

CHAPTER I

Introduction

Background of the Study

Mathematics is important in every step of life such as science, commerce and even in research for that mathematics knowledge is very essential. Mathematics is often called backbone of education and fundamental component of the literacy. Different research shows that it is a gate way and critical filter to study and employment. Mathematics is a very important subject, it helps to develop logical thinking in one side and on the other side it help students to develop their careers and also provides doorways for the further study.

The meaning of gender issues of class socially created roles of men and women. In this study gender refers to the social identity of men and women. It cannot be understood at the level of individual is grammatical classification of sex. Gender refers to the roles and responsibilities of men and women that are created in our families, societies and cultures. Gender is social strata. It is main focus on the analysis of gender as a social structure that has its origins in the development of human culture not in biology or procreation.

The concept of gender was constructed and explored by American feminists in 1970s. Gender is human invention like language kinship, religion and technology. Gender is sociological difference and sex is biological difference. Mathematics is necessity of civilization. It was originated from practical experience of man's need and it continued to develop along with the development of civilization. Mathematics is creation of human mind. Mathematics gives us power of the human mind and becomes an intellectual capacity for both men and women. The international content

of gender definition is 'it has more direct relevance the peace is inextricably linked with equality between women and men development'.

People are born free. A mother has to bear the same pain whether they are boys or girls. But the time passes discrimination starts, treatment differs and separate responsibilities are given. The girl's periphery starts to limit whereas a boy's starts to expand. Providing education to a girl is thought useless because she would go to her husband's house after marriage. All these have affected the literacy rate of girls in the country. According to The 2011 census showed the percentages of girl's literacy rate 44.5% and boys at 71.6%. Girls who are sent to school have to do household work, take care of the youngsters and help parents in their work. As a result they are not able to do well in their study. They are irregular in the school. They have to drop out from early grades. It is very difficult from them to complete the primary cycle of education. The socio-economic condition also affects their education. Due to lack of educational awareness in parents. Girls are deprived of the access and opportunities of education.

Gender is a social institution. It focuses on the analysis of gender as a social structure that has its origins in the development of human culture not in biology. So, whatever the behavior shown for girls, it is created by social and cultural activities in our context because of the male dominated society. Females are only for man help they can do nothing for their own existence and for their identity, our culture is dominating with full of such concept. In such situation how a girl can flourish?

School is also a mini-society. There are also different races, caste, cultures and different facilitated persons. So, the similar characteristics could be seen in the school. This area is also not protected by the discrimination or we say gender bias, which studies show that school performance of girls is not satisfactory. They are more

irregular in the school than boys. They do not take part in classroom interactions.

Home environment also affects children's learning. Moreover, there is gender discrimination in the school and at home as well as in the society.

Gender differences can be seen in mathematical achievement that is why gender difference has been taken as burning issues in mathematics education. Females are very backward in comparison to males, in respect to education development. There are many causes of backwardness of females among them social factor is one.

Females could not in the access in educational and social equality for a long time.

Teachers have not exhibited the most respectable track record when it comes to date to recording their behavior towards male and female. Numerous researches and studies show that:

-) Boys got more attention by being straight forward and unreserved.
-) Teachers praise boys more often.
-) Boys receive more academic helps and
-) Teachers are more likely to accept boy's ideas or opinions during classroom.

Vetter (1992) reported that there were important gender differences in the home however; parents had lower expectation for their daughter then had for their sons in term of mathematical achievement.

Linn and Hyde (1992) reported that male were better at making conjectures, setting experiments and problem solving but female are better in interpersonal relationship and performing family task such as sewing, typing and cooking.

In secondary level girl performance is very lower than boys. Traditional empirical research monitoring female's participations in mathematics and related career activities should continue, as should document the effect of investigating program.

Going back to the history of Nepalese education, it clearly shows that Nepalese education was a male dominated education system. Girls were not considered as a part of education system. Since Nepalese who wanted to get higher education used to go Indian school and college because of strict conservation thought of Rana Regime, it was not possible to girls to get formal education. Only a few girls were fortune enough to get education at their home if there elder wished to and could afford a private to tutor or guide by their educated elder. This clearly reveals the denial for girls formal education, disadvantage faced by girls and the opportunity they deprived of simply because they were girls. This is one of a historical evident from the gender discrimination against girls.

NESP (1971) to some extend had attempted to follow the three issues in this regard. School environment is not favorable for girls. There is no appropriate physical facility in the school. Lack of discouraged from going to school. All these have affected the literacy rate of girls in the country.

Statement of the Problem

Previous studies have established that the overall picture of girls and women's participation in mathematics education is low because of the limited opportunity, many obstacles and relevance. Lower achievement and also the participation of female in mathematics is reflection of their position in society.

Efforts have been made for the expansion of girl's education in the country and today more girls are enrolled in schools. But studies were shows that school performance of girls is not satisfactory. They are more irregular in school than boys. They do not take part in classroom interactions. Home environment also affects students learning.

There are gender issues in the school and at home (CERID, 2004).

The main problem of this study is mainly concerned with the effect of gender in learning mathematics at grade nine students in Rupandehi district. Thus the study attempt to seek the answer of the following questions:

-) How the gender disparities exist in the mathematics learning?
-) What are the factors that effect in mathematics learning?
-) How does the gender affect in attaining low marks in mathematics?
-) Does the gender in school affect girl's learning?

Objectives of the Study

This study was intended to accomplish the following objectives:

-) To find out the effect of gender disparities in mathematics learning.
-) To analyze the effect of gender difference in mathematics learning.

Significance of the Study

The reason why the researcher try to find out the gender difference in learning mathematics is to identify why the girls student obtain low score in most of the examinations though they are treated equally as: they are taught same experts by the same school and same tutorial classes. This type of research helps to policy maker and educationist to follow the right strategies to eliminate the evil occurred by gender gap

because government is investing millions of dollars for women empowerment but because of low grade in technical subject like mathematics related subject such investment is being just a wastage. This research study has some significance as follows:

-) It may help to reduce the gap between gender and learning mathematics.
-) This study would help to provide proper guidelines for policy makers and educationalists to formulate appropriate policies related to mathematics.
-) This study may help to support for good parenting in favor of girls in learning mathematics.
-) This study could provide ground for the structural changes inside classroom, school and home environment.
-) This study would get the ways for new research working in this field.

Delimitations of the Study

This study would have following delimitations:

-) This study was limited to Shree Janta Secondary School Orwaliya, Rupandehi.
-) This study was limited on grade nine. Five male and five female were included in this study.
-) Mathematics teacher, students and parents were the focus point of the study.

Definition of the Related Terms

Gender. Issues of class socially created roles of males and females.

Effect. A change which is a result or consequence of an action or other cause.

Gender discrimination. Prejudicial treatment of an individual based on a gender stereotype (may also be referred to as sexism or sexual discrimination).

Gender issues. Specific consequences of the inequality of women and men.

Gender bias. The tendency to make decisions or take action based on gender. Gender bias is basically the belief or attitude that one sex is of higher power than the other sex. We see this in the subject of mathematics a lot because it is thought that men are naturally gifted and women are lacking in the content area. Gender bias is the gender issue in this research. In education, this includes decisions related to admissions and grading and giving opportunities in classroom.

Gender Analysis. It is the collection and analysis of sex-disaggregated information. Men and women both perform different roles. This leads to women and men having different experience, knowledge, talents and needs. Gender analysis explores these differences so policies, programs and project can identify and meet the different needs of men and women. Gender analysis also facilitates the strategic use of distinct knowledge and skills possessed by women and men.

Gender Relation. Ways in which a culture or society defines rights, responsibilities and identities of men and women in relation to one another.

Gender Belief. A strong feeling about gender exists or is true.

Teacher. Teachers who teach mathematics in grade nine of selected schools is referred as a teacher.

Achievement. It is the level of academic performance in a given mathematics examination. In this study mathematics achievement has been defined as score obtained by students in mathematics out of 100 full marks.

CHAPTER II

Review of Related Literature

In order to get a better understanding of the subject of one's study, it is essential and helpful to survey the literature and studies relevant and related to it. The related studies provide the researcher in making his problems more realistic, precise, researchable and meaningful. Having these advantages in mind, the researcher reviewed the relevant in the field of attitude towards mathematics and other school subjects. The related literature review done with the help of national as well as foreign scholar's research. Some of the related literatures are listed below.

Empirical Review

Dhakal (2006), conducted his thesis a study on the topic "A study of the factor affecting the girls students attitude towards the selecting of optional mathematics at secondary level". He concluded from the study that the girls should have the positive attitude towards the selection of optional mathematics. The attitude is only the determining factor to select optional mathematics and the girls students do study optional mathematics because they have positive attitude towards these variables and those having negative attitude do not select optional mathematics. The learning achievement of those who survive is also not encouraging.

Upadhyay (2010), females are very backward in comparison to male in respect to educational development. There are many cause of backwardness of females among them, Social factors is one female could not educational and social equality for a long time. Researcher found that gender differences in math achievement have

declined. However, gender difference still preparatory courses that are considered essential to acquiring the foundation for future of advanced mathematics.

Chatavt (2013), conducted his thesis a study on the topic “Achievement in mathematics by gender” with the objective to compare the achievement in mathematics according to of enrollment school year and gender. Researcher used t-test, ANOVA and post hoc test to compare achievement in mathematics. He conclude that mean score of girls is less than boys, main cause behind such low achievement of girls is less priority given by parents to their daughter than son, less confidence of girls to solve mathematical problem, home environment, cultural customs, classroom environment to study, unequal behavior by boys students.

Sharma (2014), conducted a study on “Effects of family environment in mathematics achievement”. The main objectives of this study are to compare the mathematics achievement of students of lower secondary level with respect to their family environment. This research was based on the descriptive survey design along with comparative design and qualitative in nature. He was chosen thirty students from four public and private school in lalitpur district. Total sample size of this study was 240. The finding of the study shows that the mean achievement score of educated parent’s children are higher than the mean achievement score of literate parent’s children.

Benbow and stanley’s (1980), conducted his master thesis “A study of sex difference in mathematics ability” Gender differences in mathematics have received serious in the mathematics education research for the last four decades in the united states after strong evidence for a male advantage. It is a study of gifted of gifted

seventh grade and the results show males are four times more likely to score than females on the scholastic Aptitude Test in mathematics.

Lamsal (2016), conducted his thesis a study on the topics “Causes of gender gap in enrollment in major mathematics course” with the objectives to identify the causes of gap between the enrollment of male and female students in higher mathematics education and, to find out the factors influencing in the gender gap in mathematics education. He concluded that there are many reasons create gender gap in enrollment of major mathematics course such as: less confidence, traditional method use to teach, wrong cultural practices, discourage female students by other, unequal behavior boys’ students etc.

Fennema and Sherman (1997, 1978; Schonberger 1978) the social cultural factors are influencing girls student’s performance and participation in mathematics. Society has the attitude that the girls students do not perform well in mathematics. Such attitude of the society affects the girl student’s directly and indirectly participating in the mathematics.

Khanal (2017), conducted research on “Girls perception toward gender discrimination and its effect in learning mathematics” with the objectives to find out the perception of girl’s toward gender discrimination and, to identify situation of gender discrimination in mathematics classroom. He prepared questionnaire and administered two hundred students of five schools. He was used to rating scale with arranged in the likert format. He concluded that sample students have positive perception toward gender discrimination and effect of parent’s behavior is more in learning mathematics than other type of discrimination.

The above collection of literature that is closely related to my study in way or the other portrays the types of research that will be carried out in relation to gender. The reviews of above mentioned literature have provided me with important implications on the issues of gender and mathematics learning. However, most of reaches and studies are based on the achievement difference between girls and boys and difficulties and barriers for girls in mathematics learning. Thus, I hope my study will help to decrease effects of gender in learning mathematics.

Theoretical Literature

There are many ways of looking any phenomena. Everyone is probably familiar with the old story about the three blind men who encountered an elephant for the first time. One of them ran his hands over the animal's broad side and described the elephant like a wall. The second blind as he felt the one of the creature's huge legs, become convinced that the elephant is similar to a tree. Finally, the third blind man, as he handled the beast's flexible trunk, declared that the elephant resembles a large rope. Anyone may be amused at the ludicrous conclusions of three blind men but they aptly illustrate that people tent, see and interpret things within own frame of reference, which is based on their limited personal experiences and inclination. These diverse viewpoints are called perspective. Asthe perspective of these three blind towards an elephant, there are various that have their own perspective towards gender discrimination and its practices in our family, society and school. Here in this section, researcher discusses the theme of Social Cognitive Theory and Feminist approach.

The Social Cognitive Theory

According to social cognitive theory (Schunk 1991) learning occurs in the social environment by observing others. The reciprocal interactions among person's behavior's and environment and the distinction between learning and performance are some of the features about learning and performance of behavior from this perspective. Learning and performance of learned behaviors are influenced by several factors. According to Schunk (1991), "These factors affect what individuals to attend how they process information, whether they perceive learning as useful and how they guess their capability for learning and performance".

According to Bandura (1986) "human functioning is explained in terms of a model of triadic reciprocally in which behavior, cognition and other personal factors, and environmental events operate as interacting determinates of each other". He also explained "learning is largely an information-processing activity in which information about the structure of behavior and about environmental events is transformed into symbolic representation that serves as guided for action".

Environment refers to the factors that can affect a person's behavior. There are social and physical environment. Social environment includes family members, friends and colleagues. Physical environment is the size of a room, the ambient temperature or the availability of certain foods. Environment and situation provides the framework for understanding behavior. The situation refers to cognitive or mental representation of the environment that may affect person's behaviors.

The three factor; environment, people and behavior are constantly influencing each other. Behavior is not the simply result of environment and the persons, just as the environment is not simply the result of the persons and behavior. The environment

provides models for behavior. Learning occurs when a person watches the action of another person and the reinforcements that the person receives.

The Feminist Approach

Feminist approach came into existence with the dissatisfaction toward sociological theories and subordination of woman in various fields. Feminists argue that mathematics is a male dominated subject that explains everything from the viewpoint of male behind female and feminist's perspective is must to understand the subordination and exploitation of women by men. It argues that women are excluded from the domain of mathematics, thus masculinity remains privileged. Feminists argue that only including or adding women in the domain of mathematics does not serve the purpose of understanding women or justify the absence of women's presence in mathematics. They further claim that the biological different between men and women do not explain their roles inside classroom rather it needs to be understand as socially constructed (Adkins, 2005). They admit that there are anatomical difference between boys and girls but what is important are the ways in which girls and boys are socialized and brought up, how they are treated and interacted and the ways they are taught the appropriate behavior.

According to feminist analysis, in all cultures, girls have been socialized into gender roles, although the degree to which behavior is innate or environmentally determined is greatly debated. In most cultures and time periods of the world, girls have traditionally played with dolls and toy cooking and cleaning equipment, while boys prefer toys and games that require more physical activity or simulated violence, such as toy trucks, balls and toy guns. Girls may be prevented from participating in many of the same activities that boys participate in at the same age, as a matter of protecting

them from perceived outside dangers, such as boys and men or anything that may cause physical injury. Sometimes boys are presented to be more responsible than girls, except in the cases of caring for younger children, which is sometimes thought to be instinctual in girls. Girls, as a group may be perceived as being more docile than boys and as being less capable of rational decision making and more governed by emotional responses. So, from the concept of above reviews of the theory, the researcher had drawn the following conceptual understanding for the further study.

Conceptual Understanding of the Study

From the above review of literature and the theoretical approach, the researcher has come to the point that the topic of current research Effects of Gender in Mathematics Learning has been left untouched. But, the above mentioned literatures have helped the researcher to save the research and draw meaningful conclusion. Review of those literatures gave some conceptual understanding about the effects of gender in learning mathematics at grade nine.

Local culture feast and
festivals

Interaction between

teacher and students

The parent's concentration towards their children education, parent's occupation and economic status, parent's view towards boys and girls, interaction between teacher and students, local culture feast and festivals, Mathematics learning environment of boys and girls at home and school are some hypothetical factors that may effect of gender in mathematics learning among students. The culture is male dominated. The son or boy is more emphasized than daughter or girl. Comparatively less emphasized to girls may negatively effect in mathematics learning. On one hand, the gender biasness in classroom as well as in home may cause less encouragement to girls than boys and other hand, the worked of girls are high than boys in home. Hence, the learning environment of girls is less favor than that of boys.

CHAPTER III

Research Methods and Procedures

Research methodology is a scientific approach, which deals with the systematic procedure of collecting data and use of appropriate research method. It describes the design to be carried out for the study. This chapter discuss on rational of the selection of the study area, method of collecting information, selection of case school and samples, instrument, data collection, procedure and data analysis and interpretation of the result.

Research Design

Research design is the most important part of the research. Research design is the plan which is developed before starting the research work. Therefore, research design is the base line of each research. Preparation of research design is needed to conduct a research in a proper way. This research was based on qualitative research design. This is a case study related to Effects of Gender in Mathematics Learning. Case studies are a strategy of inquiry in which the researcher explores in depth a program event activity process or one or more individuals. Cases are bounded by time and activity and researchers collect detailed information using a variety of data collection procedures over a sustained period of time. Data typically collected in the participant's setting data analysis inductively building from particulars to general themes and the researcher making interpretations of the meaning of the data. The final written report has a flexible structure. Those who engage in this form of inquiry support a way of looking at research that honors an inductive style, a focus on individual meaning and the importance of rendering the complexity of a situation (Creswell, 2015). This is qualitative as well as descriptive in nature. The data and

information were collected through using tools such as observation and interview schedule.

Selection of Field and Respondents

The present research work is a case study on “Effects of Gender in Mathematics Learning”. I selected the case school named Shree Janta Secondary School which is community based public school and located in MarchwariMunicipalityWard No. 5 as the sample school on the basic of purposive sampling. This study was qualitative in nature. So, the sample is not large. Hence, the sample size of the inquiry depends upon the researcher that what does she/he want to know, with the purpose of inquiry, what can be the credibility of the study and what can be done with available time and resource in the rural area of the Rupandehidistrict. So, the total sample students of this study were 10 students. They were selected by purposive sampling to fulfill the objective of my research work. They were named G1, G2, G3, G4, G5, and B1, B2, B3, B4, B5, where G indicate girls and B indicate boys. I selected 10 key respondents from different family background and multicultural to elicit the factual information for the case study of grade nine. The parents of selected students and mathematics teacher were other respondents in this study. The respondents were selected for the active participation to fulfill the objective of the research work successfully.

Tools of the study

Data collection is one of the most important tools for the study. Each aspect of the study is analyzed and study on the basis of data collection techniques. There are many tools for the qualitative research to get the information from the participation

about their experience, ideas and beliefs. The needed data were collected from primary and secondary sources. Primary data were emphasized for this study and the school documents related to the study were used as secondary data. To collect the primary data for this study, the following main tools were used.

Observation Form

It is a field work. The main idea behind it is to collect real information by creating good environment. It is a real life setting based activities in which observed behaviors, activities, attitude etc. I mentioned the daily notes on classroom observation of the sample school. Observations also enabled me to look a fresh at every day behavior that otherwise would be taken for granted expected to go unnoticed. Observation class had been observed directly and indirectly. Direct observation is a close and full involvement of the researcher in a nature setting in order to experience and understand the behavior, interaction event and so on. A classroom observation is a formal or informal observation of teaching while it is taking place in classroom.

Interview Schedule

Karlinger (1986) describes, interview as “a face to face interpretational role situation in which one person, the interviewer, ask person being interviewed, the respondents and questions designed to obtain answer suitable to the purpose of the research problems. 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. It performs depth understanding

and identifies key information for the solution. Interview such highly purposefully task that goes beyond more conversation.

In this study, open ended semi structured interview was administrated to use their own words and developed and their own thoughts. Prior to visiting the field, interview schedule was developed with reference to research objectives and with guidelines of previous researches. The data from interview was consisting of direct questions, from the respondents about their experiences, opinions, feeling and knowledge. The separate set of interview schedules was developed for each group of respondents that was girls and boys for their teachers and for parents but later those different sets was modified into questions so that sequence could be maintained for every respondent respectively.

Quality Standard

It is necessary to maintain quality standard after completing the construction of research tools. Checking and triangulation have been applied for quality standard. I followed the following criteria to mention the quality standard in my research.

Transferability

Transferability is used in terms of the concept of external validity. This criteria shows the applicability of finding in one context (where the research is done) to the contexts (where the interpretation might be transferred). To maintain the transferability I explained mathematical practices that found in different community students. I tried to capture most of scenario by using deep description of observations, interviews and my meaningful making (Acharya, 2017).

Credibility

This is used in terms of the concept of the internal validity. It helps the researcher to establish the confidence in the 'truth' of their finding. The credibility of their research: prolonged engagement, persistent observation triangulation, peer describing, negative case analysis, progressive, subjectivity checks and member checking. To maintain the research I tried to spend as much as time for observation and engaging with different people with their work (Acharya, 2017).

Conformability

The another quality standard is conformability, which shows the quality of the result produced by an inquiry in terms of how well they are supported by information (member) who are involved in the study and by the events that are independent of inquiry. I am also a part of mathematics students so, to maintained conformability, before concluding the information, I got those information myself many times and sometimes. I confirmed those informations to my other students before concluding as well (Acharya, 2017).

Dependability

This concept is used in terms of reliability. This is also the another quality standard for judging the quality standard and shows the consistency of the inquiry process used over time. I tried to present the logic to maintain it, for selecting people and events to observe, interview and include in the study. I will try to maintain credibility and transferability to ensure dependability standard (Acharya, 2017).

Data Collection Procedures

The permission was taken from the administration of the selected school. The research tools develop. Rapport was maintained with the selected respondents before probing into this research. Respondents had interacted informally during Tiffin breaks and in the morning before the class started or after the school.

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

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

Data Analysis and Interpretation Procedures

It is qualitative as well as descriptive research, so there is no mathematical procedure to analyze the data. The collected information at first, were categorized according to the category of the respondents and their different respondents were given in the text of interview and observation notes. After categorizing the collected data was interpreted and explained the perspective of the respondents which were

more helpful to fulfill the objectives of this study. Cross match or triangulation use more than one method or tool to collect more than one source of data for making the research qualitative and faithful. It is related to the students, teacher and parents to collect the data for this research. It was adopted to maintain the transferability, credibility, conformability and dependability of the information. Then, the cross matched information was analyzed and which was descriptive in nature. The case of the students which were collected from the different technique, were the major factors and their descriptive lead to the research in its full shape. The data analysis was interpreted by using the framework of the research in literature reviewed.

CHAPTER IV

Analysis and Interpretation of the Data

This chapter deals with the analysis and interpretation of data. This is considered as the main body of the research. Being the main body of research, it can be seen as the practical aspect of study. On the basis of the intended objectives and constructed tools for collecting information, researcher visited to research field for grasping current data.

This chapter was analyzed the collected data under the following topics: Parent's view towards boys and girls, Parent's occupation and economic status, Parent's concentration towards their children education, Interaction between teacher and student, Local culture, feast and festivals, Mathematics learning environment of boys and girls at home and school. The collected information at first was categorized according to the category of the respondents and different themes were given in the text of interview or the observation note. These themes were considered as a code and the similar code version of respondents were collected together and explained in their perspectives.

History of Case School

Shree JantaMadhyamicVidhyalya is located at Marchwari-5, Rupandehi district. It was established in 2027/06/17 B.C. The school initially started from the grade 1 to 3. The school was very poor condition with little number of students and without its own building. The school stands within the narrow area and is situated five hundred meters east from Harinampur Bazar lies between orwaliya villages.

According to the old teacher of this school, it was established with the great effort of local people and with the collaboration of the government. Initially, the students had studied on the mat under the tree. After some years the school building was constructed with the help of local worker, villager's financial and labor donation. The school was upgraded in 2051|01|22 B.C as a lower secondary school. The school was upgraded 2057|07|09 B.C as a secondary school. It was established as a higher secondary school in 2067|04|01 B.C. The main castes living in the local area are Brahmin, Yadav, Gupta, Barai, Pasi, Harijan, Chaudhary(Kurmi) etc. During the observation it is also noted that the students was not getting all the necessary teaching stuffs, materials for mathematics and science laboratory.

Demography of Secondary Level Teacher

Teachers are important input in teaching learning process for the better functioning of the school including other input as physical facilities and educational materials. Different literature and research have given important place for to teach effectively. Teacher's number, qualification training and experiences are the important factors for better performance in the classroom teaching and school holdings. There are 9 member of secondary level of teacher but no any female teacher in secondary level which creates difficulty in girls' learning mathematics. Girls feel lacknessof ownness in the absence of female teachers as a result they cannot be involved well in learning as equal as boys. This is to say, the low involvement of girls in learning results low involvement in teaching staffs too. So, this table is helpful to show male oriented not only in classes, school but also in the staffs too.

Table I. Demography of Secondary Level Teacher

S.N	Name of the teacher	Post	Qualification	Training	Remarks
1.	Karuneshkumar Tripathi	Head teacher	M.Sc/B.Ed	Yes	Rahat
2.	Sam BahadurGurung	Math teacher	B.Ed	Yes	Rahat
3.	BaliramBarai	Teacher	B.A/M.Ed	Yes	Rahat
4.	Amerikayadav	Teacher	M.Ed	Yes	Rahat
5.	Muktipersadpatharcatt	Teacher	M.A	Yes	Rahat
6.	Hari Shankar Barai	Teacher	M.A/B.Ed	Yes	Permanent
7.	UmeshKurmi	Teacher	M.A/B.Ed	Yes	Permanent
8.	SaileshChaudhary	Teacher	B.Ed/B.A	Yes	Temporary
9.	Narsing Narayan Tripathi	Teacher	B.Ed running	Yes	Temporary

Source: School Document

Table 4.1 shows some teachers are only permanent and others teachers are rahat and temporary. The all teachers' qualification, training and status are good. All teachers were trained but there is no any female teacher in secondary level. The present status of this school shows that there were adequate numbers of experienced and qualified teachers. The head teacher is qualified, highly experienced and able to run administration of the school. The mathematics teacher is also trained, qualified and experienced..

Table II. Results of Respondent of last Year

Students	Obtained mark in mathematics	Average mark
G1	20	37.8
G2	32	
G3	39	
G4	37	
G5	61	
B1	52	55.4
B2	45	
B3	75	
B4	47	
B5	58	

Source: School Document

The finding of this study shows that boys learn more than that of girls. The average marks obtained in last year exam of boys are 55.4 whereas that of girls was 39.4. This is the consistency with the previous studies.

In contrast with this study, previous researches have shown that boys are good at mathematics learning than girls (Brophy, 1985; Fennema and Peterson, 1987; and Koehler, 1990). Males are better at spatial relations. This skill was thought to be the reason males generally performed better on math tests (Halpern, 2000) and this study also shows males are better performed in mathematics than girls.

Introduction of Case Respondents

G1. The respondent is girl student of grade IX. She is 17 years old. She has been studying at this school since one class. Her future aim is to be a teacher. Nepali is her favorite subject. Her parents are uneducated. Her family economic status is low. Her father works as mason and mother is a housewife. She lives with one elder sister and 2 small brothers along with their parents. She always sits with her girls friends. She feels mathematics is a hard subject.

G2. The respondent is girl student of grade ix. She is 16 years old. She has been studying at this school since six classes. Her future aim is to housewife. Her favorite subject is English. She is one of not an active in the class. She is personality of shy. Her parents are uneducated. Her family economic status is not good. Her father works in cement factory as a worker and mother is housewife. Her family has 8 members out of 3 brothers and 3 sisters. She asks friends when she gets problems in mathematics.

G3. The respondent of G3 is a girl student of grade ix. She is 15 years old. She has been studying in this school since seven classes. Her future aim is to be a good teacher. She likes Nepali subject most. She sits on the second bench of corner side. Her performance in mathematics is good. She is living with her elder brother and 3 small sisters. Her parents are educated. Her father is an electrician and mother is a housewife.

G4. The respondent G4 is a girl student of grade ix. She is 17 years old. She admitted in this school last year. Her future aim is to a teacher. She lives with her parents and small two brothers and three sisters. Her parents are uneducated. She likes Nepali subject most. She sits on the last bench on girl column. She does not ask

whatever she does not understand. She is not completely familiar with her all classmates and teacher as well.

G5. The respondent G5 is a girl student of grade ix. She is 15 years old. She has been studying in this school since six classes. She has one elder sister and one younger brother. Her parents are educated. Her father is work in office and mother is a housewife. Her future aim is to be a nurse. She always sits on third bench in the corner. Her favorite subject is a mathematic. She gets good environment at home to study. Sometimes she helps her mother in household works. Her family economic condition is good. When she needs mathematics materials her parents provide easily

B1. The respondent B1 is a boy student of grade nine. He is 15 years old. He has been in this school since six classes. His aim is to be a cricketer. He likes mathematics subject most. He has 8 members in his family having one brother and four sisters. He is a smallest brother. His parents are uneducated. His father is mason and mother is a housewife. His family economic condition is medium. He always sits at second bench. He is regular student. His performance in mathematics is good.

B2. The respondent B2 is a boy student of grade ix. He is 16 years old. He has been studying in this school since grade six. His aim is a singer in the future. His favorite subjects are mathematics and Nepali. He is one of an active student in the classroom. His parents are uneducated. His family economic status is low. His father works as painter. His family has seven members out of two brothers and three sisters. He is regular student.

B3. The respondent B3 is a boy student of grade nine. He is 14 years old. He has been studying at this school since seven classes. His future aim is to be a doctor. He likes science most. He sits on the first bench. He is one of a discipline and regular

student of classroom. He is the talent student in the classroom. He has elder brother and one small sister. His parents are educated. His father is work in office and mother is housewife. He has good relationship with boys and girls as well as teacher in the classroom. His parents always supports in his study.

B4. The respondent B4 is a boy student of grade nine. He is 16 years old. He admitted in this school one class. His future's aim is to be a business man. Economic is a favorite subject. He attends school regularly. He is silent nature student. His performance in mathematics is good. His father works as mechanic in workshop and mother is a housewife. His parents are uneducated. He has one elder sister who is studying in xii. He consults with his sister if he faced problems in mathematics. His family economic condition is good.

B5. The respondent B5 is a boy student of grade nine. He is 15 years old from middle class family. He has been studying in this school since six classes. He has one younger brother and two small sisters. His parents are educated. His father works as a salesman in departmental store and mother is a housewife. His future aim is to be a good teacher. He likes science and mathematics. His performance in mathematics is good. He is an active, regular and discipline student in the classroom. He gets good environment at home to study. He is more familiar with boys than girls.

Parent's View Towards Boys and Girls

Parent's expectation has an effect on their children's education. They expect much from their sons and provide education to their daughters just completing their responsibility as parents. Parents' dependent upon their sons. They want to see their sons as a great person, high-rank professions in engineering, doctor that are regarded as a high status and high income profession. They regard agricultural and teaching is good profession for daughters because they do not want to invest much more in other areas of study.

"Daughters must have the knowledge of household works so that they can be able to handle their house after marriage."(Parent's View)

"Sons bring a lot of numbers in the compare of girls in mathematics because they don't involve in the household work as a result they get enough time in study."

(Parent's View)

"Sons are given much more priority because they are expected to serve the parent's throughout the life, whereas daughters are supposed to be other's property."

(Parent's View)

"No, we don't have equal opportunity in learning mathematics because we must work the whole household works as a result we don't have time to study whereas brothers have nothing to do the household work at home rather than study."

(Girls Student's View)

"Yes, we have equal opportunity in learning mathematics as our sister."

(Boys Student's View)

“Boys study well in the classroom, they answer the question frequently, they ask questions, they complete homework on time where the girls don’t ask question in the classroom, neither have they completed homework on time nor study well. They are only shy.” (Teacher’s View)

While analyzing the above-mentioned responses of all, it is known that the girls are actually less facilitated than the boys by parents. Parents seem irresponsible towards daughter and suppose them other’s property as a result they seem less interested in learning mathematics in the class too, such as, in asking questions, in completing homework, in answering the questions and teacher what suppose that they are shy.

Similarly, one of the researchers, Khanal(2017) also concludes that parent’s interest towards girls and boys affects in learning mathematics. In the same way, my research has also shown that the interest of parents towards boys and girls affect in learning mathematics. Hence, we can say that parent’s interest affect in learning mathematics.

Parent’s Occupation and Economic Status

Occupation is a person’s usual or principal work or business, especially as a means of earning a living; vocation. That parent’s education has the highest significant influence on the academic achievement of students in mathematics while the effect of academic motivation (Reyes &Stanic, 1988). The occupation of parents were categorized in three categories namely labour who had to work daily for wages, clerk who got their salary in monthly and businessman who got their own income by selling goods. The occupation of parents and their category is presented in the table below.

Table III: *The occupation of parents, category and respondent marks in mathematics are presented in the table*

Student	Occupation of parents	Category	Marks in mathematics	Achievement
G1	Mason	Labour	20	38.85%
G2	Work in cement factory		32	
G3	Electrician		39	
G4	Driver		37	
B1	Mason		52	
B2	Painter		45	
B4	Mechanic		47	
B3	Office		Clerk	
G5	Office	61		
B5	Salesman	business	58	58%

Source: School Document

From the above table we can see clear crystal effects of parental occupation on mathematics learning. The parents who are labourers their son's and daughter's achievement is only 38.85%. Similarly, the parents who are clerk man their son's and daughter's achievement is 68% and the parents who are businessmen their sons and daughter's achievement is 58%. It can be said that the achievement of labourer's son's and daughter's is the lowest of others. Similarly, the achievement of businessmen of son's and daughter's has been middle and highest achievement is of clerk.

Most of the parents were labour and some parents were clerk and businessman. The mean obtained mark in mathematics by students of labour was lower than that of other occupation. The labour parents were uneducated and they can't directly teach them. They went school rarely to talk about their children with teachers than other occupational parents. Hence the impact of occupation of parent on their children's mathematics learning was found.

The researcher concluded that the parental occupation effect on the mathematics learning. The boys scored higher marks in mathematics than girls among labour parents. Similarly, one of the researchers Pantha(2006) also concludes that parental occupation plays a vital role on children in learning mathematics. In the same way, my research has also come to be known that parent's occupation affect in learning mathematics. So, we can say that parent's occupation affect in learning mathematics.

Parent's Concentration Towards their Children Education

Desarrollo (2007) indicated that the extent to which parents or other family members are actively engaged in a student's education had appositive influence on the student's achievement. The current study assume educated who passed class-8 and uneducated who studied under class-8. Most of the parents were uneducated.

"We send our sons and daughter in the same school and provide them equal opportunity in every field." (Educated Parent's View)

"We send our sons in Boarding school but we send our daughters in governmental school because they are our property and they live with us but daughters are other's property and they live with others."

(Uneducated Parent's View)

“My parents are illiterate therefore they are unable to guide me well at home as well as they are unable to supply the needed materials too. Some materials supply for only son.”(Student's View)

“Parent's education plays vital role in all-round development of children. Therefore, I think parent's education is also an affecting factor in mathematics achievement of girls.”(Teacher's View)

From the above responses, it can be said that the parents who are literate seem providing equal access to both son and daughter in learning. But the parents who are illiterate seem only focusing on sons' learning as a result son's learning is higher than girls. The teacher also supposes that the parent's education plays vital role in sons and daughter learning. Similarly, one of the researchers Pantha(2006) also concludes that parent's education plays a vital role on students in learning mathematics. In the same way, my research has also come to be known that parent's education affect in learning mathematics. So, we can say that parent's education affect in learning mathematics.

Interaction Between Teacher and Students

In classroom, Interaction is more importance between teacher and students. Without interaction, learning can't be sustained. In the course of interaction, students can clearly understand the contents which were unambiguous before. The more interaction between students and teacher, the students become comfortable in the classroom and create learning environment. In such conditions students can learn easily.

Episode 1

It was the first class observation; the teacher went into the classroom along with the researcher. All the students stood up and said good morning. Then the teacher told them to sit down. This showed that students were well disciplined and the school has taught them to respect the teacher. There were 75 students presented in the class where only 23 girls presented. The desk and bench were sufficiently in the class. The whiteboard was kept on the right place. The teacher started to teach geometry of topic quadrilateral. Some students didn't have geometric instruments. Teacher wrote down a problem on the whiteboard and started to solve each step and he asked students whether they understand or not. Some of them answered that they can solve the problem. Mainly the students on the first and second bench were active where most of girls were passive. Again, the teacher wrote another problem from the textbook on the whiteboard and started to solve the problem explaining step by step. Teacher asked questions to students about the related question and also made them doing that class work. He solved those questions in which they were getting problem. He wrote a problem in the board and asked them whether they could do or not. At last he solved the problem in the whiteboard. Then he told them to do the exercise at home.

In this episode, the researcher found that most of the girls were absent in the classroom. There was a topic 'construction of quadrilateral' which needs geometric instrument but there was not geometric instrument with all of them. I also observed that they were doing class work with the help of their friends of geometric instruments. The girl students were not so active participate in class. The teaching method was based on lecture and practice oriented. The teacher behaved commonly to all the students. He did not focus the girls. Specially, girls were passive in

mathematics class. Only few girls of first two benches seemed to be active and rest of them were passive.

Researcher had asked the question and noted them in their respected voice as below:

“When I teach in classroom there is more interaction with boy’s students than girls students because boys are more talented than girls.”(Teacher’s View)

“There is more interaction between talent students and teacher only.”

(Student’s View)

“The teacher teaching mathematics us is male that causes feel us shy in interaction as a result we don’t feel better to interact with teacher therefore our achievement is low in the compare of boys.” (Girl’s View)

From the classroom observation, teacher’s view and student’s view, the researcher concluded that the interaction between teacher and students was satisfactory. Boys were more interactive than girls. The frequency of interaction between boys and teacher was high than that of girls. Boys asked more question to teacher and gave answer to the questions of teachers. Boys get more opportunity to learn mathematics than that of girls in the classroom. Similarly, Yadav(1016) also concludes that the interaction between teacher and students impact on students’ learning mathematics which is seen in my research too.

Local Culture Feast and Festivals

Culture may be defined as the beliefs, values, behavior and material object shared by a particular group of people. Culture is a way of life that a number of people have in common. Culture provides the framework within which our lives

become meaningful, based on standards of success, beauty and goodness. Our culture affects virtually every aspect of our lives. Cultural diversity is the result of geographical location, religious beliefs and lifestyles.

“Feast and festival don’t effect on our study rather than the girls because girls have to be involved much more time in feast and festivals.” (Boy’s View)

“I must be spent much more time in feast and festivals to celebrate it than the boys that causes to be absent me the previous and following day of fest and festivals.”

(Girl’s View)

‘Students don’t prefer to come school on the feast and festivals. The most of girls students were absent on the following day.’ (Teacher’s View)

“On the days of feast and festivals, both the girls and boys are affected by these but the girls are more affected by these because they must be involved until and unless the feast and festivals are over that interfere in their study than boys.”

(Parent’s View)

From the above all responses, it came to know that not only household work but also feast and festival is female oriented as a result they must be spent much more time in celebration rather than boys. They have work to cook new-new kinds of food and serve to all the members of family as a result they are disturbed on that day not going to school, not doing homework and so on where boys are free without nothing to do.

According to social cognitive theory, learning is affected by the social environment. Environment refers to the factors that can affect a person’s behavior. There are social and physical environment. Social environment includes family

members, friends and culture. Physical environment is the size of a room, the ambient temperature or the availability of certain foods. Environment and situation provides the framework for understanding behavior. The situation refers to cognitive or mental representation of the environment that may affect person's behaviors. In this study, the social environment i.e. culture, feast and festivals also affect on the learning mathematics.

In the respect of local feast and festivals, all of the parents and teacher accept that the feast and festivals effect their children's learning mathematics but boys student focus on their study than feast and festival. So, they disagree with feast and festival effect on their learning mathematics. In conclusion, culture, feasts and festivals effect on learning mathematics. Although, the boys celebrated the feasts and festivals, they concentrated on study too side by side but girls could not do so. Therefore boys are better than girls in learning mathematics. Similarly, one of the researchers, Lamsal(2016), also concludes that wrong cultural practices, feast and festival used in unmannered way affect in learning mathematics. In the same way, my research also has shown that feast and festival affect in learning mathematics. Hence, we can say that feast and festival affect in learning mathematics.

Mathematics Learning Environment of Boys and girls at Home and School

“Learning environment” as the social, physical, psychological and pedagogical contexts in which learning occurs and which affect student achievement and attitudes (Fraser, 2010). Learning environments are typically constructivist in nature, engaging learners in “sense-making” or reasoning about extensive resource sets. Learning environment typically include four components: an enabling context, resources, a set of tools, and scaffolds (Hannafin, Land & Oliver, 1999). Learning environment also

include students can practice mathematics anytime and anywhere; mathematical assignments can be generated 'at random', so that the amount of exercise material becomes nearly infinitely large; activities and answers of students are stored; intelligent feedback on students work is given automatically (Bokhove, 2006).

Learning environment includes the learning culture reflected in the classroom activities within the school premise. The rule and regulation, relationship among teachers, students, administrations and overall physical condition of the school and their interaction are the culture of the school and these are ultimately the teaching and learning environment of the school. Classroom practice plays the main role for the improvement of the students learning habits. So, more important things for the better learning in the students are the classroom practices. Classroom practices include the interaction between teacher and students.

Episode 2

It was the second class observation. There were 69 students presented in class. There were 22 girls presented. The class was well managed. In this class, most of the student had brought geometric instrument. The teacher checked homework of few number of students. Again, in this class teacher started to teach the topic geometry of quadrilateral. He started the class connecting with the previous lesson. Teacher wrote a problem on the whiteboard and solved step by step with the help of geometric instrument and also explained. Teacher also encouraged student in problem solving. Again, teacher provided another kind of problem to solve in the classroom and they could not solve any. Finally, teacher solved the problem too meaningfully. At last teacher told them to do relative exercise at home.

In the episode, the researcher found that teacher started class after checking homework; he did not revise that problem which was not solved students. Teacher used lecture and practice method but taught only text book's exercise. No doubt teacher was well in subject matter.

In this class observation, I found there were most of the students had lack of prior knowledge. Some of them did not get learning environment at home due to the involvement of household work. Some of the students were busy in side talking and careless in class. Where most of the girls were passive they couldn't try to learn effectively learning. They were not motivated and interacted with the teacher of the class.

Researcher had asked the question and noted them in their respected voice as below:

"Our school has good environment for the learning mathematics and it also female friendly school."(Student's View)

"In my teaching method I have used children oriented strategies and I have equally provided learning environment both girls and boys students in study"

(Teacher's View)

"I most like mathematics subject because our school has good environment for the learning mathematics." (Boy's View)

"I don't like mathematics subject because my home environment is not good for studying," (Girl's View)

From the above responses, school is situated in peaceful environment. School is far from the noise and pollution. The teacher used learning by doing theory on learning mathematics. It means the learning strategies on child centered based. So, there is quite good learning environment in the school it is also female friendly school. Most of the boy's students like mathematics subject. The teacher encourages students to practice more problems.

At home, the teaching learning activities of boys are totally different from the girls because girls are busy within the household activities.

“In my house there is no good environment for learning, because our parents force us in farming and household works.” (Girl's View)

“Our study environment is not satisfactory.” (Girl's View)

“My main task is to study, because our home environment is good and I don't have any household work to do.” (Boy's View)

“There is no good environment for girls to practice at home. They depend on classroom only and hence they are weak.so, they do not like mathematics.’

(Teacher's View)

Most of girl students did household work but boys didn't do any household work. Through many games boys learn mathematics. Girls were involved inside housework boys were involved outside work. So, we can say that the environment of home was not good for learning mathematics.

According to social cognitive theory, environment impacts in learning.

Environment refers to the factors that can affect a person's learning. There are social and physical environment. Social environment includes family members, friends and colleagues and teachers. Physical environment is the size of a room, the ambient temperature or the availability of certain foods, physical setting in the classroom and school. Environment and situation provides the framework for understanding learning. The situation refers to cognitive or mental representation of the environment that may affect person's learning. In this study, the physical and social environment of students was satisfactory in school only. Their learning was enhanced when they have appropriate environment.

Hence, from the observed class and interview, the mostly used problem solving method in teaching of mathematics. The student centered method was used. These activities indicated that the learning in classroom environment was good. According to this method or strategies in the teaching and learning mathematics, it could be concluded that mathematics teacher was well trained and experienced. The mathematics learning environment of school was good. But home environment was not good for the girl students, So, Most of the girl students not like mathematics subject. Similarly, one of the researchers, Chatvat(1013) also concludes that home environment and classroom environment affect in learning mathematics. In the same way, my research has also shown that home environment and classroom environment affect in learning mathematics. So, we can say that home and school environment affect in learning mathematic.

CHAPTER V

Summary, Conclusion and Recommendations

The chapter deals with the summary, conclusion of the study after completing by the case study. The area of implication of this study, suggestion and recommendation for the further study are included. The first section of this chapter presents summary with finding. The second chapter draws conclusion from the study and finally the third section consists of recommendation for further study.

Summary of Findings

The case study was mainly focused on to find out the effects of gender in mathematics learning. To achieve the objective of the study researcher conducted interview, observation and school record analysis on which interview was for students, their parents and their mathematics teacher as well as classroom observation was also done. The researcher analyzed and interpreted data on the basis of literature review and conceptual understanding of the study. The findings of this research are as follows:

-) From this study researcher found that the culture has gender discriminations but it was not noticed in mathematics classroom. The teacher treated girls and boys equally in observed class. The teacher punished equally boys and girls by scolding when they crossed the limited of discipline. The teacher appreciated without biasness when they solved problems of mathematics. Since, the local culture is patriarchal society; all of the household workload was responsibilities of girls. Girls had to finish all the household work to have time for the study and practice mathematics. Due to no restrictions to boys, they

were not involved in household work. So, girls are not good performance in mathematics subject

- J The interaction among teacher and boys students was found highly in the comparison of the girls. The talented students were found more involved in the interaction on the one hand and on the other hand the interaction between teacher and girls were found less than of the boys because of girls' shyness, weaknesses, fear, introvert and so on. They were found not to do homework, not to show interest in mathematics learning. They were also found to be felt of difficulty in the absences of female teacher.
- J The children of educated parents could teach, motivate and guide their children as well as could afford for extra classes if needed. That is why the children of educated parents learned better than that of uneducated parents. Due to lack of education and knowledge, the laborer and uneducated parents discriminate on the basis of sex. They gave priority to their sons than daughter in the education. The demands of sons were fulfilled by hook or crook than that of daughter. Their daughters were engaged in household works. Hence, the gender difference was found in the lower socio-economic and uneducated family than higher and educated family.
- J This study found that boys had good learning environment to learn mathematics in their homes and at school in the comparison to girls. Since the local culture is female oriented and the girls had household workload than boys. They had no enough time to practice mathematics. The household works were given priority than their study. Only during the examination they had no household workload. On the days, girls had to manage their time to practice mathematics. They used their leisure time to practice mathematics

rather than in entertainment as boys do. The demands of educational materials of boys were easily and quickly provided in the comparison to the girls. Although, the learning environment of girls in home was not satisfactory. So, girls do not better in mathematics than boys, Thus, gender difference was found in mathematics learning environment in home.

) Undoubtedly, it can be said that the local culture feast and festivals affected the study of gender differences in mathematics learning. This study was found much more affected by established norms and values because they had to be involved in the whole household work to festivals, cultures and household work distributions of work. They had to be involved and taken all responsibilities until and unless the celebration got over. As a result, they were found to be absent the previous and the following day of feast and festival and they missed the content of mathematics taught in the classroom which caused their achievement poorer than of boys. But boys were regular in the classes and they studied each and every content of mathematics in the classroom which was fruitful for them.

) Even today in our community, the concept of gender discriminations is the burning issues. it means to say, even in present days the girls were behaved differently by their parents as burden and kept into the boundary of four wall whereas sons are found to be given more freedom, high facility, easy access to practice mathematics and enough time spending on study to be greater personalities such as doctor, engineer, pilot or highly ranked person. Where the girls from same stomach of their parents were regarded to be others' daughter by their own parents. Probably for this reason they were found not to be given better education rather than making a good housewife. So, girls

were found to be engaged in household work without having freedom, easy access to practice mathematics, spending enough time on study.

Conclusion

There were different values in our society. The duties and responsibilities that sons and daughters hold are different. Daughters were involved in the household works and they did not get chance to study whereas boys were involved in outside works. This is the effect of the gender discriminations in our society. The teacher expectation of girls is lower than that of boys. Girls were afraid of mathematics subject. Educated parents were more serious about their children's education than uneducated parents. Learning environment at school was good but at home was not good. Most of the people in society had not knowledge about importance of mathematics so that mathematics was valueless in society. Beside that in the society people said that there was no value to teach girls. Because girls handle their family so that must know knowledge about household works knowledge about strong point show the different between girls and boys in learning mathematics. Due to social causes girls are lack of interest in learning mathematics. Parent's occupation and Economic status, Parent's Concentration towards their children education, Local culture feast and festivals, Parent's view towards boys and girls, Interaction between teacher and students, Mathematics learning environment of boys and girls at home and school is the main factors of affecting gender discriminations in mathematics learning.

Recommendation

According to the findings and conclusion provided by the study, the recommendations for the improvement of learning mathematics on gender.

-) This study was limited to only for class nine. A similar study can be done other classes.
-) A similar study can be done as a survey type.
-) A similar study can be extended in other subject.
-) The mathematics teacher should be encouraged to give attentions to girls students.
-) In the process of teaching mathematics suitable teaching aids should be used.
-) Girl students should be encouraged to be involved in active participation in classroom activities.

Reference

- Acharya, B. R. (2017). *Diversity in mathematics education*. Kathmandu: Pinnacle Publication.
- Bandura, A. (1986). *Social foundations of thought and action: A social-cognitive theory*. Englewood Cliffs, NJ: Prentice Hall.
- Bokhove, C., & Drijvers, P. (2006). Symbol sense behavior in digital activities. *For the learning of mathematics*, 30(3), 43-49
- Brophy, J., & Good, T. (1985). *Teacher-student relationships: Causes and consequence*. New York: Holt, Rinehart, and Winston.
- CERID (2004). *Gender Equity and Gender –Friendly Environment in School*. An Unpublished Master Thesis, T. U. Kirtipur.
- Cresewell, J.W, (2015). *Educational research: planning, conducting and evaluating qualitative and quantitative research* (4thed.). Boston, MA: Pearson Education, Inc.
- Chatavt, T.(2015). *Achievement in mathematics by gender*. An Unpublished Master Thesis, T. U., Kirtipur.
- Das, K. P. & Wilkinson, M. E. (2011). The effects of gender, class level and ethnicity on attitude and learning environment in college algebra course. *Journal of Mathematics Science & Mathematics Education*, Vol. 6 No. 2.
- Desarrollo, I. (2007). *The Quality of Education in Latin America and Carribean Latin America*. Research Work Institute Desarrollo. Paraguay.
- Dhakal, H. (2006). *A study of the factor affecting the girl's students attitude towards the selecting of optional mathematics at secondary level*. An Unpublished Master Thesis, T. U., Kirtipur.
- Fennema, E. & Sherma, J. (1978). Sex related difference in mathematics achievement and related factors: A further study. *Journal for Research in mathematics Education*, 9(3), 189-203.

- Fennema, E., & Peterson, P.L. (1987).Teacher-student interactions and sex-related differences in learning mathematics.*Teaching & Teacher Education*.2(1):19-42.
- Fraser, B.J. (2010). Classroom environment instruments: development, validity and applications. *Learning Environment Research*, 1, 7-33.
- Gender Equity Studies (2000).*Gender Equity, Teacher Education and Reform*.[On-line]. Available: www.ed.gov/pubs/genderequity/gender_equity.doc.
- Gender Equity, *Teacher Education and Reform* [On-line]. Available: <http://forumsatozteachershuff.com/showthread.php?t=6131>
- Halpern, D. L. (2000).*Sex Differences in Cognitive Abilities (3rd Edition)*. Mahwah, NJ: Lawrence Erlbaum, Associates. Inc. Publishers.
- Hannafin, M., Land, S., & Oliver, K. (1999). Open learning environment: Foundations, methods, and models. In C. Reigeluth (Ed.), *Instructional Design Theories and Models*, 115-140, Mahwah, NJ: Lawrence Erlbaum Associates.
- Hyde, J. S., Fennema, E., Ryan, M. & Frost, L. A. (1990).*Gender Difference in Mathematics Attitude and Affect*.
- Kerlinger, F.N. (1983). *Foundation of Behavioural Research*.New Delhi: Surjeet Publication.
- Khanal, K. j. (2017).*Girls perception toward gender discrimination and its effect in learning mathematics*, An Unpublished Master's Thesis, T. U., Kirtipur.
- Khanal, P. (2017).*Research Methodology in Education*.Kathmandu: Sunlight Publication.
- Koehler, M. S. (1990). "Classrooms, teachers and gender differences in mathematics."In E. Fennema& G. Leder (Eds.), *Mathematics and Gender*. New York: Teachers College Press.
- Lamsal, (2016).*Causes of gender gap in enrollment in major mathematics course*.An unpublished master's thesis, T. U. Kirtipur.
- Panta (2006).*Parent's occupation and their children's achievement in mathematics*.An unpublished master's thesis, T.U. Kirtipur.

- Reyes, L. H., & Stanic, G. M. (1988). Race, sex, socioeconomic status, and mathematics. *Journal for Research in Mathematics Education*, 19, 26-43.
- Scantlebury, K. (2009). Gender bias in teaching. In E. Anderman (Ed.). *Psychology of classroom learning: An encyclopedia*. (pp. 221-224). Detroit: Macmillan Reference USA.
- Schunk, D.H. (1991). *Social Cognitive Theory*. In Kevin M. Davis, *learning theories: An educational perspective*. Upper Saddle River, New Jersey: MERRILL, an Imprint of Prentice-Hall.
- Shrestha, M. B. (1991). *A study of sex Difference Achievement in mathematics in Ninth Graders in Gorkha District on the set*, An Unpublished Master Thesis, T. U., Kirtipur.
- Stanley, J. & Benbow, C. (1980). *Sex Difference in Mathematics Ability: Fact or Artifact* Science, 210, 1262-1264.
- Upadhyay, H. P. (2010). *Trends in Mathematics Education*, Kathmandu: Balbatika Education Publication Pvt. Ltd.
- W.H.O. (2012). *What do we mean by "sex" and "Gender"?* Retrieved on 22th October from <http://www.who.int/gender>.
- Yadav. (2016). *Causes of low enrollment of students in optional mathematics*. An unpublished master's thesis, T.U. Kirtipur.

www.Google.com

Appendix-A

Observation Guidelines

-) Environment of the classroom.
-) Teacher's viewpoint towards boys and girls.
-) Participation of the boys and girls in classroom.
-) Interaction of girls and boys with each other and with teacher.
-) Total number of question asked to boys and girls.
-) Level of question asked to boys and girls.
-) Boy's behavior with girls and vice-versa.
-) Answering way of boys and girls to the question of teacher.
-) Teacher's reaction and boy's behavior while girls are not being able to the teacher's question and vice-versa.
-) Nature of motivation, reward and punishment given to boys and girls by the teacher.
-) Any activities or behavior with in classroom.

Appendix-B

Interview question for students

Q.N 1 What is gender?

Q.N 2 Is your school Female-friendly school?

Q.N 3 Do you have equal opportunities in learning as your sister or brother?

Q.N 4 Which subject do you like most? Why?

Q.N 5 What is your perception about your parent in your learning?

Q.N 6 When teacher teaching in classroom there is more interaction with boys
or girls?

Q.N 7 Do you have good environment for the learning mathematics at home
and school?

Q.N 8 Do you feel local culture, fest and festival effect on mathematics
learning?

Appendix-C

Interview question for teacher

Q.N 1 What is your perception on your students?

Q.N 2 When you teach in the classroom, is there more interaction with boys or girls?

Q.N 3 Which method has you used in learning mathematics?

Q.N 4 Why girls don't like mathematics subject?

Q.N 5 Do you feel local culture, fest and festival effect on students learning?