

**PARTICIPATION OF STUDENTS IN MATHEMATICS CLASSROOM**

**A  
THESIS  
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## Chapter I

### Introduction

#### Background of the Study

The participation of woman was very low in economic, intellectual, social and political sector in society; hence involvement of girls in education was very low as compared to boys. This position of girls in labor market was partly mirrored by their performance in educational system. So, educationist had begun to feel that education up to the middle standard was not sufficient for the citizen, so the policy of compulsory education for the people has been announced by most of the countries in the world to raise the gender in every aspect. The founding of Harvard College in 1636 demonstrated that early set up was important to a liberal education but at that time this was not possible because, college was beyond the research of most men because of the lack of social status and of all women by virtue of their sex (Astin,1974)

There were some causes of low participation of girls in mathematics. Mathematics need much time to practice but girls did not get enough time to practice it. They had to look after their household work. Most of the girls did not get opportunities for higher study with subjects relating to math, girls are not continuing their study majoring other easy subjects. So, the participation of girls in mathematics at higher study is fewer than the boys (Devkota,2017).

Educational opportunities generally available to boys and girls are clearly illustrated by the literacy rate of the two groups. In 1790, perhaps only half as many women as men were literate (Senk,1989). There was ambivalence about the need of girls' education while parents realized that education could give independence to a

daughter who remains single. So, there were fears that too much education might spoil the chance of marriage.

Mathematics is taught in +2 levels according to curriculum. In Nepalese context, mathematics is considered as complex subject and has become a cause of failure of students in campus as well as school education in general. Studies as well as the researcher's own empirical observation have created a query that whether girls and disadvantages family children are much affected by math in their failures in different level of education. In addition to this, many of the students are troubled by the level of understanding and achievement in their learning too. The experience of failure has created less interest in students in studying mathematics.

Mathematics is generally regarded as a difficult and tricky subject. So there should be proper teaching method, teaching materials and evaluation system in teaching learning. If mathematics is not learned with understanding, it would be very difficult for further study. Student can learn mathematics with understanding, if teachers use proper teaching method. Different educational reports have given emphasis in methods of teaching. Similarly, mathematics is technical subject and seems an exceptionally difficult for the learners, its study requires special ability and intelligence, mentally and physically healthy, appropriate social environment and appropriate teaching method should incite the learners. (Fredrick, 1978)

Students who experience significant problems learning and applying mathematics manifest their math learning problems in variety of ways. Research indicates that there are a number of reasons these students experience difficulty learning mathematics (Mercer, Jordan and Miller, 1996; Mercer, Lane, Jordan, Alsop and Eisele, 1996; Mercer and Mercer, 1998; Miller and Mecer, 1997).

Mathematics provides a set of tools for describing, analyzing and predicting the behaviors of system of many kinds ' conversing different aspects of the world. It was accounting, surveying and engineering and physical sciences to biology, economics business and many factors of everyday life. Mathematics structure was characterized by undefined terms, defined terms, axioms and rules of logic.(pandit ,1998)

"Mathematics was the language of science and as such used carefully defined terms and symbolic representation that enhance our ability to communicate." He further added that "Mathematics was an organized body of knowledge in which each proposition followed as logical consequences of proved proposition or assumption." Such mathematical structure was characterized by undefined terms, assumption and rules of logic (Baniya, 2012) .

As mathematics was very closely related with our practical life, this implies that it was not only the subject for formal schooling but also related to every activity of human beings. So it was the most essential to invent about its many disciplines and to develop it ahead according to necessity of solving many problems faced by students in present situation. So in this study stress had been laid on investigating the attitudes of students towards mathematics. This was the study to identify the learners' participation in mathematics learning.

The aim of the present study is to analyze the participation of girls in mathematics classroom and their interaction with teachers and students. We have found gender gap in mathematics, when students have to choose mathematics as major at class none. The gender gap in mathematics performance and attitudes was attributed by several authors to course enrollment in high school (Lindbeck & Dambrot. 1956 ). When mathematics is optional in high school, very few' women take

the courses (Ernest. 1980). A lack of a mathematical background in school limits the opportunities for women to participate in mathematics and math-related areas in college and late- in the job market. Ecctes (1989) shown that there are no differences in mathematical ability and achievement up to adolescence, although boys surpass girls in the number and type of math course taken. Boys choose to enroll in more advanced mathematics courses, such as trigonometry and calculus, than females do (Fox. Brody. & Tobin, 1980; Chen. 1986). Most of the women didn't take the math's courses as major, due to the misconception as mathematics is the "masculine subject" and more appropriate subject for boys (Bums; 1998). This differences goes up to higher education, girls do not actively participate in mathematics classroom.

### **Statement of the Problem**

When I studied at secondary and campus level, my experience was that the students were not equally participated in mathematics. In general girls' students were lack of participation of mathematics. So the researchers would be found out the contemporary situation in participation of mathematics in classroom. The researcher selected high achiever and low achiever students in class nine from the Kunchipwakal secondary school of Tarkswar municipality in Kathmandu district. The researcher selected the respondents were help of the head teacher and mathematics teachers. Who obtained grade D or blow D in final exam and weak of test exam, term exam, etc based on the criteria. This type's respondents were low achiever. Who obtained grade A or A+ in final exam and high marks in test exam, term exam, participated in extra activities, etc, based on the criteria of selected. This type's respondents were high achiever.

Participation of the students in mathematics education is an important dimension for enhancing quality and relevance of education. Mathematics is the

primary root of education system. Education develops the human resources, which are interpreted as a process of increasing the knowledge, skill and capabilities of all people in the country. But, in the context of Nepal, all people do not get the chance to be educated due to social, Economical and Cultural problem (Acharya, 2011). Now a day it is improving but it is not sufficient. Students are still facing lots of challenges especially in mathematics learning which causes low achievement in mathematics. In the mathematics classroom or out of the classroom the way of engagement of students like regularity, pre knowledge in the subject matter, students' actives towards learning, motivation and guidance, usage of resources like book, exercise book and other accessories, collaboration with peers and teachers, environment and culture etc. This research was conducted to find out the answer of the following questions regarding on the students' participation in mathematics classroom.

Thus, the study is mainly concern to find the participation of student at grade IX in mathematics. It will also focus on the participation of student in mathematics in classroom.

This research primarily tries to answer the following research questions:

- ) How do low achiever and high achiever students participate in mathematics classroom?
- ) Do the girls equally participate as boys in mathematics classroom?

### **Objectives of the Study**

The expectation of certain outcomes from the research study is reflect in the objectives of the study. Those were stated in short and clear form, and shall be achievable. Thus, the present study was related to students' participation in Mathematics at secondary level in Education. So this study is intended to accomplish the following specific objectives:

- ) To explore the participation of low achiever and high achiever students in mathematics classroom.
- ) To analyze how girls and boys interact in mathematics classroom.

### **Significance of the Study**

The results of this research would provide important knowledge that would enable teachers, parents, society members and school family to eliminate gender differences in participation in mathematics education. The attitude and related stereotypes of young females need to be identified in order to address the issue of taking mathematics subject and learning participation in the classroom. An important reason for studying to find that attitude and gender role stereotypes in the mathematics education of young students was to find ways to encourage students to select mathematics. The positive attitude towards mathematics was also an important educational outcome, regardless of achievement level (Benbow and Standley, 1990). As teachers were made more aware of the attitude of their students, they should be able to focus on the causes, effect, and consequences of these attitudes and ways to address them in their teaching.

Most of the students in secondary level did not select or hesitate to select mathematics. It was not known what factors were affecting students' participation in mathematics. Thus, the study would be significant for the teachers to identify some of the factors that could affect the girls' participation in mathematics at secondary school education. This knowledge helps to manage pedagogy for creating students' positive attitude towards mathematics and selecting mathematics in science and technology field. Thus, in this sense the purpose of the study would have the following significance

- ) It would give information about theExplore that affect the participation of students in mathematics.
- ) The finding of this study would be helpful to pay attention towards concerned agencies to promote participation level of students in mathematics classroom.

### **Delimitation of the Study**

This study had the following delimitations:

- This study wouldlimit to Tarkeswar municipality in Kathmandu districtonly.
- This study was limited only to the secondary school of Tarkeswar municipality.
- This study included only grade IX students of one community school Shree Kunchipwakal secondary school of Kathmandu district.
- The study wouldlimit to students.

### **Definition of Related Terms**

The study uses some words repeatedly. The words that had been used repeatedly in this paper and on which this research works is based on are taken as key terms. They were:

- ) **Participation:** The term participation here was used to define the involvement of students in mathematics classroom: their attendance in mathematics classroom interaction with teachers, their interaction with peers and their involvement in classroom activities.
- ) **Community Schools:** The schools which were fully financed by the government were called government community schools in this study



- ) **Students Interest:** This refers to interest of the students in selecting mathematics.
- ) **Prior Achievement:** This refers to the achievement of the students in mathematics in prior classes.
- ) **School Related Factors:** The variables such as teachers' behavior, prior achievement and peer group influence were taken under school related factors.
- ) **High achiever:** this refers to the obtained of the A and A+ grade in mathematics from final exam of the result.
- ) **Low achiever:** this refers to the obtained the marks D and below D grade in mathematics from final exam of the result.

## **Chapter II**

### **Review of related literature**

The review of related literature is a source of further study of research task. It helps to give better idea of surveying in the research. It also guides to reach hypothetically nearly about the conclusion. Thus, review of related literature is important and essential for guideline of research planning. During the past decades, the mathematicians have developed many technical reasoning and ideas of research methods and they have contributed to upgrade mathematics. As a result, a lot of research studies have been reported about attitude of students, teachers, parents and also achievement of students towards mathematics. Some of the literature reviews related to this study are listed below:

#### **Empirical Literature Review**

This chapter presents the review of books, journals, reports of the previous researches and other published sources. The major theses, journals, reports reviewed are as follows:-

Chapagain(2016) on his master thesis "Exploring The Participation of Students In Mathematics Learning" The major objective of his study was to find the engagement of the students in mathematics learning at classroom, the involvement of the students in mathematics learning at home. The study is conducted in a qualitative paradigm in a government funded school. The study field is chosen as a motto of the study for suburban area.

The main finding of the study was that the existing level of participation of students in terms of regularity, their economic increment, positive attitude towards education, investment in the child education by their parents are appreciative. Particularly in case of mathematics learning students are not taking commonly and

they were performing uncomfortably. There have been shown some of the hurdles in mathematics learning. This research suggests for concerned bodies which can be removed by clever compilation of the components of mathematics learning.

Ray(2016) conducted the research on "Factors Affecting Low participation of Girls in Optional Mathematics" the major objective of her study was to find the out factors that affect the participation of girls in optional mathematics, to compare the participation level of girl students of rural school and urban school. She selected all secondary level girls of academic year 2072, of Bara district as a population. She collected the data from sampled population of 120 girl students and 20 math teachers from 10 schools. She used non-purposive random sampling procedure. Interview and questionnaire were major tools for data collection. She found that the interest of the girls' students, teachers, teacher's qualification students as well as parents' expectation and their views and beliefs directly influenced on girls participation in optional mathematics. Thus, the researcher found that there were many problems or factors girls had very low participation in mathematics class. They were almost absent in class and had low interest in mathematics. More importantly rural girl students were comparatively poor in learning mathematics.

Joshi (2010) conducted the research on "A Study on Attitude of Girls towards Optional Mathematics at Secondary Level". The major objective of this study was to find out the attitudes of secondary level girls towards optional mathematics and to compare the attitudes of urban and rural girls towards optional mathematics. His selected a set of opinionnaire consisted of 25 statements which was developed along with attitude scale on the basis of categorizing and specification of HF Bell. He was selected 60 girl student of Kalaili district. Ten schools (five from urban and five from rural area). He found that there was a positive attitude of girls towards optional

Mathematics. There was no significant difference between attitude of urban and rural girls. Comparatively mean attitude scored of urban girls was greater than mean attitude score of rural girls. From the interview it was concluded that there were not favorable environment for girls because they have compulsion to do work at home and most of girls have no keen interest in optional mathematics.

Anna(2016)conducted the research on" participation of rural Zimbabwean female students in mathematics: the influence of perception." She chosen the qualitative research design grounded in the interpretive paradigm was employed. Eighteen ordinary level female students and six teachers purposively selected from three rural co-educational secondary schools participated in the study. Data were generated through lesson observations and semi-structured question type interview guide. Findings reveled that rural female students perceived mathematics as a difficult subject, masculine and irrelevant to their future aspirations. Participants outlined that their perceptions were rooted in the prevailing cultural belief that mathematics is a masculine subject and negative stereotypes about girl math abilities. Further findings indicate that female students' participation in mathematics result in the development of a general negative attitude to the subject that caused fewer female students to participate in mathematics in large numbers. We recommended parents and teachers to work hard to eliminate the negative gender and cultural stereotype in order to enhance female mathematics teachers and expose female students to female role models who have succeeded in life in order to encourage mere participation of female students in mathematics. Schools are made responsible for smoothing out difficulties generated by the prevailing culture. There was a gap in knowledge base pertaining to the Zimbabwean rural girls' participation in mathematics.

Lamichhane (2012) did a research on "causes of girls' difficulties in mathematics learning at secondary level" with the objective to find the causes of difficulties faced by girl's students in learning mathematics at secondary level. The objectives of this study were to identify the causes of girl student's difficulties in mathematics learning and to analyze the most significant causes of girl students' difficulties in mathematics learning. It was a case study and qualitative in nature. This study was conducted with the sample of five girl students of grade X. The sample was chosen purposive sampling, all of the girl students who were in grade X, Ne. Ma. Bi. Prayagpur Gulariya, Bardiya. The finding of this study, in home environment parent's education, poverty, gender bias, lacks of study hour, behavior of the parents was the causes of girl student's difficulties. Girl students were frequently absent due to the problem of work in home. There was lack of interaction between girl students, mathematics teacher and other students. The mathematics teacher had not equally behaved the boys and girl students. He had not motivated the girl students in mathematics class.

Devkota (2017) did research on "participation of girls in mathematics ". This was a survey research that attempts to describe the participation level of girls' students in secondary level mathematics and to analyze the participation of girls. Four secondary schools were selected randomly from all schools of Gorkha District including one rural and three urban areas. Concerning to above factors unstructured interviews was taken with mathematics teachers from respective sample secondary schools. The main factors that affect the participation of girls were: male dominated society, less priority was given by parents to their daughter than sons, different error made by students in solving mathematical problem, home environment, school environment, teaching learning process, drill and practice. At last, it is concluded that

girls were equally able and should be given equal facilities at home and at school to learn mathematics. Parent and teachers should not consider boys were assert and daughter as a liability.

Yadav(2017) did research on "causes of low enrollment of girl students in optional mathematics". The main objective of this study was to analyze the causes of low enrollment of girl students in optional mathematics and to explore the remedial ways of low enrollment of girls students in optional mathematics. The study was qualitative design in case study approach. Shree Babulal Hansbahini secondary school was the study site of my study. To achieve the objective interview, focus group discussion and classroom observation were used as research tools. He found that teaching without contextualization, rote learning, fearful environment of classroom, lack of confidence and practices without understanding were the main causes of low enrollment of students in optional mathematics. And further it was found that the ways to minimize low enrollment were: Making teaching learning activities interesting and lively, understand the mathematical concept rather than memorizing, making our mathematics education culturally relevant and contextualized.

Rayamajhi (2011) did research in "Causes of low participation on of girls of rural community in optional mathematics". This was a case study type of research. She concluded that the lack of parent supports, influence of society, peer group affected, school environment, less confidence, parent and girls interest etc are the main causes of low participation of girls' education.

Fennema and Sherman(1977) brought the idea of attitudes about mathematics by different genders to the public's enrollment in the late 1970's with their much referenced study. This study suggested that a barrier and the lack of ability by females, was the explanation for the difference in achievements in mathematics. Some

of the barriers faced by females do not know advanced mathematics and the general belief that cannot do well in mathematics. This study helped to shape show how future educators looked at research on gender.

### **Research Gap**

According to Academic perspective the, I found out the existing knowledge gap in the field of knowledge world. I have applied review of previous resources to identify knowledge gaps. I can't found different resources on issues related to interaction of students with mathematics teacher in classroom of mathematics but these resources were different than my research. "I found the findings were related review students were not favorable environment for students because they have compulsion to do work at home and most of students have no keen interest in mathematics, students were equally able and should be given equal facilities at home and at school to learn mathematics. Parent and teachers should not be consider boys were assert and daughter as a liability, making teaching learning activities interesting and lively, understand the mathematical concept rather than memorizing, making our mathematics education culturally relevant and contextualized, the lack of parents supports, influence of society, peer group affected, school environment, low confidence, parent and students interest etc. were the main causes of participation of students education". They have not discussed in this area. Most of researches related these topics were quantitative design approach and they are analyzing with chi-square test, t-test and f test etc. I mean to say the previous research didn't mention why especially students participation in mathematics classroom? Also, how can maximize the participation of student in mathematics classroom? So, I found gap between review literature and my title of study. Thus, to full fill the gap, I would like to study on this topic. I believe that the topic was suitable for carryout a research.

## **Review of Theoretical Literature**

The theoretical discussion was needed for the interaction of the finding of the study. There were many theories about learning and development of children such as cognitive, behavioristic, humanist and social constructivist. Learning means the relatively permanent change in behavior which occurs as a reinforced practice. According to the behaviorists, learning is the stimulus- response process. They mention that learning was an interaction between human being and external environment.

Vygotsky has developed "socio-cultural theory" and believed that children were active seekers of knowledge, but he did not view them as solitaires agents in this theory. Constructivism was basically based on observation and scientific study about how people learn. It says that people construct their own understanding and knowledge of the world through experiencing things and reflecting on those experiences when they encounter something new. We have to recon cite it without previous ideas and experiences which may be changing what we believe or may be discarding the new information as irrelevant in any sector. We were active creators of our own knowledge. To do this, we must ask questions, explore and assess what we know. Constructivism stands on its three maxims that were learners learn knowledge from their active participation, learners gain knowledge reflecting on their own action and learners gain knowledge when they try to convent their solution to others. This shows that the better learning results from the students' active participation and their own readiness for study.

Theoretically, the participation of girl students in optional mathematics may depend on different variables. Generally, participation of girls in optional mathematics was specially influenced by teaching learning process, home



environment, school environment, social variables, errors in problem solving, time variables and attitude towards optional mathematics. Under teaching learning process, teachers' qualifications, interest of learners, expectations of teachers, views and beliefs of teachers about girls' participation are must. The variable related to home environment consists gender bias in home, parents education, practice time providing at home for children especially daughters, economic condition of parents, study hour of children at home. The physical facilities, students' number in classroom, gender bias, teachers and peers behaviors were considerable elements for doing better or worse in optional mathematics. Social variable was also non separable and important factor on participation of girls in optional mathematics. This includes social system, cultural customs, and traditional effects of gender in society. Errors in problem solving and time variable also play significant role on girls' participation in optional mathematics.

From the above discussion, it was obvious that there are many factors that are responsible to cause low participation to give in the classroom. Generally the attitude of the students towards course creates confusion to what to choose to study.

According to Rao (2004), students who have positive attitude have achievement higher than students who have negative attitude towards mathematics. Similarly, Gotame (2005) stresses that there was correlation between parents' belief, students' beliefs and achievement in mathematical thinking and doing depend on the parental status and beliefs. The upper caste students have higher achievement in mathematics due to their parents' high expectation towards mathematics and school system.

Parental belief was the main motivation factor in learning of mathematics.

In Nepalese society, in most of the rural areas most of the girls have to prepare the meal, look after sibling, cleaning and sweeping and all the household activities.

Those girls' students in the rural areas have to accomplish so many duties which were assigning to them. So, they were synonymous to housewife. As a result, they don't have much time to study and sometimes they were unable to attend the class because of heavy workload in the house. As we know, practice makes man perfect; mathematics subject also needs much practice. Because lack of enough time to practice at home. The girls' student can't tackle the mathematics properly. So that, mathematics becomes 'hard nut to crack' to those girl students while learning and they feel mathematics difficult to learn. (Tyson,2006)

This shows that the family background plays the vital role in their children's education and their success. If the parents were educated they compel their children to study anyhow and their children become motivated. So, the educated family background has positive impact to the success of their children's education.

School was the second home of the any child. The teachers, students and parents were the components of the school. School environment reflects belief and tradition of the school community delineating the relation among parents, students and teacher. Scholarship to the students, extra class provided, appropriate teaching Method and equal chance for boys and girls in all activities were the major aspect of school environment. (KC,2009)

For education in school to be effective the environment needs to be conducive to learning, allowing the pupils space and time to interact with in the learning and teaching process. Creating and maintain, stimulating learning environment can be achieved through effective classroom organization, interactive and whole school displays and a climate of innovation.

Cognitive theories were emphasis on recogcization perception, organization of knowledge learning with understanding goal setting, organizational perception and

divergent thinking principles. An individual structure and mental represent of the world play a central role in individual's perceptions. Thoughts and action, learning involves making connection between new knowledge to knowledge they have already developed. The work of Jean Piaget presents the most comprehensive view of this theory according to whom, overall development follows the four stages, concrete operational stage and formal operational stage, Cognitive s stages taken as maturation process in the sense that development in a continuous and was based on previous growth, the operation was sequential and successive. The stages were hierarchical and they form an order of increasingly sophisticated and integrated mental operation. Environmental experiences were crux to the Piaget cognitive theory, since Piaget learning theory focus on the four points (the importance of readiness. Motivation for cognitive activities, awareness for cognitive level of learner and emphasize on intelligence as an action). So the educationist, curriculum, Piaget said that the role of peers were not necessary but can stimulate thinking, raise questions. Students motivated towards learning with active participation. Also, Piaget said that teacher become able to assess the child's present level, their strength and weakness. Of the learner then provide tools such as learning process of mathematics. Yadav(2017)

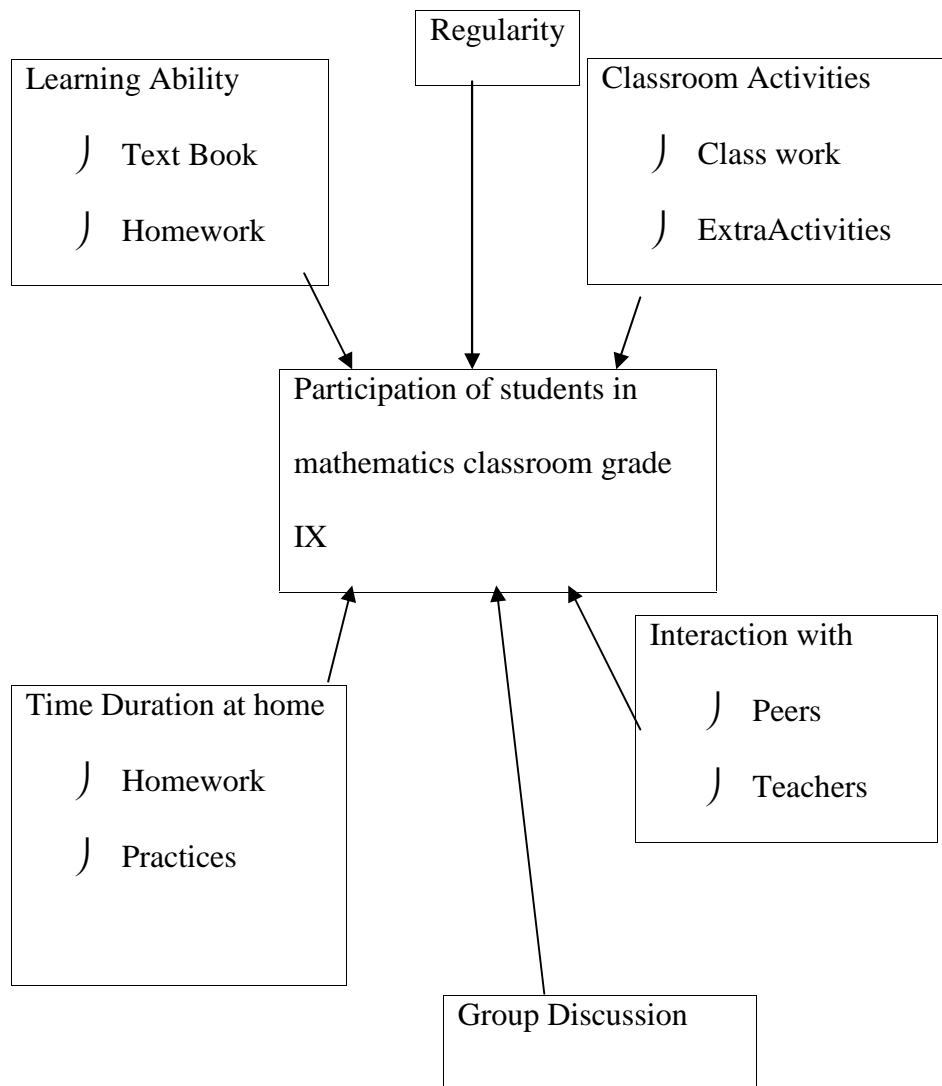
### **Conceptual Framework of this Study**

This study based on different kinds of Skimp theory states that psychological environment, quality of instruction, teachers knowledge about the subject matter were the factors that influenced education of students. Also, the theory of Vygotsky was mentioned that academic environment, peer group influence, quality of instruction, student's participation parents attitude.

The impacts of social aspect werethe main factors that influence education of students. The Piaget theory also states that lack of mathematics lab, evaluation

system, and interest of students participation in teaching learning process and intellectual power of students play were affect their education. From the above review of literature related to those theories, the researcher construct to the following framework which would consider the conceptual framework for this study.

**Flow chart participation of students in mathematics classroom.**



Source: (chapagain 2016)

The above diagram relates the explore affecting in learning mathematics of student on basis of learning ability means students learning capacity. How to teach

effectively in mathematics. Regularity refers to the one who continuously attend in mathematics classroom. Not to absent at school.

Classroom activities; as far as the mathematical activity is concerned different perspective are possible. Mathematics is a theoretical system, in which definitions play a crucial role. Through definitions the 'objects' of the theory are introduced; definitions express the properties which characterize them and relate them within a net of stated relations; new properties of the defined objects and new relations between them and the objects of the theory can be further established through the process of deduction (M.A. Mariottio and E Fischbein, 1997). Interaction; a great advertising campaign comes from the successful interaction of strategic planning and creative skills with peers and teachers most of the interaction helps to learn more learnt thing so it helps for the researcher. Group discussion is a group of individuals with similar interest who gather either formally or informally to bring up ideas, solve problems or give comments. The major approaches are in person, via conference call or website or online messaging. People respond comments and post forum in established mailing list, news group or IRC. Other group members could choose to respond by posting text or image (wikipedid). Time duration at home. The main objective of this study was found out to explore the participation of students in mathematics. So the conceptual framework helps' of the researcher to the completed this thesis.

## **Chapter III**

### **Method and procedures**

Methodology is a scientific approach, which deals with the systematic procedures of collecting data and use of appropriate research method. It presents the logistics of the study. It describes the design of the plan and the procedures of the study, which are able to be carried out to achieve the objective of the study. This chapter explains research design, selection of study area and case respondents, tools for data collection, data collection procedure and data analysis and interpretation techniques.

#### **Research Design**

The research design is based on case study. A case study is kind of different evident which investigates the answer of specific research questions (Bill Gillham, 2000). Additionally, depth of understanding was achieved by seeking out multiple sources of data (Creswell, 2007). The process of data analysis involve "preparing the data for analysis, conducting different analysis, moving deeper and deeper into understanding the data, representing the data and making an interpretation of the larger meaning of the data"(Creswell, 2009, p. 183). Likewise, simply case study was a process or record of research in which detail information was given to the development of particular person, group or period of times. When I was studying in school level and higher level and university level girl's students were low participated in mathematics. The case of my study was to find atthe participation of low achiever and high achiever students in mathematics classroom.

#### **Study Site**

This study was qualitative in nature it does not seek for representative of large population. Such qualitative study only seeks for analytic or theoretical generalization

(Blaxter,1996). Keeping this in mind, I focused my study in schools of Tarkeswar municipality in Kathmandu district.

### **Respondent of the Study**

This study would qualitative in nature. So, the Sample was not large. Hence, the sample size of the inquiry depends upon the researcher that what she/he wants to know, with the purpose of inquiry, what could be the credibility of the study and what could be done with available time and resources in the Kathmandu district. So, the total sample students of my study were four students, one mathematics teacher, students parent was the sample of the study by purposive sampling method. The researcher selected one girl and one boy student was low achiever and one girl and one boy student was high achiever were chose help of with math teacher, schools administer and head teacher. Low achiever refers to obtained D or less than D grade marks in final exam result and class test, homework and learning capacity etc measured of this based in choose. The high achiever refers to obtained A or A+ grade marks in final exam result and class test ,term exam, homework, classroom activities etc, measured of this based in choose.

### **Tools for Data Collection**

Data collection was one of the most important tools of the study. Each aspect of the study was 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 experiences, ideas, and believes. The needed data were collected from primary and secondary sources. Primary data were main sources of this research. To collect primary data class observation and interview were the main instruments of this case study. They were described consequently in the following ways.

**Interview guideline.** The Interview guideline was the tool for method of data collection. Qualitative research seeks natural setting data. So, Interview stands one of the prime sources of data collection tools. Interview such highly purposefully task that goes beyond more conversation (Andersin,1998) In this study, the interview was held to subject teacher, parents and students of the sampled school. The researcher prepared there were eight interview guideline based on conceptual formwork. Interview schedule would manage with the support of thesis supervisor. The interview was hold related to students' participation in mathematics.

**Classroom observation note.** The researcher used observation guideline to record the activities of the selected key respondents in their class using observation note. The mathematics classroom observed was 10 days. The observation note prepared based on conceptual formwork of this study was took on the natural setting researcher watched, asked, listened and interacted the essential data from the informants in the natural setting using the observation note shown in Appendix I.

### **Data Collection Procedures**

After selecting Kathmandu district purposively,for this purpose the researcher took permission letter from the Central Department of Education, TU, Kirtipur and handed over the letter to the head teacher of selected school. Theresearcher visited the sampled school, students, their parents and mathematics teacher with instrument to collect data. Before administration of tools, researcher met the concerned people and explained the purpose of the study in detail. Once they agreed to allow the study to be carried out the researcher arranged the data and time for administering the tools. The data was collected by administering the interview schedule and observation note among the sampled students, their parents and mathematics teacher. With the help of



unstructured interview schedule, the interview was conducted with students, their mathematics teacher and parents at their home.

With the help of observation note, the researcher had observed the class for 10 days regularly. Then the information was discussion parents and mathematics teacher separately. Then the information was noted to analyze them and to find out the conclusion of the research study.

### **Analysis and Interpretation of Data**

The collected information at first was categorized according to the category of respondents and different themes were given in the text of interview, observation notes. These themes were considered as a code and the similar code version of respondents were collected together and explained in their own perspectives. Interaction with peers and teachers and other details were obtained by observing about the school environment, interviewing with students and their mathematics teacher.

The information collected from interviews was analyzed descriptively. 'Data triangulation' refers to the use of different sources of data as distinct triangulation we can use more than one method to understand the phenomena very well. There are different methods in triangulation like investigator triangulation, theory triangulation, methodological triangulation environmental triangulation all have different purpose to check the validity and see the difference of opinion about the phenomena from using different methods in the production of data (Thomas,2006). In.Crossmacth and triangulation was also adopted to maintain the validity of the information.

## **Chapter IV**

### **Analysis and interpretation of data**

This is a case study related to the causes of participation of mathematics students in classroom at Kathmandu district. The main objective of this study is to explore the participation of low achiever and high achiever students. The main tools used for this study were interview schedules and observation notes. The main respondents of this study were the students in Secondary level and their mathematics teacher of the sample students. There were four students selected in grade IX. One girl and one boy were high achiever and one girl and one boy were low achiever. Those respondents were unreal name. These students basic information were as follows:

#### **Respondents A**

Respondent A is Rajan Tamang and he is 14 years old he is studying in grade IX. His position was eighteen in his class. He was born at Tarkeswar municipality ward no. 1 Kathmandu district. He has four members in his family having one brother. His mother and father are middle age. His parent's occupation is laborers in factory.

His house is situated at the Tarkeswar municipality of Kathmandu district. He goes to tuition but lack of economic condition and also lack of time. He goes school with his friend.

#### **Respondents B**

Respondent B is Bikas Adhikari of 15 years old studying at grade IX. He is first boy in his class. He was born in Tarkeswar municipality word no. 1 of Kathmandu district. He is first boy in class nine. His family has four members having one brother. His brother was Study at grade XII. His father is literate as well as his economic condition is medium. His parent's occupation is agriculture.

### **Respondent C**

Respondent C is Dila Tamang of 13 years old studying at grade IX. Her position is 22 in her class. She was born in Tarkeswar municipality ward no. 2 of Kathmandu district. She has six members in her family having one brother and one sister. Her mother and father are middle age. His parent's occupation is agriculture.

### **Respondent D**

Respondent D is Sobha tamang of 13 years old studying at grade IX. Her position is second in her class. She was born on tarkeswar municipality ward no. 1 of Kathmandu district. She has four members in her family having one brother and one sister. Her mother and father are middle in age. Her parent's occupation is agriculture. To explore the participations of low achiever and high achievers of students were analyzed on the basis of following themes:

- ) Time Duration at home
- ) Learning Ability
- ) Regularity
- ) Interaction with Peers and Teacher
- ) Classroom Activities

### **Time Duration at home**

Time plays vital role for mathematics learning. Children learn how to time spent for the mathematics homework and practice at home. Mathematics was a most logical and interesting subject. So how many times gave the students at home. It's dependent on the home environments and student parents behave. This study includes occupation of the family, economic condition and learning opportunities of sampled students. When I observed the respondents in classroom:

*I found that high achiever students were did everyday mathematics homework and low achiever students were did not daily mathematics homework. Low achiever respondents were couldn't mathematics problem practice at home. Especially girl respondents were not interested in mathematics practice at home. But high achiever respondents B and D were most practice and did mathematics homework at home.*

On the basis of the above data of observation when I asked the questions of high achiever and low achiever respondents help of the interview guideline. About this my respondent A and C expressed "*our parents forced us in farming and house works and then only go to school. Mathematics was very hard subject, so I did not homework and practice at home*".

Similarly respondent B expressed "*my parents forced us in my studies and always said more read and do homework and practice of mathematics problem.so I am practice more and easily solved the mathematics problem*".

Also respondent D expressed "*my parent was a farmer so they were focused in housework and kitchen. I hadn't sufficient time for mathematics homework and practice at home. But other subject leaved homework and I was did mathematics homework because mathematics was my favorite and interesting subject*".

Mathematics teacher expressed "*high achiever students were always did homework and practice at home. But low achiever students were didn't mathematics homework and not practice mathematics problem at home. They were not interested in mathematics. There was not good environment for students to practice at home. They depend on the classroom only and hence they were weak. But respondent B and D were 1<sup>st</sup> and 2<sup>nd</sup> position in classroom*".

Also respondent A and C parents expressed *"My daughter/son does not get enough time for study at home because s/he has to work and help her/him mother and father in works. Our occupation is agriculture and our economic condition is poor so our children must work"*.

While analyzing the above versions, the researcher observed mathematics classroom and I found most of the students were didn't mathematics homework and practice at home. But some students were did their mathematics homework and most practice of mathematics problem.

The researcher found that according to interview guideline respondent A and C had not sufficient time at home, so they didn't mathematics homework and practice of math problem. And they were not interested in mathematics subject. They said mathematics was hard subject. But respondent B and D were did math homework and more practice math problem. They were giving many times to mathematics at home. Student parent was a farmer and labor work so they didn't care their children study. Boys and girls were equally participated in mathematics classroom.

Sum up low achiever students were did not do homework and they have not sufficient time at home. But high achiever student where did the mathematics homework. Boy students have sufficient to time at home but girl student lack of time in home.

### **Learning Ability**

Learning ability was most important parts the students. Cognitive skilled were a determining factor of an individuals' learning ability. Cognitive skilled were mental skills that were used in the process of acquiring knowledge according to oxfordlearning.com the skills that "separate the good learners from the so-so learners" in essence, when cognitive skills were strong learning was fast and easy. When

cognitive skills were weak, learning becomes a struggle. When I observed the respondents in classroom:

*I found that high achiever student had mathematics book and low achiever students not bring mathematics book and copy. Low achiever respondents were didn't homework. But high achiever respondent did always homework.*

On the basis of the above data of observation when I asked the questions of high achiever and low achiever respondents help of the interview guideline. About this my respondent A and C expressed "*I have no one to guide at home for mathematics. Individually I was not able to do the homework and study mathematics. Because math was defaults and not interesting subject so not bring math book at school*".

Similarly respondent B and D expressed "*I have no one to guide at home for mathematics. But individually I was able to do the homework and study mathematics. Math was easy and interesting subject so I always bring math book at school. I was daily study and practice of math*".

Also math teacher expressed "*Most of the students were not doing homework and even they are not sincere about the learning of mathematics at home. So talented students were always brings math book*".

From the above view of mathematics teacher it was clear that most of the students were not doing homework but talented students were always brings math book. Lack of ability by females, was the explanation for the difference in achievements in mathematics. Some of the barriers faced by females do not know advanced mathematics and the general belief that cannot do well in mathematics. This study helped to shape show how future educators looked at research on gender(Fennema and Sherman,1977).

In sum up, low achiever students were girls and boys both were same problem at home. They were not brings mathematics book and did not homework but high achiever students were daily brings math book girls student were some difficulty at home. Low achiever students couldn't easily understood of mathematics problem.

### **Regularity**

Regularity is the quality of being stable and predictable. If you exercise with regularity, you might work out every day if your car breaks down with regularity then you are probably used to taking the bus. If you add the prefix ir-to this word, you get irregularity –something unusual, out of the ordinary, or unexpected. When I observed the respondents classroom:

*I found that high achiever students were regular come school and regular did homework. But low achiever respondents were not come regular school and did not homework and mathematics problem practice.*

On the basis of the above data of observation when I asked the questions of high achiever and low achiever respondents help of the interview guideline .About my respondent B expressed "*I am come to regular school. My parents said that you always want to school don't leaved your class*".

Similar respondent C expressed" *I could not come to regular school. My parents said that sometime did at housework so you leaved some class*".

Also math Teacher expressed" *Talented students were come to regular school. They were not to leaved class. They took regular mathematics class*".

The talented students were regular come to school. But low achiever students were not regular in school and mathematics class. They were not being able to manage the good learning environment for their children at home. These students

were not capable of managing their time for the study properly at home and their home environment was not sound for the learning.

There were different scenarios were observed for the students who were in their higher achiever students are regularly come to school and they were always activate mathematics class. But low achiever students were not come to regular school and they are not interested in mathematics class. They were made loudly noise and they did side talk each other. They were sited at last bench.

### **Interaction with Peers and Teacher**

Most of high achiever students are interacted with their subject teacher and peers also; which may be beneficial for them. But most of the low achiever becomes less confident and they have anxiety themselves “Anxiety is factor that affect female participation in the classroom. Females were higher than males in extraversion, anxiety, trust and especially gender mindedness”(Feingold, 1994) and shyness habit; they do not interact with teachers and peers in classroom. Numerous studies have shown that boys receive more attention from teachers and generally dominate the classroom discussion ( Fennema, 1995; Leder, 1995; Lee, Marks, & Byrd, 1994; Sadker & Sadker, 1994 ). Studies that have investigated interaction with peers and teacher in the classroom reveal a trend of unequal attention throughout the class. When I observed the respondents classroom: *I found that high achiever respondents were regularly interaction with peers and teacher. But low achiever respondents were did not interaction with peers and teacher regularly.*

On the basis of the above data of observation when I asked the questions of high achiever and low achiever respondents help of the interview guideline. My high achiever respondent expressed their feeling *"I am interacting with my friends about mathematics and also I was math teacher discussed about math problem. Our*



*teachers friendly behave so I couldn't fear with subject teacher". But two of the respondent A and C expressed "could not interact and close with subject teacher because there are large number of students and talented dominated classes, only interact with friends". Also mathematics teacher expressed" low achiever students were not interact with friends and teacher but high achiever students were interaction with teacher and peers. They were discusses about mathematics problem.*

From the above view of observation of mathematics classroom was high achiever students were interact with peers and teacher but not interact with peers and teacher. Also low achiever students said "I am afraid with math teacher and math was difficult subject so I don interact with peers and teacher about mathematics". High achiever students said "I am interaction with peers and teacher. Our teacher was helpful and friendly". So high achiever students were must interact with peer and teacher. But not low achiever students.

For education in school to be effective the environment needs to be conducive to learning, allowing the pupils space and time to interact with in the learning and teaching process. Creating and maintain, stimulating learning environment can be achieved through effective classroom organization, interactive and whole school displays and a climate of innovation (Vygotsky, theory). So who interacts' teachers and peers in schools' in classroom he/she more learnt and high achiever. But who lack of interact s/he was low achiever.

### **Classroom Activities**

Classroom activities is concerned different perspective are possible. Mathematics is a theoretical system, in which definitions play a crucial role. Through definitions the 'objects' of the theory are introduced; definitions express the properties which characterize them and relate them within a net of stated relations; new

properties of the defined objects and new relations between them and the objects of the theory can be further established through the process of deduction (M.A. Mariotto and E Fischbein, 1997). When I observed the respondents classroom: *I found that high achiever respondents were clever and active in mathematics classroom. But low achiever respondents were not attending extra activities.* On the basis of the above data of observation when I asked the questions of high achiever and low achiever respondents help of the interview guideline. About my A and B respondents expressed " *I did sometime classwork but not regular because many problems were difficult and not interested. I am participation at extra activities. Like some game and dance.*"

Similarly respondents B and D expressed "*I did daily classwork when the teacher gives. I participated in extra activities in school. Like quies further game*".

Also teacher expressed "*high achiever students were regularly did classwork and participated in extra activities. But low achiever students did not classwork and not participated in extra activities*".

From the above view of observation of mathematics classwork was high achiever students were did mathematics classwork and participation at extra activities. But low achiever students did not mathematics classwork and sometime participated at extra activities.

## **Chapter V**

### **Summary, conclusion and recommendations**

This chapter is basically concentrated in deriving findings from the discussion of previous chapter. Besides finding and conclusion it has some recommendations which would be useful for further studies and educational implication.

#### **Summary of the study**

The case study entitle "participation of students in mathematics classroom" is attempt to study how students takes part in mathematics learning. Actually how the learners are fascinating towards the learning of mathematics is the key concern of this study.

The overall objective of the study was to find out the Explore the participation of low achiever and high achiever students in mathematics classroom. The purpose of this study was to identify the participation of students for school level. This case study of students related to participation of students in mathematics at school level. Direct observation and interviews were the main tools for the collection of information in one government school at Tarkeswar municipality in Kathmandu district. The respondent of the study was the students of grade nine, their mathematics teachers and parents. The constructivist views of learning was the approach used in the interpretation of the result.

#### **Finding of the study**

The researcher found major findings from this study as follows:

- ) Low achiever students have not sufficient time at home, so they didn't mathematics homework and practice but high achiever were did math homework and practice of math.

- ) Low achiever girls and boys who were very weak in math they have same problem at home. They have not brings mathematics book so didn't homework but high achiever students were daily brings math book but girls students have some difficulty at home.
- ) Low achiever students were not came regular in school and in mathematics class. These students cannot manage the time properly for their study at home because of bad environment and high achiever students were regularly come to school and they were always activatingin mathematics class.
- ) High achiever students were interacts with peers and teacher but not low achiever student cannotinteract with peers and teachers. In general most of the boys are interactive than girls students more with their teacher and friends.
- ) High achiever students were did mathematics classwork and participated in extra activities. But low achiever students did not mathematics classwork and sometime participatedin extra activities.

### **Conclusion**

The students were participating in mathematics classroom. The students were not actively participate in mathematics learning. The low achiever students have not sufficient time at home. They didn't mathematics homework and practice. They cannot attended regular in mathematics classroom and did not regular homework and practice. The high achiever students were did math homework and practice. They were regular came to school and interact with peers and teachers. They were participated in extra activities.

Low achiever students girl and boy were equal participated in mathematics, but high achievers girl students have not sufficient time and some difficulties in mathematics participation. The high achiever boy's students can manage the time and their parents also support in their study. The high achiever students were more interact with teacher and peers. In general most of the boys were interaction with teacher. But low achiever students feel alone and uneasy so they are silence.

### **Recommendation for Further Study**

The findings and conclusion drawn cannot be generalized in all schools but it could be helpful to improve the teaching learning quality as desired by the student. Which is applicable for the planning of student centered instructional strategies and which helps to the implementation of existing learning theory and methods of teaching and learning. There might arise some issues which needs to be further studies are as follows:

- ) This study followed the case of students' participation and the performance shown during study. It can be done with particularly in depth with comparison.
- ) It is the study done with macroscopically but it can be done with concentrating on any one of the particular factor regarding on this study.
- ) Only one school was taken for the case in this study more schools should be taken for the study with larger parameter

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## **Appendix I**

### **Observation Area**

The observation of students would take on the basis of following guidelines everyday:

Name of the student:

Address:

Time:

1. Observation of classroom activities as classwork, extra activities.
2. Interaction between peers and teacher.
3. Learning ability in text book and homework.
4. Teacher activities with girls and boys.
5. Behavior of parents towards their son and daughter.
6. Time duration at home for homework and practice.
7. Student's regularity.



## Appendix II

### Interview Schedule for mathematics teacher:

Name:

Religion:

Nagar:

ward:

Age:

Sex:

Cast:

Qualification:

Training:

1. Students brings mathematics book?
2. Students did homework?
3. Students come to school regular?
4. How to students interaction with peers and teacher?
5. Students did classwork?
6. What types of students participate in extra activities?

### Appendix III

#### Interview Schedule for girls/boys students:

Name:

Class:

Place of birth:

Nagar:

Religion:

Ward No.:

1. Do you interaction with peers and teachers?

Ans:.....

2. Do you brings daily mathematics book?

Ans:.....

3. Do you mathematics homework?

Ans:.....

4. How many time practice mathematics problem at home?

Ans:.....

5. You are come regular school?

Ans:.....

6. Do you class work?

Ans:.....

7. You are participative in extra activities?

Ans:.....

8. How much time do you study at home?

Ans:.....

**Appendix IV**

**Interview schedule for parents**

Name:

Religion:

Sex:

ward no.:

Age:

Nagar:

1. What is your occupation?

Ans:.....  
.....

2. What is main interesting area of your daughter/son?

Ans:.....  
.....

3. Do you think your daughter / son get enough time for study at home?

Ans:.....  
.....

4. Aren't son and daughter equal to give the same opportunity?

Ans:.....