain economic help. Gita helped her parents both in household work and works outside the house. Her main work was to take care her younger brothers and to work the household works when her parents went out of the home. She did not have good family environment to study. Her mother used to think that a daughter must do household activities. The researcher asked to the mathematics teaches about her learning, he told that. "She can not attain the class

regular and got more difficult in learning verbal problem because she was not understand Nepali language frequently as she spoke Santhali language at home. She had to labour hard to get success in mathematics.

Respondent G₂

Respondent G₂ is 11 years old girl studying in grade five. She lived in Bhathigachh VDC-6. She has nine members in her family. The distance between her house and school is 1 km (approximation). She said "I have to do all the household works". Her mother thinks that daughter must do household works. It her duty to finish all the works of house study is not important for a girl in her opinion because of this she said "I have no time due to my house work" Her economic condition was very low. Due to her parents couldn't invest the money in education of his children'. She did not wants to go to school regularly. She said "Our home culture makes hesitated to communicate with the teacher and other friends at school, so I do not like to go school".

Respondent G₃

Respondent G₃ is 12 years old girl studying at grade five. She lives in Bhathigachh VDC-6. She has five members in her family. She has to do all the household works. study is not important for a girl in her opinion because her parents said "After marriage girls will have to go to her husband's houses". As they believe that education was important for son and so daughters are kept within the four walls of the house. Her parents are uneducated and unemployed. Their main professions were traditional farming and working at others houses (jamindar's houses). In mathematics class she was unable to understand mathematics problems. She felt it was a difficulty subject.

Respondent G₄

Respondent G₄ is 12 years old girl studying at grade five. She live in Bhathigachh VDC-6 with her family. There are seven members in her family. Her father and mother were farmers. Her economic status was very poor. She was working on the field near her house when the researcher visited her, she has to do most of the household works before she goes to school. After she wake up in the morning she has to do fetch the firewood and grass sow the cow, cook the food for the family, to care the little younger sister. She always tries to help her parents to making money. She had very little time to Complete her homework. She has not felt any notorious remarks from her parents for her study. She feels mathematics is a hard subject.

Respondent G₅

Respondent G₅ is 11 years old girl studying in grade five. She lives in Bhathigachh VDC-6 with her father, mother, grandmothers, one brother and one sister. There were six members in her family. She takes about 30 minutes to go school. The main occupation of her family is agriculture. Her economic status was poor. Her home environment was not good for study mathematics. In her family no seniors were school educated. They can't teach and motivate her to do mathematics and can't favor her to create the home environment for practice. She tries to do homework better but sometimes She asked to help from the friends so that she can copied and submitted to the class teacher.

From the above case studies, researcher had made some conclusions. Such as, poverty factor is playing crucial role to backward the students and supperssing their positive psychology to earn better education. The education status of the family, lack of good motivation and student oriented teaching learning environment and burden of

domestic works had seen the major factors to hinder to get good achievements of the students.

Causes of failure in mathematics of Santhal students was explored with the help of class observation, interview with students, mathematics teacher, parents, head teacher and school documents analysis. The data collected through different tools was categorized and analyzed with the help of conceptual framework the following headings.

Home Environment

Home is the first school of student so the home plays the vital role on learning mathematics. A family education and parents or seniors behavior affects achievement in learning mathematics. The researcher found that Santhal students was busy in household work, care of elder children, care of cattle, cutting wood etc. In the evening and morning. But in the night there was shortage of light to study. It forces to sleep those students who was weak in mathematics. The one aspect which affects the learning of students was the work they have to do in their home. It was not a new case to do simple work in home in our content. But if students doesn't get be time to study on home because of the overload of homework, it hampers in the study.

"My father and mother both go to work out in the field and that time I also have to contribute my family by working in the field, sometime as carrying goods. So I don't get time to study at home " (students)

"The children do help in the household work because we need their hand at our work sometime we ask them to stay at home to finish the work." (Parents)

"Parents are illiterate and they are not aware of the children's study" (Teacher)

From the observation researcher found that the learning environment of mathematics was not better for the girls at home also, they have no time to study mathematics at home because they had to do most of the house works before gone to school and after come from school they busy in the household works in out time of the school. Their parents did not manage tuition and coaching classes, all required materials for the study mathematics and they did not discussed about their learning progress report with their math teacher. Their parents treat unequally to son and daughter because their parents was not well educated. Educated parents also can't give the time to the daughter for study mathematics. Parents did not force to the daughter for go to school regularly.

Researcher found that because of economic condition of family a lot of students were busy to make money for the home. And the culture of the family also disturbed to the girls in study. Female have inferior place in their society. There was low role and opportunity for girls in society.

About the home environment of the students the mathematics teacher said that, "because the parents should not pay to more money in government school so they did not interested to participate in school and like now is their study, they did not care about their study, how they can learn, what school should be do etc. If parents want to give nice education then they admitted to the students in private school but parents did not want to give nice education to daughter. Very few of the parents meet me and consult about their child's mathematics learning."

"In my family no seniors are school educated. They can't teach and motivate me to do mathematics and can't favor me to create the home environment for practice." (Students)

"I give much time to household work. I haven't enough time to practice mathematics at home." (students)

"Educating children especially daughter of no use since they have to do the household works after marriage." (parents)

" They go to work to earn money that hampers their study." (Teacher)

Above response shows that girl haven't enough time to do exercise of mathematics at home and repeat the chapter which are teach in class. Thorndike (1874-1949) emphasis on the law of exercise, recall, recognition, relearning and reconstruction but home environment of student is not good for do exercise, recall, recognition, relearning, reconstruction. They haven't enough time to do practice at home because of household problems.

The constructivism theory also elaborated that the opportunity to learn mathematics at home play vital role in mathematics achievement.

Researcher concluded that the lack of sufficient time for mathematics learning at home of Santhal students was one of the causes for the failure in mathematics. Due to poor economic condition of Santhal students cannot manage their time at home for mathematics learning.

Parent's Education and Economic Condition

The students passed their most of the times in the home. The children learn many things from their parents. If the parents was literate, moral and have good characters, their children also follow the same behavior. If the parents have bad behavior and are illiterates, their children learn that behavior from parents. There is not only the role of teacher in learning process but also of the parents awareness, education, their way of handling and guiding the family members, culture, economy and environment. Most of the Santhal people was uneducated and their economic condition was very low. They could not fulfill the need of the family. Due to Santhal students did not do their mathematics homework regularly and become weak in mathematics. The parents taught the basic knowledge of life, practical aspects, skillful concepts, right vision, appropriate norms and values to their children. If the parents have good education. They too try their best to enable their children academically. So they can live easily in society and inspire them to the right use of life's every potentiality and opportunity.

When I asked about their parents education, the following responses were obtained:

"Our parents are illiterate they could not read and write. So our parents can not provide guidance at home to mathematics learning". (Students view)

"I am helpless, I have no education so I can't help them". (Parent's view)

"The parents are illiterate. They do not give the guidance to them for learning mathematics. Their children do not complete the homework regularly. Due to this reason they become weak in mathematics subject." (Teacher's view)

The above mentioned view manifests that due to illiterate parents Santhal students was not getting expected achievement in mathematics. The parents do not guide them in house and always avoid to take responsibility to provide educational environment in the home. The above view also show Santhal students did not do homework regularly in mathematics, Due to lack of sufficient time at home for mathematics, Practice and lack of guidance of parents they become weak in mathematics.

The constructivism theory elaborated that the students had high achievement in mathematics if there is good educational guidance otherwise the achievement would be low. Finally it can be said that the lack of educational guidance at home was another responsible factor for failure in mathematics.

School Environment

School is the second home of any child, school is the totality of the educational atmosphere. The teacher, student and parents are the components of the school. School environment reflects belief and tradition of the school community delineating the relation among parents, students and teachers, scholarship to the student, dominance of lower caste, Extra class provided are the major aspects of school environment.

Researcher found that school did not manage all the teaching materials for learning mathematics. There was no library to develop the reading habit of a student. Teacher did not suggestive to motivate students to study mathematics. There was no rule to coming regular in school and teach regular in class. And there was no rule of punishment and reward for the regular and non regular for the students. There was no rule for supervision of class regularly and solve the school problems. There was no

environment to help each other in studying mathematics. School did not give the chance to discuss with the senior students with the teacher and with peer group discussion. Santhal students were not economically strong which they cannot afford their study easily. There was a difference between their home culture and school culture. So their school culture and home culture cannot be matched each other due to which they feel themselves as inferiority complex compared to other students. So Santhal students were weak in mathematics learning. Although, they were not provided with extra class activities their learning was also hampered by the language problem. Their home language and school language were not matched. So they were poor in mathematics.

"The parents of Santhal students towards their Santhal children of school found more lower. most of the parents leave the whole responsibility of their children to the school" (Math teacher and Headmaster)

When the researcher asked the head teacher, "How is your school environment and classroom environment?" then the head teacher said that, "Environment of our school is very good. All physical facilities are available in the school. School is located in a peaceful and beautiful place where no outside sounds are coming to disturb and no pollution is here. But we do not have an appropriate building with a lot of classrooms, benches, desks, a library and a lot of teaching materials. We should manage them recently. Classroom environment is a little bit poor in the mathematics class. There are no extra classes provided to students. So the mathematics achievement of our school is not satisfactory. We will solve this problem soon."

Above response shows that the policy of the school was not good for low achievers and failure students. The head teacher cannot make the school environment good

for learning mathematics. Sharma (2005) has recommended that the head teacher should be the man of task oriented in order to make the school effective. School leadership should be handled over to such person. The head teacher should work in school such a way to make the teacher task oriented being regular in the school and taking care of the problem of the teacher in academic and social needs. The head teacher was the instructional leader of school. He had to provide classroom support, administration, teaching observation as the central figure of school. But in a case school such type of work not be seen.

Thus, it is concluded that because of negative thinking of students and parents about the government school, there were no body tried to made effective teaching learning environment at school and no one interested to make a good classroom environment which was direct related and effect to achievement of mathematics. Good school environment is not enough for good achievement, a good classroom environment is also necessary to get better achievement especially in mathematics.

Dominance of Language

Language is a means of communication. Nepal is a multilingual country many language are spoken all over the country. In the context of Nepal, Nepali language is the medium of instruction. The dominance of language would mean the hindrance of first language by second language. Here the Santhali language was the first language for Santhal students but they were imposed to speak second language Nepali, in the class room and while interacting with the teacher. So they felt some difficulty to not understand second language. They do not understand simple idea about mathematics if the teacher pours the idea in second language.

The following response was obtained, when asked which language is appropriate for medium of teaching.

"We understand clearly if the teacher teach in our language." (Student's view)

The above view shows that the Santhal students do not understand second language adequately while teacher teaches in Nepali. The second language hinders to understand a idea about mathematics which becomes a poor interaction with teacher and students

The above view also shows that the culturally backward ethnic group Santhal community used Santhali language to their relatives, parents, friends and Santhal teacher except the people of other community. But they were imposed to use second language to learn mathematics. This shows that the dominance of mother tongue is reason for low achievement.

Teaching Method and Materials

It plays a great role in the achievement of students. It includes all the functions that are used inside classroom to achieve the goal of lesson. Usually, the teacher used teacher-directed structure practice with students. He did not use any relevant teaching materials during teaching learning activities. He was trying to participate students in discussion but limited number of students were participating on discussion. The teacher was always using questioning techniques to every student to find out the level of understanding of students.

The experienced teacher can make his students understood. A trained teacher can use rightly and appropriately the teaching materials and makes the teaching learning easy and interesting. Mathematics is a practical subject, So the use of

teaching materials is necessary in the study of this subject. But lack of appropriate method, the teaching learning process can not be effective in mathematics in mathematics teaching. If the student is interested in mathematics then she/he gives enough time to the study mathematics and ultimately gets good achievement in this subject. But if the students take as a hard subject they can not solve the problem and they don't take the more time for this subject. Teacher was not trained on motivation students with different ability and he did not teach regularly in class. He solved the one or two question in the board and gone to the new topic. Students also did not curious and active while learning mathematics, they did not enjoy while solving mathematics problems. They feel mathematics was less interesting than other subject. They did not go to school regularly. They did not complete homework given by math teacher because they can't solve the all of problem of mathematics and they did not have enough time to study mathematics. It is difficult to ask the problem with teacher which has not been understand. Students did not keep on practice of already taught mathematics problems.

Views of students about teaching learning process are as followings:

"Teacher gives focus only to talent students. I'm not satisfied with the teaching method that our math teacher is used."

"I can't understand what teacher teaches us. classroom is very noisy so I can't listen what teacher said. Discipline cannot found in mathematics class."

"I am not interested in mathematics. It is a matter of my headache because of poor mathematics background. Our teacher never provide clear concept on each topic, so we are weak in mathematics."

The above responses were shows that because of bad teaching learning process, students didn't have any interest in subject mathematics. Teacher didn't use discovery method or problem solving method etc. Bruner's theory emphasis that students can learn from guided discovery learning, problem based learning. Discovery learning believes that it is best for learners to discover facts and relationship for themselves. But in case school these learning method didn't use in classroom teaching of mathematics.

Social construction explain that motivation is the key component for learning which makes classroom more interesting and encouraging. Teacher should become a facilitator in the classroom and should provide positive reinforcement. The positive reinforcement is always emphasizing in good learning. But the case school hasn't adopted this approach in classroom teaching of mathematics.

Thus it is concluded that teaching learning process of school was the major aspects for betterment of student achievement. Teacher should pay attention to improve the condition of teaching and learning environment otherwise student's progress tends to zero. Thus traditional classroom environment during teaching learning activates was also a responsible factor for failure in mathematics.

Encouragement and Motivation for Santhal Students.

Encouragement is a factor of school and home environment. However, it inspires the students to learn something which are out of interest or matter of interest for the students. The students get less encouragement by the parents to go to school. However, the weak students in mathematics have no extra to create interest to learn mathematics. On other hand they get no encouraged environment to learn mathematics in the house. The school offers a little bit encouragement in the class

which is not sufficient for learning. The teacher or parents was do not anything for encouragements the failed students.

Motivation is the foundation of learning which encourages make and excite the person to learn from inner self. It activates the person to learn positive thing. Motivation becomes one of the prominent factors to learn mathematics which bring high achievement in mathematics.

The researcher found that the parents were uneducated and do not have knowledge to suggest or encourage students to learn mathematics Santhal students was not afford to create curiosity to learn mathematics. Constructivist theory elaborates encouragement and motivation which is the basic component to enhance the progress in students to learn mathematics but there were lack of encouragement and motivation which cause failure in mathematics.

Irregularity

Irregularity was one of the main problems of Santhal students in mathematics learning. They were compelled to go their school after the completion of their household work was their family concept. To approach the school was their second priority because their first priority was to mange food to survive their lives. For which they have to be engaged in working on the river bank getting fishes and working at other house. It shows that they were usually irregular in their school. The data provided by the school can be presented as below:

Respondents	Average attendance in month
B ₁	16 days
B ₂	14 days
B ₃	18 days
B ₄	8 days
B ₅	7 days
G ₁	10 days
G ₂	11 days
G ₃	15 days
G ₄	9 days
G ₅	18 days

(Source: Students attendance in register of school)

The above mention data presents that, their irregularity in school was very high. Due to this their achievement was very poor in learning mathematics and it was concluded that there were vast irregularity of the Santhal students in the class which justifies that there were great problem in mathematics learning. The study also shows that many Santhal students were unable to go to school regularly which was far from their interest. The low economic condition, workload at home, language and fear of punishment from teacher they feel quite difficult and afraid to go to school. Therefore such irregularity creates the great obstacle in learning mathematics.

School's Policies for Low Achieved Students

A school administrator is an educational leader who has responsibility of developing, communicating and implementation school policies. He promotes the success of all students by facilitating the development, articulation, implementation

and stewardship of a vision of learning that was shared and supported by the school community. He also promotes the success of all students by ensuring management of organization, operation and resources for a safe, efficient and effective learning environment. The another important task of school administrator was to promote success of students by collaborating with families and community members, responding to diverse community interests and needs, mobilizing community representative and acting with integrity and fairness.

School's policies plays great role in the improvement of school. A critical study of all aspects such as administration, community relation, students performance, staffs relation etc and development of operational policies can reduce all the problem that may be observed at school. The following were some of the reprehensive responses of head teacher, math teacher and management committee.

What type of strategies can be managed by school for failure students to improve achievements?

"I am planning to manage one mix class from grade IV and V especially for failure students." (Head teacher)

"The school is providing extra class in the evening for failure students in mathematics." (Members of management committee)

"We are now planning to take internal test at least twice a month." (Math teacher)

"The school is providing extra class in the evening at minimal cast but the number of the class is same as regular class so the school should manage us in at least two sections measuring the level of students." (Students)

The above views indicate that a lot of improvements have done from this year and the process of improvement is still continuing. The result of reforms cannot be more analyzed due to the beginning of the implementation. But the vision of school were clearly defined among teachers, parents, students and communities.

In short the research declares that the major causes of failure in mathematics were irregularly of student, Home environment, lack of economic condition, reinforcement in classroom, teaching learning environment, supervision and assessment, physical and instructional facility, lack of teaching materials etc which directly affect the result of the student in mathematics.

Chapter V

SUMMARY, FINDINGS, CONCLUSIONS AND

IMPLICATIONS

This chapter deals with the summary of the research, major findings of the research and conclusion and recommends for further study. The first section levels the summary, the next sections lists the major findings and conclusion derived in the basis of research analysis and finally presents recommendation for further study.

Summary

A range of source shows that school mathematics failure is a problem not only in Nepal but in the world. Failure in mathematics are creating difficulties in teaching learning activities at school. Why many Santhal students fail in mathematics ? Why the achievement of Santhal student is very low ? Since the time immemorial, these Santhal people are being discriminated, humiliated and disadvantaged socially, economically, culturally and politically in the society by the other caste people and the state on the name of ethic group. providing individual right to education and managing classroom with different cognitive level to bring out common educational outcome is a matter of problems to the school administrators. They are also challenging to the curriculum designers. Thus, this study totally concerned with the find out the cause of failure of Santhal students in learning mathematics.

This case study had been done to find the causes of failure in mathematics. The researcher had selected Shree secondary school Bairiya Bhimpur Bhathigachh-6, Morang on the basis of the achievement in mathematics. As the researcher is also a

local residence of this area and the school was facing problem of failure in mathematics. So the researcher had selected this school for case study. After constructing the tools of data collection such a observation form, interview, schedule, the researcher participated at school and studied relevant documents related to sample students to find the causes of failure in mathematics of Santhal students. How student learns mathematics is concerned with their opportunities to learn and the discussion he/she take part in the level to which student learn mathematics depends of their engagement and experiences in classroom activities. As we know each child has innate potential sets of abilities. So he/she needs opportunities to display that individual potential. Thus, the creation of self learning environment is necessary for students. In this research the researcher has analyzed the school's physical and psychological environment, school's policies, teaching learning strategies, home environment, parent's education and economic condition, irregularity, language discrimination, etc are the factors to find out the cause of failure in mathematics of Santhal students.

Findings of the Study

This case study was mainly focused related the factor that causes of failure in mathematics of Santhal students at grade V. Financial condition were not strong enough to send their children at school and can't afford them in their further education. Most of the parents are illiterate and their children are usually used as means of earning money for their simple livelihood. Girls students have not enough time for home study and to do exercise practice of mathematics at home because of household works and domestic problems. Because of non education parents, culture

of the home is also not good for study. This is major causes of failure of girls students in mathematics.

The following points were observed while conducting this study which are the major findings of the research.

-) Teaching style was traditional. Lack of student oriented teaching learning environment is causing to making the student's learning poor.
-) Mathematics was considered as a difficult subject by the students. The students of mathematics had negative attitude to their teacher as well as math subject. This situation is causing to make failure in mathematics.
-) School policy hasn't concerned about mathematics learning. There weren't extra classes of mathematics for failure students. There was no library and sufficient learning materials in school which are causes of failure in mathematics.
-) Beside the learning, the Santhal students participate more in house hold work and cultural activities.
-) Santhal student do not get encouragement and motivation at home and school.
-) The method of evaluating the achievement of students at school were only terminal, half yearly and yearly exams. However, the teacher used to give homework daily but student were facing the problem in daily of checking the copies.

-) Santhal student have used their mother language at home and Nepali language as the second language which never used in his/her home. There is language discontinuity at home and school.
-) By the economic condition and lack of positive concept about education of their parents, they are irregular in the school.
-) There is discrimination concept between son and daughter.
-) Most of the people of Santhal community passed their time in unnecessary deeds like drinking alcohol, playing cards, carom board etc.

Conclusions

From the above finding it is concluded that the language plays vital role in mathematics learning. Due to the lack of proper understanding of language, that creates the difficulty in learning mathematics. Their economic status is not enough to carry their future education and as a result they compelled to break their education. They are given less emphasis for learning and participation. The learning environment plays vital role in better performance in learning mathematics. Due to the lack of proper environment at home and school, that creates the difficulties in learning mathematics.

To upgrade economic condition, government should employ their parents. To create learning environment at home awareness their parents by organizing some programs and at last there should be the provision of teaching mathematics to the students of primary level in their mother tongue as well as in Nepali language. So, the language problem of them can be solved. Also there can be another provision of Santhal teacher in primary level to minimize the language problem.

Implications

This was a case of a school. So the results can not be more generalized at all situation. It is due to lack of time and resources. Thus, similar researches should be done in large schools district wise

From the above finding and conclusions, the researcher would like to suggest some recommendation for the improvement of mathematics achievement of the school. Some of them are as follows:

-) A similar type of study can be conducted at different levels and in different subjects.
-) The school should manage the physical facilities to improve the quality of education.
-) Student- centered teaching learning methods and techniques should be emphasized.
-) Continuous assessment system should be implemented to improve the student's achievement of mathematics.
-) School should manage extra- class for failure students in mathematics.

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Appendix – A

Individual Student Record

Name: _____ Class: _____

Roll No: _____ Age: _____

Address: _____ Date: _____

.....Zone.....District.....VDC/MP.....

.....Ward No.....Village

Name of School:-

Girl/boy:-

Religion:-

Position in previous class:-

Number of family member:-

Father's Name:-

Education: -

Occupation:-

Mother's Name:-

Education: -

Occupation:-

Interested subject:-

Aim of life:-

Hobby:-

(Source: Dahal, 2011)

Appendix-B

Interview Format for Mathematics Teacher

Name: _____ Date: _____
Qualification: _____ Sex: _____
Experience in teaching: _____ Age: _____
Address: _____

Interview guidelines

- Teaching strategies to Santhal students
- Problem in teaching Santhal students.
- Encouragement and motivation to the Santhal students
- Participation of students.
- Teacher students relation
- Dominance of language.
- Teaching learning environment
- Teaching method.
- Teacher view about Santhal students
- Students learning habit.
- Use of homework and class work.
- Facilities provided by school
- Extra class for low performer.
- Teaching and learning practices environment in the school
- Causes of failure in mathematics.
- Policies for low achieved students
- Relationship with guardians.

(Source: Dahal, 2011)

Appendix-C

Interview Format for Students

Name:

Date:

Roll No.

Class:

Address:

sex:

Interview guidelines

- Teacher behavior towards them
- Opportunity to learn at home
- Opportunity to learn at school
- View towards mathematics teacher
- Family background/support.
- View about mathematics/language.
- Homework and class work.
- Family support in learning.
- View about school environment.
- Regularity in school
- Opportunity provided by school
- Teaching method.
- View towards causes of failure in exam.
- View towards school policy for low achieved students.
- Income sources.

(Source: Dahal, 2011)

Appendix-D

Interview Format for Parents

Name:

Age:

Qualification:

Occupation:

Name of his/her child-

Address:

Sex:

Monthly income:

Interview guidelines

- Individual description
- View about language
- Parent's view about education
- View about school and teacher
- Obstacles of Santhal children in school
- View about cost of education
- School and home environment in learning for students
- Guidance of mathematics learning
- Occupation of the family and their income sources
- Number of children that they have
- Expectation from school
- View towards schools facilities and policies
- Culture they followed

(Source: Dahal, 2011)

Appendix –E

Main Topics of Observation Area

- Regularity of Santhal students in mathematics class.
- Regularity of mathematics teacher in class.
- Learning behavior of Santhal students.
- Relationship between teacher and Santhal students.
- Learning environment at home.
- Friend's behavior towards the Santhal students.
- Children's involvement in household work.
- Participation of Santhal students in teaching learning process.

(Source: Dahal, 2011)